The Aneurin Great War Project: Timeline
Part 7 - Economic Wars, 1816 to 1869

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[BUT UNDER CONSTANT EXTENSION AND CORRECTION, SO CHECK AGAIN SOON]

This timeline supports the Aneurin series of interdisciplinary scientific reflections on why the Great War failed so singularly in its bid to be The War to End all Wars. It presents actual or best-guess historical event and introduces theoretical issues of cognitive science as they become relevant.

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The Timeline Items

1816 The British government establishes the Royal Small Arms Factory at Enfield Lock, Middlesex. [THREAD = WW1 SMALL ARMS]

1816 The Prussian General Karl von Grolman [Wikipedia biography] insists that one of the most important tasks of a General Staff in peacetime is to draw up detailed plans for possible future conflict scenarios. [THREAD = WW1 ARMIES AND TACTICS]
**ASIDE - MOBILISATION SCENARIOS IN 1914:** The Prussians will learn to do pre-planned mobilisations exceptionally well and it will win them the Franco-Prussian War [=>1870 (19th July)]. The point is that once a particular plan has been activated at the highest level all the contingent lower level orders - and ultimately there are tens of thousands of these - simply come out of cupboards, are signed, and sent off. Unfortunately this gives the operation in question an immediate momentum of its own, because it will take an equivalent number of countermanding orders to bring it to a halt. Moreover, the last to receive any recall order will be the most forward patrols! Indeed a START-STOP-RESTART just such as this will degrade the Schlieffen Plan mobilisation in the run-up to WW1 [=>1914 (3rd August)].

1816 The American gunsmith Eliphalet Remington II [Wikipedia biography] devises a new procedure for fabricating rifled barrels and founds the Remington and Sons gun factory to capitalise on this new technique. [THREAD = WW1 SMALL ARMS]

1816 [26th April-11th June] **Reports of the Select Committee on Madhouses:** The British Parliament reviews evidence submitted to it concerning conditions in the nation's lunatic asylums and workhouses. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

**ASIDE:** This material has been further indexed on Andrew Roberts' Mental Health History Timeline at http://studymore.org.uk/mhhtim.htm.

1816 [2nd May] **Prince Leopold of Saxe-Coburg-Saalfeld** [Wikipedia biography] marries **Princess Charlotte of Wales** [Wikipedia biography], sole legitimate child of the British Prince Regent [=>1820 (29th January); later King George IV], thereby becoming second-in-line to the British throne after his sister's daughter **Princess Victoria** [=>1819 (24th May)],. [THREAD = THE SHAPING OF THE MODERN WORLD]

**ASIDE:** As with "Lady Di", the Princess of Wales who was famously killed in a car accident in Paris in 1997, the title "Princess of Wales" does not mean that the person in question has prior Welsh connections, nor that their subsequent involvement with the Principality will be anything more than ceremonial.

1816 [25th May] A commando unit of the **Orange Order** [1796 (12th July)<=>19th July] bursts into a Catholic church service at Dunreilly, County Cavan, and murders the priest and several of the congregation [continues at 19th July ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1816 [14th June] The Quaker philanthropist **William Allen** [Wikipedia biography] and the clergyman **Thomas Harper** [no convenient biography] become the founding members of the **Society for the Promotion of Permanent and Universal Peace** [usually just "the Peace Society"], to campaign for disarmament and the settlement of international disputes by arbitration. [THREAD = WW1 CONSCIENTIOUS OBJECTION]

********** "THE YEAR WITHOUT A SUMMER" **********

1816 [21st June] Around this time the volcanic ash-cloud from the Mount Tabora eruption in Indonesia [<=1815 (10th April)] starts to impair the weather in Europe. There follows a period of depressed grain harvests and high food prices which fosters intense social unrest amongst Britain's working classes. [THREAD = THE SHAPING OF THE MODERN WORLD]

1816 [19th July] **The Unlawful Oaths Act, 1816:** [ ... Continued from 25th May] Responding to the atrocity at Dunreilly [<=25th May] the Irish Parliament strengthens its **Unlawful Oaths** legislation, making it illegal for private societies to become oath-bound paramilitary secret societies. The intention is [and in 2014 still is] to prevent the Protestant **Orange Order** [25th May<=1823 (29th January)] and its Catholic counterparts from waging a war of tit-
for-tat local atrocity [continues at 1823 (29th January) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1816 [19th October or hereabouts] The Merthyr Tydfil Riots: Angry at attempts to cut their wages now that the demand for munitions has collapsed, rioting iron workers break into the various Merthyr Tydfil ironworks, bringing production to a halt. The ironmasters on site, among them Sir John Josiah Guest [1815<=1836 (21st June)] and William ("the Iron King") Crawshay II [1810<=1825] are forced to take refuge in accommodation hardened in advance precisely for this purpose. Troops are soon brought in to restore peace. [THREAD = THE SHAPING OF THE MODERN WORLD]

1817 John Walter [II] [1803<=1847 (28th July)], the proprietor-editor of The Times appoints the lawyer-journalist Thomas Barnes [Wikipedia biography] as that newspaper's managing editor. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

********** UTOPIAN SOCIALISM IS CONCEIVED **********

1817 Robert Owen [1813<=1820] opens Britain's first ever infants' school at his New Lanark mill complex. Believing that this sort of deliberate social engineering will help reduce poverty, he goes on to propose an even larger experiment, this time with purpose-built "townships", that is to say, integrated living and producing communities, complete with healthcare facilities, factories, shops, parks, etc. He sets out his ideas in "Revolution in the Mind" [Google read online] [continues at 1825 (Orbiston and New Harmony) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1817 John Macdona[<=1808] now publishes "A Treatise Explanatory of a New System of Naval, Military, and Political Telegraphic Communication"1 and an associated "Telegraphic Dictionary, Numerically Arranged". A small set of flags is used to transmit decimal numbers, which specify identical dictionary phrases at both the transmitting and receiving stations. Sequences of numbers specify sequences of phrases, allowing longer sentences to be concatenated2. Here are some examples ...

267 = "They would always"
367 = "Things would be better managed"
390 = "The third ship"

Around the same time Frederick Marryat [Wikipedia biography] publishes a "Code of Signals" for Britain's merchant shipping which, again by using pre-printed tables of meanings [Wikipedia example]. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1ASIDE: Note the inclusion of "political" signalling as well as tactical. In fact diplomatic and strategic signalling systems and techniques have always existed alongside tactical systems for use in the field or at sea - check out the Companion Resource for examples.

2ASIDE - SENTENCE PRODUCTION: Human language production works in exactly this fashion - check out the Companion Resource (especially Section 4).

1817 [10th February] Frederick William III of Prussia [1813 (21st April)<=d.1840 (7th June)) decrees that his army is to adopt, and take great pride in the use of, a standardised catalogue of Armeemärsche [= army marches]. [THREAD = WW1 ARMIES AND TACTICS]

ASIDE: Three categories of Armeemärsche were recognised, namely AM-I = infantry slow march, AM-II = infantry quick march, and AM-III = cavalry march. Frederick the Great's own Hohenfriedberger March [=1745 (4th June)] is given the Catalogue No. AM-III, 1b [hear it now].
ASIDE - GERMAN BANDS: It will not be long before the Prussian love-affair with martial music is noted abroad, and to this day English rhyming slang uses the word "German(s)" (being short for "German band(s)"), to mean "hand(s)" [hear an example now].


1818 Following some sort of management disagreement at the Whitecliff Ironworks [=1808] the consultant metallurgist David Mushet [1808<=>1826 (?)] moves across to the Darkhill Ironworks [=1845], three miles away to the south-east at Parkend, Gloucestershire. Here he will experiment with coke-fired furnacing in the production of steel. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1818 The Harford and Partridge Partnership [1796<=>1842] takes over the Tredegar Ironworks [1799<=>1832] running it in tandem with their Ebbw Vale Ironworks [1796<=>1829] in the next valley to the west. Around the same time, having fallen out with Samuel Homfray I [1807<=>1822 (22nd May)] Richard Fothergill I [1799<=>1821 (25th May)] opens an ironworks at Ponthir, near Caerleon, South Wales, integrating production with that at the Abernant Ironworks at Aberdare. Also this year upon the death of Richard Hill II [=1806 (20th April)] his interests in the Plymouth Ironworks at Merthyr Tydfil [1799<=>1834] pass to his younger brother Anthony Hill1 [no convenient biography=>d.1862 (2nd August)]. Also the Cwm-y-felin Ironworks [1796 (3rd August)<=>1841] at Neath, South Wales, starts to specialise in boilers, connecting rods, cranks, etc. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1ASIDE - THE PLYMOUTH IRONWORKS UNDER ANTHONY HILL: Anthony Hill will run the Plymouth Ironworks for the next 44 years, improving techniques where he can and generally earning the company a reputation for quality and reliability.

1818 The French gunsmith François Prélat [Wikipedia biography] makes further improvements to percussion cap technology [=1814]. [THREAD = WW1 SMALL ARMS]

1818 Carl von Clausewitz [1807 (8th October)<=>1832] is appointed director of the recently re-opened Allgemeine Kriegschule in Berlin, turning it into a university of Prussian-ness. [THREAD = WW1 ARMIES AND TACTICS]

1818 The American gunsmith Elisha H. Collier [Wikipedia biography] patents the Collier Revolving Flintlock [image], a transitional handgun design part-way between a pepperbox pistol [=1775 (Henry Nock)] and a revolver [=1830 (Samuel Colt)]. [THREAD = WW1 SMALL ARMS]

********** KEATS IDENTIFIES A BIG, BIG, PROBLEM **********

1818 [3rd February] Belief Systems [XXIII - Propaganda (A Casual, but Far-Reaching, Observation)]: (Continued from 1797) In an attempt to tease out the defining characteristic of aesthetic beauty the British poet John Keats [Wikipedia biography] notes as follows in a letter to his close friend John H. Reynolds [Wikipedia biography] ...

"We hate poetry that has a palpable design upon us [...]. Poetry should be great and unobtrusive, a thing which enters into one's soul, and does not startle or amaze with itself, but with its subject."

Keats' point (and he is not talking about propaganda, remember) is that the public is generally too easily pleased by the superficialities of things; by pictures which (to use
a modern phrase) are "too chocolate box", by poems which are self-consciously verbose, by literature which is more concerned with sales than with originality, and by music which "has too many notes" [full story]. He has, however, inadvertently put his finger on the essential characteristic of persuasive communication as well, namely that it has a palpable design upon its audience (and, of course, the essential evil of such communications is that they do their best to keep their hidden agendas to themselves) [sub-thread continues at 1831 ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

ASIDE: Readers wishing to see just what is at stake when words and/or pictures have a hidden agenda of some sort should, unless already familiar with it, immediately view Leni Riefenstahl's [Wikipedia biography] 1935 masterpiece of Nazi propaganda "Triumph des Willens" [in English as "Triumph of the Will"] [YouTube full movie]. They should then view F. George Steiner's [Wikipedia biography] piece to camera in the 1994 TV Documentary "Looking at 'Triumph of the Will'" [see YouTube clip now], during which he deploys the "palpable design" argument as a litmus-test of political good faith. To cut a long story short, Steiner's closing exhortation that we should step back from manipulative messages "with a strong and courteous 'No, thank you'" is precisely what peace activism needs. What is less clear, unfortunately, is whether a critical mass of like-minded sceptics will be achieved in time to avoid Humankind's next world war.

1818 [16th February] The Cotton Mills Commission: The owners of Britain's cotton mills successfully petition Parliament to establish a Special Commission into "the condition of children employed in factories", believing that they, the owners of those factories, have been getting an unreasonably bad press of late. The Commission's work will bring about the Cotton Mills and Factories Act, 1819, outlawing the employment of children aged under nine years and restricting those aged nine to 16 years to a maximum 12-hour working day. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]


1818 [13th November] The Stockton and Darlington Railway [I - The Initial Plan]: A public meeting at Darlington, County Durham, resolves to ask Parliament for permission to build a railway between the collieries around Bishop Auckland in upland Durham and docking facilities at Stockton-on-Tees [continues at 1821 (19th April) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1819 [22nd May-30th November] The side-paddle SS Savannah [Wikipedia shipography] departs Savannah, GA, en route for Liverpool, England. She will arrive safely on 20th June, making her the first steam-assisted sailing ship to cross the Atlantic (albeit the last two days of the voyage were under sail alone, her coal having been exhausted). [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]


1819 [3rd July] The Battle of Shopian: This battle is fought between a Sikh Empire army under Ranjit Singh [Wikipedia biography] and a Durrani Afghan army under Jabbar Khan [no convenient biography]. The outcome is a decisive Sikh victory. The battle is noteworthy in the present context for allowing the Sikh Empire to take control of the province of Kashmir. [THREAD = THE SHAPING OF THE MODERN WORLD]
1819 [14th July] The French government establish a major arms factory at Châtellerault, to produce swords. Similar establishments are set up at Puteaux and at Bourges. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1819 [16th August] The Peterloo Massacre: An estimated 60,000 people gather at St. Peter's Field, outside Manchester, to hear an address protesting rising food prices by the radical political theorist Henry Hunt [Wikipedia biography]. Unbeknown to the crowd, the event has been singled out in advance for an Establishment clampdown, and troops under Guy L'Estrange [no convenient biography] are at hand should riot break out. It does, and the 15th (King's Own) Regiment of Light Dragoons [1788 (appears there as the 1st Regiment) =>1914 (18th August)] is deployed to disperse the crowd. In the resulting melee 15 civilians are killed and some 600 more variously injured. Hunt is arrested for public order offences and jailed for two years. The confrontation immediately goes down in the annals of the British class struggle as the "Battle of Water Peterloo", and is noteworthy in the present context as another demonstration of how easy it is to get citizens to use lethal force against fellow citizens, provided only that they are wearing a different uniform or assembled under a different banner. [THREAD = THE WW1 WORKING CLASS SOLDIER]

ASIDE - THE 15TH DRAGOONS IN WW1: The 15th Dragoons arrived in France on 18th August 1914 and its three squadrons were allocated to the 1st, 2nd, and 3rd Infantry Divisions for reconnaissance purposes. Once the war became trench-bound and immobile the regiment was duly re-brigaded as part of the 1st Cavalry Division on 14th April 1915.

1819 [4th September] The Lake Champlain Steamboat Company's SS Phoenix [<=1815] sinks following a fire onboard, with the loss of six lives. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

********** MODERN EGYPT IS BORN **********

1820 The Egypt-Sudan War, 1820-1822: Still determined to carve out an Egyptian Empire from the ailing Ottoman Empire, Muhammad Ali of Egypt [1805 <=1825 (15th April)] starts to move troops southwards towards Sudan. His army is commanded by his youngest son Ismael Pasha I [no convenient biography] [CAUTION: The Internet incorrectly redirects searches to Ismael Pasha II, Ali's grandson, not born until 1830]. The Sudanese have no modern army as such and simply move their tribal forces back into the hinterland, from where they will counter-attack in the fullness of time [=>1881 (The Mahdist War)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1820 An Edinburgh tannery worker named Abram Combe [Wikipedia biography=>1825] spends time with Robert Owen [1817 =>1825] at his New Lanark mill complex. He is duly converted to Owenite thinking and returns to Edinburgh to promote the same sort of co-operativism there. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1820 Crawshay Bailey [1801 =>1826] takes over at the Nantyglo Ironworks [1811 <=1833], and sets about expanding it to five blast furnaces producing 16,000 tons of iron per annum. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1820 The American inventor Robert Hare [Wikipedia biography] demonstrates that electrical sparks generate sufficient heat to ignite gunpowder. He follows this up two years later with a "hot wire blasting cap". [THREAD = WW1 MILITARY ENGINEERING]

1820 [29th January] Upon the death of George III of Britain and Hanover [<=1806 (6th August)] his thrones pass to his eldest son, presently the "Prince Regent" [<=1816 (2nd May)], as George IV of Britain and Hanover [Wikipedia biography=>1830 (24th June)]. [THREAD = THE SHAPING OF THE MODERN WORLD]
1820 [23rd February] The Cato Street Conspiracy: Angered by the Peterloo Massacre [<=1819 (16th August)], a nest of activists led by one Arthur Thistlewood [Wikipedia biography] is intercepted by the authorities on their way to attempt the assassination of the British Cabinet. The five main conspirators are executed on 1st May. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** THE GERMANS UNITE **********

1820 [15th July] The German Confederation: After five years working on the details the new German Confederation [<=1815 (8th June)] finally comes into effect [continues at 1834 (1st January)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1820 [25th October] The first patients are admitted to the Cornwall County Asylum at Bodmin, Cornwall. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1821 [17th March] The Greek War of Independence, 1821-1832: This nationalist uprising by ethnic Greeks against the Ottoman Imperial occupation begins with a widespread rural uprising which fails to make significant progress in the Ottoman-garrisoned cities. At sea, however, the Greek nationalists are able to assemble a small navy in the Aegean. Their ships are nothing more than small converted merchantmen but their crews are experienced, well motivated, and familiar with the waters. Faced, therefore, with fully armed Ottoman men-of-war the Greeks become skilled at fire-ship tactics. Here are the main events ...

The Battle of Eresos, 1821; The Battle of Chios, 1822; The Egyptian Intervention, 1825; The Battle of Navarino Bay, 1827

The war will be brought to an end by the London Conference [=>1832 (7th May)], the overall outcome being a Greek victory and the establishment of the Kingdom of Greece. The war is noteworthy in the present context for the financial and psychological support given to the Greek rebels by "Philhellenists" [= "lovers of all things classically Grecian"] from across Europe (especially from Prussia, France, and Britain), of whom perhaps the most famous is the poet Lord Byron [Wikipedia biography]. [THREADS = THE SHAPING OF WW1 EUROPE and WW1 ROMANTIC NATIONALISM]

1821 [19th April] The Stockton and Darlington Railway [II - The Authorisation]: [...] Continued from 1818 (13th November)] The Act authorising the building of this railway receives Royal Assent. The first track will be laid on 23rd May the following year [continues at 1825 (27th September)]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]


1821 [27th May] The Battle of Eresos: This (David and Goliath) naval battle is fought as part of the Greek War of Independence [<=17th March] between one of the Greek navy's fire-ships and an Ottoman frigate off the Isle of Lesbos. The outcome is the destruction of the Ottoman warship. [THREAD = THE SHAPING OF THE MODERN WORLD]

1821 [28th November] Panama Switches Empires [I - Independence from Spain]: [New sub-thread] Inspired no doubt by the news from Mexico, Panamanian separatist rebels stage a bloodless coup against the Spanish Empire, and appoint José de Fábrega [Wikipedia biography] as President. They then resolve to become a province of neighbouring Gran Colombia [sub-thread continues at 12th December 1846] [THREAD = THE SHAPING OF THE MODERN WORLD]

1821 [14th December] Jean -Baptiste Villèle [Wikipedia biography] is appointed Prime Minister of France, and sets about promoting an "ultra-Royalist" agenda. [THREAD = THE SHAPING OF THE MODERN WORLD]

1821 The Dowlais Ironworks [1815<=1830] is asked to produce the rails for the Stockton and Darlington Railway [<=1818 (13th November)], soon to become the world's first passenger railway. To meet this increased demand, it adds an eighth blast furnace to its establishment. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

********** THE CAMERA OBSCURA IMAGE IS CAPTURED **********

1822 The Development of Photography [II - Niépce]: [Continued from 1800 (Wedgwood)] At around this time the French inventor Nicéphore Niépce [Wikipedia biography=>1826] is experimenting with primitive photographic techniques. He makes some progress with what will become known as the "bitumen process", whereby a flat plate, thinly coated with a film of etchers' bitumen [see ASIDE below], is exposed for some time in the projection plane of a camera obscura. The bitumen in the lit areas of the image then gradually becomes more resistant to a solvent rinse than does the bitumen in the dark areas. After an exposure time of many hours, the plate can therefore be treated by the already well-established acid-etching process ...

ASIDE - THE ACID-ETCHING PROCESS OF PRINT-MAKING: Where the bitumen coating has rinsed away, the underlying substrate - typically a soft metal sheet - is now open to, and can be selectively eroded by, the acid in an acid bath. Ink is then rubbed into the etched away areas, before screw-pressing the plate down onto the surface to be printed.

Niépce's own name for this process is "heliography" [Greek = "sun+drawing"] [sub-thread continues at 1826 ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1822 The radical political theorist Francis Place [Wikipedia biography=>1824 (21st May)] publishes "Illustrations and Proofs of the Principles of Population" [full text online at https://archive.org/details/illustrationspro00plac] in which he advocates contraception as a tool of economic policy. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1822 Cardiff Docks [I - Early Planning]: The local land-owner John Crichton-Stuart, 2nd Marquis of Bute [1792 (12th October)<=1830 (16th July)] starts to plan how coal docking facilities at Cardiff, South Wales, might best be exploited as a speculative investment (Davies, 1981) [continues at 1830 (16th July) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1822 [22nd May] Upon the death of Samuel Homfray I [<=1818] his interests in the Tredegar Wharf Company [<=1807] and the Penydarren Ironworks [<=1799 (18th January)] pass to Samuel Homfray II [no convenient biography=>1826], [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1822 [22nd May] Upon the abdication of their Emperor Agustín de Iturbide [1821 (28th September)<=d.1824 (19th July)] the Mexicans formally adopt a new constitution and become thereby a presidential republic. They also start to encourage English-speaking migrants
into the Province of Tejas [= modern Texas] from the U.S. to settle along the Brazos River. In this they are helped by the American entrepreneur and real-estate speculator Stephen Fuller Austin [Wikipedia biography=>1835 (2nd October)]. However it soon becomes apparent that the new Texians are a secretive lot, conducting much of their business in closed session in Masonic lodges. As the British had done in Ireland [=29th January], the Mexican government is so concerned about the hostile intentions of these lodges that on 25th October 1828 they formally outlaw them. [THREAD = THE SHAPING OF THE MODERN WORLD]

1822 [6th-7th June] The Battle of Chios: This (David and Goliath) naval battle is fought as part of the Greek War of Independence [=1821 (17th March)] between another of the Greek navy's fire-ships commanded by Constantine Kanaris [Wikipedia biography] and the Ottoman flagship Bourlota Saimaz off the Isle of Chios. The outcome is the destruction of the Ottoman warship. [THREAD = THE SHAPING OF THE MODERN WORLD]

1822 [11th July] The French theatre designer Louis Daguerre [Wikipedia biography=1829] uses his command of stage lighting and construction to open a "Diorama Theatre" [Wikipedia factsheet] in Paris. In its initial, simplest, form the audience viewed a giant canvas, painted on both sides, and variously lit for effect from front or back. A "performance" would last, say, ten minutes, with progressive zonal lighting picking out this then that element of the fronting scene. Then, when the time was right, the reverse lighting would be switched on to bring up the denouement view - a train now crashed, a town now collapsed in an earthquake, etc., etc. [THREAD = THE SHAPING OF THE MODERN WORLD]

1823 The British infantry officer John Norton [no convenient biography] experiments with "cylindro-conical" [= "bullet-shaped" in the modern sense] lead slugs. [THREAD = WW1 SMALL ARMS]

1823 The British engineers Robert Napier [Wikipedia biography=>1839 (12th July)] and David Elder [no convenient biography] design and build a "side-lever" steam engine for the PS Leven [no convenient factsheet]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1823 [29th January] Amendment to the Unlawful Oaths Act: [... Continued from 1816 (19th July)] The Irish Parliament now passes legislation totally banning the Orange Order [=1816 (19th July)] and similar oath-bound societies. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1823 [14th March] The Battle of Nowshera: This battle takes place as part of the Afghan-Sikh Wars [=1819 (3rd July)] between a Sikh Empire army under Ranjit Singh [1819 (3rd July)<=>1834 (6th May)] and a Durrani Afghan army under Azem Khan Barakzai [no convenient biography]. The outcome is a Sikh Empire victory. [THREAD = THE SHAPING OF THE MODERN WORLD]

1823 [2nd December] The Monroe Doctrine: Concerned about erosion of the United States' trading and influence network by the European empires (Britain, Holland, France, Spain, and Russia), President James Monroe [check him out] declares in his 1823 State of the Union Address [Wikipedia briefing] that the undeveloped lands of the North West and the nations of Central and South America "whose independence we have [already] acknowledged" are no longer "to be considered as subjects for future colonisation by any European powers". In June 1895 the Republican Henry Cabot Lodge, Snr. will explicitly resurrect Monroe thinking by applying it to the Venezuelan Dispute [check it out]. The doctrine will also be invoked by JFK in 1962 as grounds for his stand against the Soviets in the Cuban Missile Crisis.
1824 John Taylor [Wikipedia biography] and James Shears II [Wikipedia biography] start to accumulate a number of smaller ironworks in Wales and England, trading under the name British Iron Company [=>1826 (7th February)]. Meanwhile [Sir] Benjamin ["Big Ben"] Hall II [Baron Llanover] [1838 <=1817 (31st July)] sells his interests in the Rhymney Ironworks [1817 (31st July) <=1826] to William Forman [1794 <=1829], who sets about expanding capacity with additional blast furnaces. The iron trade remains depressed, however, until the coming of the railways starts to boost demand in the 1830s. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1824 The first patients arrive at the new Hartford Retreat for the Insane, at Hartford, CT. The first Director of the facility is Eli Todd [Wikipedia biography]. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1824 Perhaps unaware of earlier developments in this area [<=1814 (Hermann)] the Italian mathematician Tito Gonnella [no convenient biography] constructs his own prototype planimeter [see the technicalities]. A later example of this instrument will be exhibited at the London Great Exhibition [=>1851 (1st May)]. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

1824 Noting the potential value of equipping cartridges with built-in percussion caps [<=1814], the Prussian gunsmith Johann von Dreyse [Wikipedia biography] sets out on what will prove to be a 12-year programme of experimentation, during which he will (a) successfully replace the caplock musket's large external hammer with an internal firing pin, and (b) devise a bolt-action mechanism to cock said pin while by the same action giving breech-loading access to the firing chamber. [THREAD = WW1 SMALL ARMS]

1824 [21st May] Repeal of the Combination Acts of 1799 and 1800: Having considered testimony from Francis Place [<=1822] and others to the effect that these two Acts have been on balance counter-productive¹ in banning Trades Unions of any form, a British government Select Committee recommends their repeal forthwith. There is an immediate surge in Trade Union creation, followed by an equal surge in wildcat strikes and industrial unrest. When they have finished screaming "Told you so!" Government hard-liners pass a replacement Combination Act the following year [continues at 1825 (4th July) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

¹ASIDE: The Acts have, the Committee says, "had a tendency to produce mutual irritation and distrust" between masters and their workmen (Hansard, 21st May 1824, 11,811-814).

1824 [16th September] Upon the death of the politically centrist Louis XVIII [<=1814] the French throne passes to his more right-wing brother Charles Philippe, Comte d'Artois, as King Charles X [Wikipedia biography]. [THREAD = THE SHAPING OF THE MODERN WORLD]


********** ORBITON AND NEW HARMONY **********

1825 Abram Combe [<=1820] and fellow utopian socialists establish an Owenite cooperative community at Orbiston, near Glasgow. It will prove only a short-lived enterprise, collapsing after Combe works himself into an early grave in 1827. As for Robert Owen [1820 <=1826 (5th February)] himself, he is presently in the U.S., seeking to invest his personal fortune in a second New Lanark. This takes him to the township of Harmony, IN, where between 1814 and 1824 a community of German Protestant migrants - the "Harmonists" - led by one George Rapp [Wikipedia biography] has been
building a utopian community of their own. This community has recently (24th May 1824) relocated to Ambridge, PA, and is happy to take $150,000 from Owen for the deeds to the abandoned site. Owen duly renames his new project "New Harmony" and sets about attracting new residents interested in an idyllic life of equality, cooperation, freedom of speech, learning, and lawfulness [continues at 1826 (5th February) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1825 William ("the Iron King") Crawshay II [1816 (19th October)<=]1867 (4th August]) moves into Cyfarthfa Castle [Wikipedia entry], his new family home, directly across the River Taff from Cyfarthfa Ironworks [1810 (27th June)<=]1867 (4th August]) and with the upper terminus of the Glamorgan Canal [<=1799 (18th January)] at the bottom of his lawn. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

**ASIDE: William Crawshay I** [not an active ironmaster himself] regarded his son's investment as an expensive white elephant, given the prevailing depressed market in iron (Addis, 1957; Chapter 3). Cyfarthfa Castle became a school in 1908 before being acquired by the Merthyr Tydfil local authority in 1981. It is nowadays a museum to the iron and steel industry [museum website].

1825 Chile starts to export "caliche" [Wikipedia chemistry], a sedimentary ore rich in sodium nitrate, to Germany, where it is converted to potassium nitrate. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

**ASIDE - NITRATES IN WW1:** In terms of their explosive chemistry, sodium nitrate and potassium nitrate are pretty much interchangeable. However the former is "deliquescent", that is to say, it absorbs water from the ambient atmosphere, making it unsuitable as a component of gunpowder.

1825 Using slightly different techniques the German chemist Carl Löwig [Wikipedia biography] and the French chemist Antoine Balard [Wikipedia biography] independently extract a brumous red-brown liquid from sea salt residues, concluding that it is a new element and naming it "Bromine". [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

**ASIDE - BROMINE IN WW1:** The French army used Ethyl bromoacetate in tear gas grenades as early as August 1914. The Germans used Xylyl bromide in artillery rounds at the Battle of Bolimów [=1915 (31st January)]. Potassium bromide and sodium bromide were used as sedatives in psychiatric applications, also (reputedly) as sex drive suppressants for troops.

1825 John Hall and Company acquires the Faversham Gunpowder Works [=1847]. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1825 [15th April] The Egyptian Intervention: At the request of Sultan Mahmud II of Turkey [Wikipedia biography] [=1827 (20th October)] Muhammad Ali of Egypt [1820]<=]1827 (20th October) lands an army under his eldest son Ibrahim Pasha [Wikipedia biography] [=1832 (21st December)] at Methoni [map, etc.] On the Peloponnesian Peninsula, from where to support the Ottomans against the Greek rebels [continues at 1827 (20th October) ...] [THREAD = THE SHAPING OF THE MODERN WORLD]

1825 [4th July] The Combination of Workmen Act, 1825: [... Continued from 1824 (21st May)] This is the Act of Parliament referred to above as stamping down on the labour unrest of 1824-1825. Although there is some net benefit to the nation's workers the Act nevertheless re-introduces stringent criminal penalties for picketing and associated activities. It will remain in force until the early 1870s [=1871 (Trade Union Act)]. [THREAD = THE WW1 WORKING CLASS SOLDIER]
1825 [27th September] The Stockton and Darlington Railway [III - The Opening]: [...] The new railway is formally opened and Locomotion No. 1 makes history by taking two hours to travel 12 miles pulling 600 passengers. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1825 [1st December] Upon the death of Alexander I of Russia [<=1815 (9th June)] his throne passes to his younger brother Nicholas I or Russia [Wikipedia biography=>1829 (24th May)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** THE OLDEST SURVIVING PHOTOGRAPH **********
********** THE OLDEST SURVIVING PHOTOGRAPH **********
********** THE OLDEST SURVIVING PHOTOGRAPH **********

1826 The Development of Photography [III - Niépce Again]: [Continued from 1822] Using his heliographic technique Nicéphore Niépce [1822<=1829] produces prints from a bitumen-on-pewter plate of the scene outside his laboratory window. Now entitled "View from the Window at Le Gras" [see it now=>1829 (ASIDE)] this is the world's oldest known photograph [sub-thread continues at 1829 ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1826 Around this time Crawshay Bailey [1820<=1833] sponsors the building of a freight tramway between the Rhymney Ironworks [1824<=1829] and Bassaleg, where it joins the Ebbw Vale/Tredegar tramways for the final three miles run down into Newport Docks. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1826 The Wills tobacconist business in Bristol [<=1786] now sets up the Wills and Company cigarette factory. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

********** TROUBLE IN AFGHANISTAN **********


1826 [??th February] The New Harmony Community: [...] By now the New Harmony community is beginning to expand, but it will only be a few months before internal tensions make it clear that the experiment is not going to work, and by March the following year the community is being wound up. Its founder Robert Owen [1825<=d.1858 (17th November)] will spend the rest of his life talking and writing about socialist principles, having tired of trying to make them work. Another resident, the philosopher-socialist Josiah Warren [Wikipedia biography=>1827 (18th May)], will later explain that New Harmony was too artificial, making the fundamental mistake of reducing the individual "to a mere piece of machinery". [THREAD = THE SHAPING OF THE MODERN WORLD]

1826 [??th February] Following a boardroom reshuffle at the British Iron Company [<=1824] the metallurgist David Mushet [1818<=1845] is brought in to replace John Taylor [<=1824] and James Shears II [<=1824]. Around the same time at Tredegar Samuel Homfray II [1826<=1835 (??th July)] builds himself Ty Bedwellty 1 [>=1851 (1st May)], a mansion fit for an ironmaster. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1826 [24th March] The Liverpool and Manchester Railway [I - The Authorisation]: A consortium of Lancashire businessmen led by Henry Booth [Wikipedia biography] obtains approval from Parliament for the construction of a 35-mile-long railway line between Liverpool and Manchester. The works will include 64 bridges and viaducts and the 2 kilometer Wapping Tunnel at the Liverpool end. The permanent way will be "standard" gauge 4 foot 8½ inches, and will be laid doubled for the full length of the
line. Booth will run the line for the next 20 years [continues at 1830 (15th September) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1827 The Italian-born British banker [Sir] Moses Montefiore [1st Baronet] does pilgrimage to Jerusalem and so moved is he by what he sees that he will devote the remaining 58 years of his (101 year) life to bettering the lot of the Jewish people wherever they might live. [THREAD = THE SHAPING OF THE MODERN WORLD]

1827 [8th March] The Swan River Colony [I - The Reconnaissance]: James Stirling explores the Swan River area of Western Australia [continues at 1829 (25th April) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** MONEY AS LABOUR / LABOUR AS MONEY **********

1827 [18th May] Inspired but eventually disappointed by his experience at New Harmony [<=1826] Josiah Warren [<=1826 (??th February)] founds the "Cincinnati Time Store" as another highly innovative socio-economic experiment. His store exchanges products not for dollars and cents but rather for "labour notes", that is to say, IOUs for a stated number of hours labour on the part of the customer concerned. Warren will close down the experiment in May 1830 in order to do other things, but his time store was something of a success as long as it lasted. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1827 [13th June] The Select Committee on Pauper Lunatics: The British Parliament appoints a Select Committee to report on the "dreadful state of misery" in which the poor of Middlesex live. The inspectors deplore the fact that when their inspections are known about in advance it allows ward managers to sanitise things in advance. Magistrates should therefore be given greater powers and duties of supervision [continues at 1828 (19th February) ...]. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1827 [20th October] The Battle of Navarino Bay: [... Continued from 1825 (15th April)] This battle is fought as part of the Greek War of Independence [<=1821 (17th March)] between a European fleet under Edward Codrington [Wikipedia biography] and the Egyptian-Ottoman fleet under Amir Tahir [no convenient biography]. The outcome is the annihilation of the Egyptian-Ottoman fleet. The battle is noteworthy in the present context for prompting Sultan Mahmud II of Turkey [1825 (15th April)<=1831 (31st October)] to strengthen the Ottoman Navy with its first steamships and some of the largest wooden ships-of-the-line ever constructed [e.g., =>1828 (31st December)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE - THE TURKISH NAVY IN WW1: See the Wikipedia summary of Turkish naval strength in 1914.

1827 [8th November] Having served for some time as Regimental Surgeon to the 15th Regiment of Foot [1782<=1881] the discoverer of phosgene, John Davy [<=1812], is appointed Physician to the Malta Garrison. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]


1828 Jean Lamarque [1800 (3rd December)<=1830 (9th August)] is elected to the French Chamber of Deputies, where he aligns himself with the rapidly growing liberal opposition. [THREAD = THE SHAPING OF THE MODERN WORLD]
1828 Working at the Wiltsontown Ironworks [Heritage website], Forth, Scotland, James Beaumont Neilson [Wikipedia biography] develops the "hot blast" furnace, a method of pre-heating blast furnace inlet gases so that the subsequent reactions require less fuel. The technology will be extended to the Calder Ironworks [<=1801] in January the following year. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1828 (19th February) The Lunatic Asylums Regulation Bill, 1828: [A.k.a. The Madhouses Act, 1828] The British Parliament debates a Bill to consolidate earlier legislation regulating County Asylums [<=1808 (23rd June)]. It reminds members that the purpose of such institutions is to take care of "such unhappy persons of the lower classes as, being deprived of reason, were reduced to the lowest extreme of poverty and distress" (House of Commons Debates, 29th April 1828), and appoints a "Commission in Lunacy" to license and supervise the many privately managed lunatic asylums in London. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1828 (26th April) The Russo-Turkish War, 1828-1829: This war between the Russian and Ottoman empires begins with two Russian land advances into Ottoman territory, one through Moldavia into Dobruja [map, etc.], and the other through the Caucasus into north-eastern Anatolia. The war will be brought to an end by the Treaty of Adrianople [=>1829 (14th September)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1828 (1st May) William King [Wikipedia biography] publishes the first edition of "The Co-operator", a periodical dedicated to promoting not-for-profit commercial activity for and by the working classes. "We have to shop," King says, "so why not shop in our own shop". [THREAD = THE WW1 WORKING CLASS SOLDIER]

1828 (31st December) ONS Mahmudiye [Wikipedia shipography] is launched. At 250 feet long and carrying 128 guns she is one of the largest wooden ships-of-the-line ever built. [THREAD = THE WW1 SURFACE NAVIES]

1829 The Development of Photography [IV - Niépce and Daguerre]: [Continued from 1826] Niépce [<=1826] teams up with the diorama-showman Louis Daguerre [1822<=1837], and together the two men continue the search for faster-responding photographic processes. However Niépce's death in 1833 eventually leads to Daguerre taking over the project in its entirety [sub-thread continues at 1835 ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE: Niépce was a rather accomplished inventor, with prototypes of the internal combustion engine to his credit. He also helped develop the bicycle as we know it today, and even gave it its popular European name the velocipede (the modern vélo). The Niépce Museum at Chalon-sur-Saône celebrates his achievements [see their website]. His Le Gras image [<=1826] is nowadays part of the collection at the University of Texas at Austin's Harry Ransom Center [see their website].

1829 Moses Teague [no convenient biography] rebuilds the Cinderford Ironworks [<=1797] to capitalise upon an upsurge in the market for iron. Within 10 years he has three blast furnaces producing some 12,000 tons per annum. Meanwhile at the Ebbw Vale Ironworks [1818<=1835] production is being expanded to produce rails for the Liverpool and Manchester Railway [=>1830 (15th September)] and the Stockton and Darlington Railway [<=1826 (24th March)], whilst at the Rhymney Ironworks [<=1826] the death of William Forman [<=1824] sees ownership transferred to his sons Thomas Seaton Forman [no convenient biography], Richard Forman IV [no convenient biography], and William Henry Forman [no convenient biography]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]
1829 [29th April] The Swan River Colony [II - The Settlement]: [... Continued from 1827 (8th March)] Charles Fremantle [Wikipedia biography] claims the Swan River area for Britain and, as the transport ships arrive over the coming weeks, offloads the first 300 colonists. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE - WESTERN AUSTRALIA IN WW1: The Swan River Colony will become "Western Australia" in 1890. Its major towns are Fremantle and Perth and they both raised volunteers for the AIF, the Australian Imperial Force, for service in WW1. Of the (eventually) 60 battalions in the AIF, the 11th, 16th, 28th, 51st, and 52nd were all at least partly recruited in Western Australia, and many of these were trained at Blackboy Hill Camp, outside Perth, nowadays a heritage memorial site [website]. The 11th Battalion will be heavily involved in the Gallipoli Campaign [=1915 (25th April)].

1829 [24th May] Much to the irritation of the ethnic Poles (who as "Congress Poland" [=1815 (9th June)] have been a Tsarist Russian satellite state these last 15 years) Nicholas I of Russia [1825 (1st December)<=>1830 (29th November)] has himself crowned King of Poland. [THREAD = THE SHAPING OF THE MODERN WORLD]

1829 [14th September] The Treaty of Adrianople: This treaty between the Russian and Ottoman empires brings the Russo-Turkish War [=1828 (26th April)] to an end. Its main provisions are that the Ottomans recognise Moldavia and Wallachia as Russian protectorates and grant Serbia autonomy. [THREAD = THE SHAPING OF THE MODERN WORLD]

1829 [6th October] The Liverpool and Manchester Railway [II - The Rainhill Trials]: [... Continued from 1826 (24th March)] The Liverpool and Manchester Railway stages a competition for a £500 prize for the best all-round steam locomotive. Five locomotives are entered for the competition but the only one to complete all the heats is George and Robert Stephenson’s Rocket [Wikipedia factsheet] [continues at 1830 (15th September)]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1829 [17th December] The first steam (as opposed to horse-drawn) train runs on the Tredegar-Newport line [railway history]. [THREAD = WW1 RAILWAYS]

ASIDE: The Tredegar-Newport line was closed down in the 1963 Beeching cut-backs, and is now a heritage trail within the Sirhowy Valley Country Park [website].

1830 Now with 11 furnaces in operation, the Dowlais Ironworks [1821<=>1836 (21st June)] now constructs a "Big Mill" for rolling its rails. With a meteoric expansion of the railway system in the offing, Dowlais' output will increase to 70,000 tons per year by the end of the 1840s. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]


1830 [24th June] Upon the death of George IV of Britain and Hanover [=1820 (29th January)] both of his thrones pass to his 64-year-old younger brother William IV [Wikipedia biography] [=1837 (20th June)]. Some historically significant reform legislation will be passed during the seven years of the new king’s reign. [THREAD = THE SHAPING OF THE MODERN WORLD]

1830 [4th July] A young American named Samuel Colt [Wikipedia biography] burns his school down pranking with fireworks. He is sent to sea as punishment, but, while away, devises a method of turning a pepperbox pistol [=1775 (Henry Nock)] into a rotating breech system rather than a rotating barrel system. Borrowing some money from
personal contacts he hires a gunsmith named John Pearson [no convenient biography], and sets him to work on the necessary prototypes. [THREAD = WW1 SMALL ARMS]

1830 [10th July] The French liberal politician Adolphe Thiers [Wikipedia biography] pre-briefs a pressure group of journalists against Charles X of France [<=1824], who is about to announce a tightening of civil rights. [=>25th July] [THREAD = THE SHAPING OF THE MODERN WORLD]

1830 [16th July] Cardiff Docks [II - The Bute East Dock Authorisation]: [...] Continued from 1822] Among the Acts of Parliament given the Royal Assent this day is "An Act for empowering John Crichton-Stuart, 2nd Marquis of Bute [1822<=1831 (1st June)] to make and maintain a Ship Canal commencing near the mouth of the River Taff, in the County of Glamorgan, and terminating near the town of Cardiff, with other works to communicate therewith" (House of Commons Journal, 85). Construction work will not commence, however, until December 1834 due to delays in surveying and land acquisition [continues at 1834 (22nd May) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

********** MARIANNE-LIBERTY BACK ON THE STREETS **********

1830 [25th July] The July Revolution: Charles X of France [<=1824] proposes the tightening of civil rights previously mentioned [10th July<=2nd August], and Paris's radical activists duly take to the streets in protest. [THREAD = THE SHAPING OF THE MODERN WORLD]

WAR ART: Check out Eugène Delacroix's (1830) "Liberty Leading the People", painted in Autumn 1830 on "a modern subject - a barricade", and first exhibited in May 1831. Perhaps ominously Liberty is shown standing atop a pile of bodies.

1830 [2nd/9th August] The Abdication of Charles X of France: [...] Continued from 25th July] Persuaded of his unpopularity by the violence on his streets Charles X of France [25th July<=1836 (6th November)] abdicates his throne, to be replaced a week later by Louis-Philippe of Orléans [Wikipedia biography] (1830<=29th November) is put in charge of the military and Charles is permitted to take exile in Britain, from where he will "pretend" to the throne until his death in 1836 [continues at 1836 (6th November) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1830 [25th August] The Belgian Revolution [I - The Brussels "Mutiny"]: The Muntshouwburg Theatre in Brussels, the southern capital of the recently merged United Kingdom of the Netherlands [<=1815 (9th June)], stages the romantically nationalistic French opera "La Muette de Portici" (Daniel Auber, 1828). When the performance gets to the duet "Amour Sacré de la Patrie" [hear it now] the Francophiles in the audience start a riot which, catching the anti-Dutch spirit of the moment, spreads out across Brussels to the other like-minded southern provinces. The Dutch send 8000 troops to try to quell the mutiny but they are unable to make progress in the bitter street-to-street fighting which results [continues at 20th December) ...], [THREADS = THE SHAPING OF WW1 EUROPE and WW1 ROMANTIC NATIONALISM]

1830 [15th September] The Liverpool and Manchester Railway [III - The Opening]: [...] Continued from 1829 (6th October)] Accompanied by much fanfare the first train runs on the Liverpool and Manchester Railway [<=1826 (24th March)]. The event is marred by the death of the politician William Huskisson [Wikipedia biography] (dies this day), tragically run down by Rocket [see the Companion Resource for a fuller account]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1830 [29th November] The Russo-Polish War, 1830-1831: This war is fought between Józef Chłopicki's [Wikipedia biography] rebellious Polish nationalists and Nicholas I of Russia's
Imperial Russia, intent on crushing them. The war will unfold as a succession of lesser events, as follows...

The November Uprising, 1830; The Battle of Stoczek, 1831; The Battle of Olszynska, 1831

The overall outcome is that Poland is down-graded from a kingdom with a Russian king to a mere satellite Russian province. [THREAD = THE SHAPING OF THE MODERN WORLD]

1830 [29th November] "The November Uprising": This armed uprising takes place within the Russo-Polish War [<=previous entry], and opens with the storming of the Warsaw armoury and an attack on the Belweder Palace. Józef Chłopicki [1830 (29th November)<=1831 (25th February)] is elected "Dictator of the Uprising". In France Jean Lamarque [9th August<=1832 (5th June)] speaks out in favour of the Poles. [THREAD = THE SHAPING OF THE MODERN WORLD]

WAR ART: Check out Marcin Zaleski's (1831) "The Storming of the Warsaw Arsenal".

1830 [20th December] The Belgian Revolution [II - The London Conference]: [...] Continued from 25th August] This international conference agrees to recognise a Belgian secession from the United Kingdom of the Netherlands [continues at 1831 (21st July) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1831 Belief Systems [XXIV - Superstition, Witchcraft, and Magic ("Robertson" again)]: [Continued from 1818 (3rd February)] After nearly 40 years in the magician-showman business Robertson [=1797] summarises his achievements in "Mémoires Récréatifs" [full text online] [sub-thread continues at 1845 (3rd July) ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1831 The British chemist Peregrine Phillips [no convenient biography] patents a catalytic conversion process for producing concentrated sulphuric acid. However his invention will remain on the side-lines for some 50 years because until the 1870s industrial customers need only the moderately concentrated sulphuric acid available from Harrison's lead chamber process [=1793]. [THREADS = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION and THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1831 [14th February] The Battle of Stoczek: This battle takes place within the Russo-Polish War [=1830 (29th November)] between a Polish column under Józef Dwernicki [Wikipedia biography] and a significantly larger Russian column under Teodor Geismar [no convenient biography]. The outcome is an against-the-odds Polish victory. [THREAD = THE SHAPING OF THE MODERN WORLD]

1831 [25th February] The Battle of Olszynka: This battle takes place within the Russo-Polish War [=1830 (29th November)] between a 40,000-man Polish army under Józef Chłopicki [=1830 (29th November)] and an appreciably larger Russian army under Hans von Diebitsch [Wikipedia biography]. The outcome is a Polish tactical victory on the day, and an even greater strategic victory when the Russians are forced by their losses to abandon their advance on Warsaw. [THREAD = THE SHAPING OF THE MODERN WORLD]

WAR MUSIC: "The Song of the Polish Legions" [listen to it now; Wikipedia factsheet], a patriotic Polish marching song from this era, will reappear regularly from now on as the de facto anthem of Polish nationalism.

1831 [1st-7th June] The Merthyr Tydfil Uprising: The British workers' rights activist Richard Lewis, one of 26 workers protesting pay and conditions, and better known to history by his nickname Dic Penderyn [Wikipedia biography], is arrested during industrial unrest at Merthyr Tydfil. He is charged - probably without justification in fact - with stabbing a soldier, sentenced to hang, denied an appeal, and duly hanged on 13th August 1831. It will be later become apparent that the Establishment union-busting at the time was coordinated by John Crichton-Stuart, 2nd Marquis of Bute [1830 (16th July)ssel=1848 (18th March)]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

ASIDE - EXEMPLARY JUSTICE IN WW1: There is little doubt that Dic Penderyn was executed for a crime he did not commit, simply as an example to deter others from similar behaviour. Similar brutal exemplary "justice" was meted out for desertion, mutiny, and other offences against military discipline in WW1 [=>1916 (18th October [SHOT AT DAWN]) and follow the onward pointers; compare also the pour encourager les autres tale of Admiral John Byng at 1756 (27th December)].

********** NEUTRAL BELGIUM IS PROVISIONALLY BORN **********

1831 [21st July] The Belgian Revolution [III - A New King]: [... Continued from 1830 (20th December)]
As agreed at the London Conference [<=1830 (20th December)] Prince Leopold of Saxe-Coburg-Gotha [<=1816 (2nd May)] is now formally installed as King Leopold I of the Belgians [continues at 2nd August ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1831 [2nd-12th August] The Belgian Revolution [IV - The "Ten Days"]: [... Continued from 21st July]
The remaining provinces of the United Kingdom of the Netherlands make one final military attempt to prevent the Belgian secession, but their army is beaten back by a French army of enforcement under Étienne Gérard [Wikipedia biography]. The Dutch will continue to threaten force until the Treaty of London [=>1839 (19th April)] finally persuades them of the futility of further resistance [continues at 1839 (19th April) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]


1831 [12th September] The Truck Act: Following more than a year of heated debate the British Parliament passes an Act consolidating earlier legislation and extending it to require employers to pay their employees in coin of the realm rather than in company tokens. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1831 [20th October] The 1831-1833 Cholera Epidemic: After a year spreading westwards out of India, the first British cholera death takes place in Sunderland. Another epidemic will arrive in the late 1840s [=1848]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

********** POLITICKING IN THE LEVANT **********

1831 [31st October] The First and Second Turko-Egyptian Wars, 1831-1833 and 1839-1841: These wars are fought between the Ottoman Empire and its increasingly nationally-minded former province of Egypt. The casus belli is the loss of the Greek fleet at Navarino [1827 (20th October)], in respect of which the Egyptians have decided that they deserve Syria in compensation. In both wars the Ottomans are led by Sultan Mahmud II of Turkey [<=1827 (20th October)] with Russian support and the Egyptians are led by Muhammad Ali of Egypt [<=1827 (20th October)] with French support. Here are the respective main events ...
FIRST TURKO-EGYPTIAN WAR [IN WHICH EGYPT CONQUERS SYRIA]
The Siege of Acre, 1831-1832; The Battle of Konya, 1832

SECOND TURKO-EGYPTIAN WAR [IN WHICH EGYPT LOSES SYRIA]
The Battle of Nezib, 1839; The Bombardment of Acre, 1840

The first of the wars will be brought to an end by the Treaty of Kütahya \(\Rightarrow 1833\) (6th May), and the second by the Convention of Alexandria \(\Rightarrow 1840\) (27th November). The overall outcome is that Egypt renounces its claim on Syria in return for international recognition of Muhammad Ali and his descendants as the legitimate ruling house of Egypt. [THREAD = THE SHAPING OF THE MODERN WORLD]

**ASIDE - SYRIA IN WW1:** In 1914 Syria is still part of the Ottoman Empire, and therefore sides with Germany \(\Rightarrow 1914\) (5th November) once the Turks enter the war. Britain then starts encouraging anti-Turkish sentiment amongst Syrians with strong Arab nationalist sympathies, and in 1916 a British-supported Hashemite Syrian army rises against the Turks \(\Rightarrow 1916\) (5th June). For a dramatised account of these events see David Lean's (1962) movie "Lawrence of Arabia" [see trailer now].

1831 (3rd November-27th May 1832) **The Siege of Acre:** This seven-month siege is fought out as part of the First Turko-Egyptian War \(\leq 1831\) (31st October) between a besieging Egyptian army and the Ottoman garrison at Acre. The outcome is an eventual Egyptian victory. [THREAD = THE SHAPING OF THE MODERN WORLD]

1831 (21st November) **The Canut Riots:** Several hundred French regional silk weavers - the "Canuts" - march into Lyon city centre protesting against their pay and working conditions, and demanding a fixed [i.e., non-free-market] price for their products. The following day they storm the local arsenal and capture the town. It will be a month before government troops arrive and re-establish control. [THREAD = THE WW1 WORKING CLASS SOLDIER]

********** MAJOR THESIS ON WAR **********

1832 Having compiled the notes and writings of the recently deceased Carl von Clausewitz \(\leq 1818\) his theories of war are published posthumously by his executors as "Vom Kriege" [in English as "On War"]. The work is both thorough and insightful, and will sell well both at home and in translation [full English text online at http://www.clausewitz.com/readings/OnWar1873/TOC.htm]. [THREAD = WW1 ARMIES AND TACTICS]

1832 One John Gooch (Grace's Guide biography) is taken on at the Tredegar Ironworks \(\leq 1818\) <= 1835. He records in his journal the condition of those who physically work the iron, thus ...

"Utterly remote at the head of the Sirhowy Valley, the town was a man-made hell. Men and children worked killing hours in the smoke and filth of the foundries and were maimed by molten metal. Their only medical help was that administered by the 'Penny Doctor'. Wages were paid in Homfray's private coinage - banks were not allowed in the town - so workers spent their coins in Homfray's shops, buying food at Homfray's prices. Poverty and malnutrition followed and disease followed both" (quoted in Vaughn, 1985). [THREAD = THE WW1 WORKING CLASS SOLDIER]

1832 Serving in the East India Company's Bombay Army, David Davidson [no convenient biography] experiments with early telescopic sights. He gets good results when hunting big game, but will be unable to promote his equipment commercially until he returns to Britain in 1848. \(\Rightarrow 1848\) [THREAD = WW1 SMALL ARMS]
********** A GOOD YEAR FOR HIGH EXPLOSIVES **********

1832 The French chemist Henri Bracannot [Wikipedia biography] synthesises nitrocellulose [Wikipedia chemistry] by treating wood fibre with nitric acid. This discovery is noteworthy in the present context because nitrocellulose will shortly become the world's first mass-produced "high explosive". At much the same time the Italian chemist Ascanio Sobrero [Wikipedia biography] syntheses glyceryl trinitrate/nitroglycerine [Wikipedia chemistry]≈1863. [THREADS = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION and THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

**KEY CONCEPT - NITRATION AND DETONATION:** The act of "nitrating" a chemical involves adding one or more NO₃ "nitrate" radicals to the body of the molecule in question, most conveniently by treating the stock chemical with nitric acid. The end result is that the new molecule contains the carbon atoms it began with plus three new oxygen atoms. If the molecule includes a six-carbon benzene ring it is relatively easy to nitrate every second carbon, giving a "trinitrate". And trinitrates, therefore, contain nine additional oxygen atoms. If a trinitrated molecule is then somehow "detonated" the carbons in the molecular skeleton react violently with the oxygens in the attached nitrate radicals, and they do this without needing any further oxygen from the atmosphere. They do not burn as such, in other words, but rather decompose explosively ...

**KEY BALLISTICS VOCABULARY - BRISANCE:** The French term brisance refers to the sharpness of an explosion, that is to say, brisance is a measure of the speed with which the chemical reaction proceeds, which, in turn, is a measure of the rapidity with which the resulting pressure wave develops. Low brisance explosions, such as those produced by gunpowder, produce a (comparatively) slow pressure front and are commonly described as "pushing" explosives. Pushing explosions can lift great weights without shattering them overmuch, as when setting off mines beneath castle walls. By contrast, high brisance explosions, such as those produced by modern "detonating cord" [more on these], produce a fast pressure front and are commonly described as "cutting" explosives. Cutting explosions tend to blow holes straight through obstacles rather than heave them out of the way [check out Alford Technologies' demonstration on YouTube].

**ASIDE - NITROCELLULOSE AND NITROGLYCERINE IN WW1:** Cellulose trinitrate is the active component of guncotton [=1845 Schönbein]. Glyceryl trinitrate is the active component of dynamite and gelignite. The two nitrates, properly combined, are the active components of the smokeless powders ballistite and cordite.

1832 [1st February] The Royal Commission into the Operation of the Poor Laws, 1832: The British Parliament establishes a committee of enquiry to receive evidence concerning poverty in the land, who are disturbed to discover that some 12% (1,500,000) of the nation's 13 million population are paupers. Their 13-volume Report recommends "parish union" workhouses large enough to achieve some economy of scale, the banning of "outdoor relief", and the establishing of a central administrative authority. These changes will now be implemented in the Poor Law Amendment Act, 1834 [=1834 (14th August)] but in practice will achieve little. [THREAD = THE WW1 WORKING CLASS SOLDIER]

**ASIDE - CONCEPTIONS OF POVERTY IN 1832:** The problem was [and in 2014 still is] that the non-poor take an exceptionally unsympathetic view of the poor, routinely holding their poverty to be in some way their own fault. There is no scientific resolution of this question but the modern notion of "benefit dependency" can clearly be seen in writings from the early 1800s, for example: "... the habitual reliance of poor persons upon parochial relief rather than upon their own industry tends to the moral deterioration of the people" (Friendly Societies Act, 1819, cited in Gosden, 1961).

1832 [1st February] The Labour of Children in Factories Petition: The Member of Parliament for Aldborough, Yorkshire, Michael Sadler [Wikipedia biography] presents a petition from 10,000 Leeds millworkers documenting "the sufferings and cruelties practised upon the unhappy and miserable children [...] who were occupied in factories
for twelve, fifteen, twenty, and sometimes even thirty hours successively, in an overheated and moist atmosphere, and without any relaxation”. This evidence, once collated, will be published as the “Sadler Report” in 1833 and will form the basis of the 1833 Factories Act. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1832 [7th May] The London Conference [on the Greek Question]: This international conference agrees a diplomatic plan to bring the Greek War of Independence to an end. [THREAD = THE SHAPING OF THE MODERN WORLD]

1832 [5th June] The Paris Uprising: Still on edge thanks to the fundamentally unstable outcome of the July Revolution, crowds gather early in Paris to line the route to be taken by the state funeral of Jean Lamarque. They block the cortege when it arrives, and use it as a focus for a lot of impromptu speech making and flag waving. In the end, however, hotheads in the crowd start exchanging gunfire with the authorities, and by nightfall some 3000 protesters have holed themselves up behind barricades in central Paris. The authorities simply move 20,000 national guard and 40,000 regulars in around them, complete with artillery, and there follows a brief and rather one-sided battle in which the protest is decisively crushed. [THREAD = THE WW1 WORKING CLASS SOLDIER]

WAR LITERATURE: Check out Victor Hugo's (1862) novel "Les Misérables", especially Parts III and IV which describe the events in some detail. For instructions on how to build a Paris-style revolutionary barricade see http://www.telegraph.co.uk/culture/culturepicturegalleries/9742470/Les-Miserables-Behind-the-scenes-in-pictures.html.

1832 [7th June] The Representation of the People Act, 1832: [A.k.a. the “Reform Act, 1832”] After no little resistance from the British nobility the British Parliament passes an Act by this name which extends the voting population to all male commoners aged 21 years or over, properly registered, and of some property. All women and most of the male working class remain disenfranchised. No further changes to the voting system will take place until the 1860s, and many modern historians believe that the latter Act will be historically far more significant. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1832 [21st July] The Treaty of Constantinople: This treaty between Britain, France, Russia, and the Ottoman Empire brings the Greek War of Independence to an end, and appoints (the Philhellene) Prince Otto Friedrich of Bavaria as Othon I of Greece. With his realm heavily in debt to foreign bankers Othon's early years are a period of some austerity. [THREAD = THE SHAPING OF THE MODERN WORLD]

1832 [7th November] The British and American Steam Navigation Company [I - The Initial Idea]: The American lawyer Junius Smith suggests in this month's American Rail Road Journal that a four-ship "line" of steamers might provide a profitable fortnightly trans-Atlantic service between London and New York City. [THREAD = THE SHAPING OF THE MODERN WORLD]

1832 [December] Seeing is Believing [I - Early Moving Images (Stampfer/ Plateau/ Horner)]: The Austrian inventor Simon Ritter von Stampfer devises a stroboscopic image viewer which allows a number of images spaced out around the rim of a spinning disc to be viewed (in a mirror) through slits in said disc. Since this reveals each image in the same retinal location as the one before, the apparatus can be...
used with progressively displaced or articulated images to create an impression of continuous motion. Similar instruments are developed at much the same time in Belgium by Joseph Plateau [Wikipedia biography] (the "phenakistoscope" [literally "the eye-deceiver" and colloquially the "magic disc"; Wikipedia factsheet]) and in Britain by William G. Horner [Wikipedia biography] (the "daedaleum" [Wikipedia factsheet]). To see a generic demonstration video click here [sub-thread continues at 1842 (Childe) ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

RESEARCH ISSUE - THE PERCEPTION OF CONTINUOUS MOVEMENT: The human visual system is unable to discern as separate flashes in the centre of the visual field once they occur faster than a Critical Flicker Fusion Frequency (CF³) [Wikipedia factsheet] of around 15 Hz. On the periphery of the visual field (where a different type of retinal cell is involved) there is greater sensitivity to flicker, and the CF³ can be as high as 60Hz. Where the stimulus sequence is not of static image but rather a progressively changing figure, each fractionally different from the one before, then the perception is of a jerky movement until the CF³ is reached, whereupon the movement suddenly becomes smooth.

RESEARCH ISSUE - THE PERCEPTION OF CONTINUOUS NARRATIVE: But achieving an illusion of smooth movement is far from the whole story, because as seconds expand into minutes directors have to work their way toward a superordinate narrative structure. There has to be a "storyboard" - literally or figuratively - of some sort, specifying (a) the "conventional theatre" transitions of time, person(s), and place which together make up the story to be told, and (b) the camera angles, actions, effects, and film edits by which (a) is to be implemented. A poorly made film, in other words, will be a "turkey" no matter how many frames per second you shoot it at, and films told in flashback can become irritatingly difficult to follow unless careful directorial attention is paid to the peri-transitional action and the transitional edits [=1843 (Childe [RESEARCH ISSUE])].

RECOMMENDED VIEWING: Readers should find the John P. Hess YouTube tutorial [view it now] on Frame Rate very helpful. See also the Wikipedia factsheets for Beta Movement, Flicker Fusion Threshold, Persistence of Vision, and Motion Perception.

1832 [21st December] The Battle of Konya: This battle is fought as part of the First Turko-Egyptian War [=1831 (31st October)] between an Egyptian army under Ibrahim Pasha [1825 (15th April)<=>1839 (24th June)] and a much larger Ottoman army under Reshid Pasha [Wikipedia biography]. The outcome is a very much against-the-odds Egyptian victory. [THREAD = THE SHAPING OF THE MODERN WORLD]

1833 [Sir]1882 Joseph Bailey [Wikipedia biography] and (his younger brother) Crawshay Bailey [1826<=>1837 (17th February)] buy out the Beaufort Ironworks [=1779<=>1862], and start using it to supply pig iron to their Nantyglo Ironworks [=1820]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1833 [6th May] The Treaty of Kütahya: This treaty between Egypt and the Ottoman Empire brings the First Turko-Egyptian War (=1831 (31st October)) to an end. The main outcome is that the Ottomans cede the provinces of Syria and Adana to Egypt. [THREAD = THE SHAPING OF THE MODERN WORLD]

1833 [8th July] The Treaty of Hünkâr İskelesi: This treaty between the Russians and the Ottomans establishes a defence alliance between the two empires. The treaty includes a secret clause by which the Ottomans agree to close the Dardanelles to third party traffic whenever the Russians see fit [but see 1841 (13th July)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1833 [17th May and thereafter] The 1833 Slavery Compensation Loan [I - The Original Scheme]: [New sub-thread: See firstly 4th March 1830] On 17th May 1833, following decades of lobbying by reformers such as William Wilberforce [Wikipedia biography], parliament
begins the long-promised debate on the Slavery Abolition Bill [Wikipedia briefing]. The resulting Act will receive the Royal Assent on 1st August 1833 and come into effect on 1st August 1834. Under the terms of the Act, slaves in most British overseas possessions (the Act did not apply to territories owned by the East India Company or on the Island of Ceylon) received their formal freedom (the Act redefined them as "apprentices") and the slave owners received financial compensation. Here is how the debate heated up when it got to the nitty-gritty of setting the level of that compensation...

CAMEO – THE CLAUSE 25 WINDFALL: Here is what the Hansard parliamentary record has to say about setting the amount of compensation and how its distribution would be managed. This was debated as "Clause 25" of the Bill on 30th July 1833, thus (a long passage, heavily abridged; for the abbreviation £ read £; the Hansard archive has been machine scanned and contains a number of typos, hence the occasional corrections of speakers' names; for readers in a hurry we have highlighted the main argument thus; click here to read the original)...

INTRODUCTIONS: “Mr. Secretary Stanley” was Edward Stanley [14th Earl of Derby] [Wikipedia biography]. The Chancellor of the Exchequer was John Spencer, Viscount Althorp [Wikipedia biography] (four generations up in the family of the much-loved “Lady Di”).

"[MR. SECRETARY STANLEY.] I now move, Sir, to fill up the blank in line 3, page 14, with the words 'twenty millions', that being the amount proposed by His Majesty’s Government as compensation to the West India proprietors.

The question having been put, [the debate begins …]

SIR LAIDLEY WILMOT [Sir John Eardley-Wilmot, Con., N. Warwickshire] […] I oppose the grant of 20,000,000 £.

Mr O’CONNELL [Daniel O’Connel, Irish Repeal Party, Dublin] […] I do not know on what sanction this grant of the 20,000,000 £. is to rest. Can the people of England afford this sum? +++ general and specific taxes discussed +++ The people have the right to know how it is to be provided for. +++ much quite bitter arguing and much data on the price of slaves of late +++

Mr. LOWELL BUXTON [Thomas Fowell Buxton, Lib., Weymouth] […] I am one of those who think it expedient that this sum should be given [but] I say that the amount proposed far surpasses what I believe to be the actual value of the slaves; and that if they were only to wait till next year, they would buy emancipation at a quarter of the present price. I say that the Government are entitled to, and will receive, the cooperation of another body, deeply interested in this matter – I mean the slaves themselves. There is no error so great as the way in which we have underrated the negro character. My firm persuasion is that they will […] recompense us for our exertions on their behalf by observing in their new situation an uniform demeanour of fidelity, industry, and peace. […]

Mr. FRYER. [= Richard Fryer, Lib., Wolverhampton] I protest against this vote as an extravagant waste of the public money. […] This bill will not bring with it the abolition of slavery, for who is to execute it? I can tell you who it is that in Ireland executes the Coercion Bill [Wikipedia briefing] – thirty thousand soldiers and twenty thousand police. […]

Mr. RUGBY SEASON [= Rigby Wason, Lib., Ipswich]. I oppose this grant of 20,000,000 £ because I consider it to be most enormous and extravagant. +++ price per slave, etc. again detailed +++

"Mr. HARVEY [= Daniel Whittle Harvey, Lib., Colchester] It is somewhat curious that after the many discussions which have taken place upon this subject, we have never yet been able
to elicit from the Noble Lord, the Chancellor of the Exchequer, by what means he proposes to raise these 20,000,000 l., and by whom the interest of it is to be paid. [+++ previous debates recalled +++]

***** NOTE THE NEXT POINT CAREFULLY *****
(IT WILL STILL BE BEING ARGUED ABOUT IN 2022)

Mr. ROBINSON (= George Richard Robinson, Peelite, Worcester (shipping interests)) I come then to the question of the mode in which the interest of this money is to be paid. I am aware that the Chancellor of the Exchequer has said that it is for this House to grant the 20,000,000 l, and for a subsequent Parliament to determine in what way the money is to be raised. But with great respect to the Noble Lord, I contend that this House has a right to call upon him to state in what manner he proposes to pay this money. My objections to this grant would be materially diminished if I could have an assurance that the interest of so large a sum would be raised rather with reference to the ability of those who have to pay it, than by a tax upon all the consumers of an article which has become almost a necessity of life. […]

The CHANCELLOR OF THE EXCHEQUER Before the House comes to a vote, I wish to state, generally, the views which I have as to the mode of raising the interest of this money. I should have done so earlier in the debate, but that I thought I had done it on a former occasion, when I stated that I thought the best mode of raising this money would be by an additional tax upon colonial produce. […] The tax may be levied upon sugar with or without its becoming an article of monopoly. […]

Mr. O'CONNELL. I wish just to state what I mean by monopoly. If the duty on West India sugar is less than the duty on other sugars, the consequence is a monopoly in favour of the West Indians. […]

THE CHANCELLOR OF THE EXCHEQUER. There is nothing in this Bill regarding monopoly at all. […] I shall propose to Parliament an additional tax upon colonial produce […] but I am ready to state this – that our colonial sugars ought, for the present, to have the advantage.

Mr. HERRIES. (= John Charles Herries, Con., Harwich) […] The answer of the Noble Lord, upon the financial part of this clause, is much less satisfactory than I expected […] because] the whole machinery of the clause requires a great deal more explanation […]. This is the most unusual grant I have ever heard of in the whole history of our financial system. There is no precedent for it” (17458).

Interestingly, the banker-politician-slaver Alexander Baring made his clearly-not-disinterested views known in committee the following day (31st), as follows ...

"With respect to the best means for raising the money to be granted for compensation, he had also a suggestion to offer to the noble Lord, namely, that instead of borrowing money in the market accordingly as the contingency might occur, the most suitable mode of giving the slave-proprietors their settlement would be, grants in the shape of stock, bearing a moderate degree of interest. As in the case of the purchase of property, the purchase of the liberty of a slave could not be finally completed until the title of the master had undergone a full investigation; and as in that process a vast deal of time must of necessity be consumed, or else a very hasty inquiry take place, the most suitable mode of arranging the matter would be to give the planter stock at the rate of three and a-half per cent for each 100l. of his claim; the effect of which would be the locking up of the principal sum to meet any contingent claims that might arise. If the present arrangement was persisted in, what would be the state of the case? Supposing the contingency which the noble Lord alluded to as forming the condition for the grant to arise, the Lords of the Treasury would go into the market, and raise at once five or ten millions of money as the case might be; and if then they were to proceed paying 100l. of money for every 100l. of claims, pending the making out of titles, and the settling of contingent claims, a great many millions of the money so raised would be vested in their hands—a responsibility as disagreeable to the individuals who might fill the office, as it might be dangerous to the public. By his plan he was satisfied all parties would be suited, while the frequent borrowing of millions of money (which, independent of the jobbing it would cause, would keep the market in a perpetually feverish condition) would be avoided; and he confidently recommended it, or some modification of it, to the consideration of the noble Lord” (201).
QUICKIE - THE BANKER-CHANCELLOR: The "Baring" speaking at this point is Alexander Baring [1st Baron Ashburton]\textsuperscript{1835} [Wikipedia biography]. He was "the recipient of compensation when slavery was abolished in the 1830s. He received compensation for nearly 500 slaves across four estates. He was compensated at Spring Garden in British Guiana to the tune of over £3,400. He was also compensated to the tune of more than £6,500 on three estates in St. Kitts" (his Wiki). For further background on the Baring banking dynasty see the entry for Baring Family (Bankers and "Merchants of War") at a Glance in the Companion Encyclopaedia.

In the end, the total cost of the compensation scheme - estimated at various points during the debate at between £15 and £18 million - is beyond what the Treasury can immediately afford and so a £20 million loan will duly be raised on the bourses. That loan will not be finally repaid until 2015.

ASIDE: Readers unfamiliar with the workings of perpetual debt may be amused by the story of Yale University's 374-year-old dollar-a-month Schichtse Rijnlanden Bond. Start at 15th May 1648 then follow the onward link to 25th September 2017.

For a lot more details on the compensation aspect of the story see Part Two of the entry for Neoliberalism, Some Worked Examples in our Companion Encyclopaedia - click here to be transferred [sub-thread continues at 3rd August 1835 ...]. [THREAD = SOVEREIGN DEBT, HOW IT REALLY WORKS] [THREAD = STOCK MARKET AND FINANCIAL SHARP PRACTICE]

1833 [29th August] The Factory Act, 1833: [...] Continued from 1832 (1st February)] The main provisions of this Act as finally Assented are that children under 9 years of age may not be employed at all, those from 9 to 13 years of age are restricted to an 8-hour working day (plus two hours classes), and those from 14 to 18 years of age are restricted to a 12-hour working day. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1834 Primary documents from this year indicate that output at the Plymouth Ironworks [1818<=>1875] has more than doubled since 1815, with general and railway demand more than compensating for the post-war slump in armaments sales. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1834 The British surgeon [Sir]\textsuperscript{1837} James Clark [Wikipedia biography] is appointed physician to Alexandrina Victoria [I of Britain]\textsuperscript{1837} [Empress of India]\textsuperscript{1876} [(1819 (24th May)<=>1837 (20th June)]. He will thus attend her when her first daughter - Victoria, Princess Royal [Wikipedia biography] - is born six years later. He will also attend the Princess Royal 19 years after that when she gives birth to the future Kaiser Wilhelm II [1859 (27th January)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1834 The "Brattleboro Retreat": The first patients are admitted to the newly opened Vermont Asylum for the Insane, at Brattleboro, VT. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1834 The German chemist Friedlieb Runge [Wikipedia biography] isolates phenol [Wikipedia chemistry], a 1-hydroxylated derivative of benzene, from industrial coal tar residues. This compound is noteworthy in the present context for the fact that, when nitrated \textsuperscript{<=1832} (ASIDES), it creates the high explosive picric acid \textsuperscript{1873 (Sprengel)}. [THREAD = WW1 ARTILLERY]

1834 [1st January] The Zollverein: [...] Continued from 1820 (15th July)] Mainly at Prussia's behest the states comprising the German Confederation \textsuperscript{<=1820 (15th July)} now implement a Zollverein [= customs union] to standardise trading tariffs within and between them. This in
effect creates a unified economic Germany in a still non-unified political Germany. [THREAD = THE SHAPING OF THE MODERN WORLD]

1834 [24th February] **The Tolpuddle Martyrs:** A ploughman/lay Methodist preacher named George Loveless [no convenient biography], together with five fellow workers, are arrested at Tolpuddle, Dorsetshire, for having taken an illegal oath in the formation of a mutual aid society. The group are tried at the Dorchester Assizes on 18th March accused of forming an illegal Trade Union, convicted more or less out of hand, and sentenced to seven years' transportation to Australia. The nation is appalled and lets its anger show with an 800,000-name petition for clemency. The convictions will be duly reversed in 1836. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1834 [10th March] **The Great Western Railway [I - The Authorisation]:** The British Parliament debates the Western Railroad Bill [continues at 1838 (4th June) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1834 [6th May] **The Battle of Peshawar:** This battle takes place as part of the Afghan-Sikh Wars [{<=1819 (3rd July)} between a Sikh Empire army under Hari Singh Nalwa [Wikipedia biography]=>1837 (30th April) and a Dost-ite Afghan army under Dost Mohammad Khan [1826<=]1839 (23rd July)]. The outcome is a Sikh Empire victory. The battle is noteworthy in the present context for allowing the Sikh emperor, Ranjit Singh [1823 (14th March)<=>1839 (27th June)], to occupy Peshawar and secure the Khyber Pass, thus stabilising the border between north-western India and Afghanistan. [THREAD = THE SHAPING OF THE MODERN WORLD]

\[1\]ASIDE: We use the contrived term "Dost-ite" to indicate the incumbent Afghan regime under Dost Mohammad Khan. As we shall shortly be seeing, the British are about to launch the First Anglo-Afghan War [{=>1838 (10th September)} in an attempt to reinstate the rival claimant to that throne, the "Shuja-ite" Shuja Shah Durrani [1826<=]2nd July].

ASIDE - PESHAWAR IN WW1: The 1st (Peshawar) Infantry Brigade [Wikipedia unit history] of the British Indian Army will help secure the North West Frontier of India throughout WW1.

1834 [22nd May] **Cardiff Docks [III - Bute West Dock Re-Authorisation]:** [...] Continued from 1830 (16th July) [...]. Among the Acts of Parliament given the Royal Assent this day is one "to alter, amend, and enlarge" the 1830 authorisation for these works. Construction of the Bute West Dock will now go ahead, the foundation stone being ceremonially laid on 18th March 1835 [continues at 1839 (8th October) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]


****** THE GREAT GAME KICKS OFF ******

1834 [2nd July] **The Battle of Kandahar:** This battle is fought as part of the "Great Game", a fringes-of-empire never-directly-declared war of political intrigue, espionage, mutual distrust, and general double-dealing between Britain and Russia. The Russians are supporting the present Afghan emperor, Dost Mohammad Khan [6th May<=]1839 (23rd July)] against the rival claimant Shuja Shah Durrani [6th May (ASIDE)<=]1838 (10th September)]. The outcome is that Shuja Shah is driven out of Afghanistan and takes refuge in the north-western provinces of India. [THREAD = THE SHAPING OF THE MODERN WORLD]
1834 [14th August] **The Poor Law Amendment Act, 1834:** [A.k.a. the "New Poor Law"] The British Parliament passes an act by this name encouraging the local provision of workhouses for the nation's paupers, sick, elderly, and incapable. Inmates are expected to earn their keep by providing free labour to their institution's commercial interests. Contemporary opinion of workhouses is less than complimentary, accusing them of training the young "in idleness, ignorance, and vice" and demotivating the able-bodied. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1835 **The Development of Photography [V - Fox Talbot]:** [Continued from 1829] At around this time the British scientist-inventor William Fox Talbot [Wikipedia biography] is successfully producing photographs using a light-sensitive silver chloride emulsion which is "fixed" after exposure to produce a "negative" image which can then be re-imaged to produce a "positive" print. One of these negatives [see it now (it's not very big)] survives in the Fox Talbot Museum [homepage] at Lacock Abbey, Wiltshire [sub-thread continues at 1837 ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]


1835 The American physicist Joseph Henry [Wikipedia biography] builds an electromechanical relay, a device capable of turning an electrical current into a mechanical actuator or electrical switch. Around the same time the American art lecturer turned engineer Samuel Morse [Wikipedia biography] starts work on a "recording telegraph", a system which should automatically create its own permanent record of what has been sent to it. Morse had his original ideas in 1832, and, between 1835 and 1838, perfects an electromagnetic "register", capable of remotely producing momentary deflections in an otherwise straight pencil trace on a slowly moving spool of paper. This is soon replaced by an embossed trace on a paper tape which is advanced every time it is activated by the sending signal key (Pope, 1881), and eventually by a fountain pen tracer. The effective range of the trial system is not impressive, however, due to degradation of the signal over distances in excess of about one mile, and so Morse consults a New York University colleague of his, a chemistry professor named Leonard D. Gale [no convenient biography], who points him to Henry's work on high-power electromagnets. Further development takes place at the Speedwell Iron Works in Morristown, NJ, is funded by its proprietor's heir, Alfred Vail [Wikipedia biography], and is assisted by a 15-year-old apprentice, William Baxter [no substantive biography]. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1835 [7th July] **Newport Docks [I - The Town Dock Authorisation]:** Among the bills to receive the Royal Assent this month is one authorising Samuel Homfray II [<=1826 (7th February)] and the Newport Dock Company to develop docking facilities at Newport, South Wales. Work begins 1st December with the ceremonial lifting of the first turf [continues 1842 (10th October) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1835 [3rd August] **The 1833 Slavery Compensation Loan [II - The First £15 Million]:** [Continued from 17th May 1833] On 3rd August 1835 the Chancellor of the Exchequer Thomas Spring Rice [1st Baron Monteagle of Brandon] updates parliament with the latest on the loan arrangements required to service the compensation payable under the terms of the Slavery Compensation Act. Here, presented as a third person commentary, is the corresponding Hansard entry (a long passage, heavily edited; key points highlighted thus) ...
"The House was aware that under the Slavery Abolition Act, which had just been read, there were provisions enabling the Government to raise, by way of loan, a sum not exceeding 20,000,000l. for the purpose of giving compensation to the owners of slaves in our colonies. [++++ government borrowing protocols discussed +++] Of this sum 2,100,000l. was devoted to the Mauritius, and 1,200,000l. to the Cape of Good Hope; and as neither of these sums could come into course of payment between this and February next, he felt justified in excluding that 3,300,000l. from the loan. There was also a sum of 1,721,000l. apportioned to the island of Barbadoes[4ic] [details given] This being the case, till a new Act was passed by the Colonial Assembly he should not be required to provide compensation for the proprietors of slaves in Barbadoes [... Taking these three exceptions together gives] a gross amount of 5,000,000l., which might be excluded from a consideration in contracting the present loan. He found himself therefore bound to make provision for a sum of 15,000,000l. sterling, but the precise period at which he might be called on to pay it was uncertain. [...] Looking at so large an operation as this loan of 15,000,000l., it appeared clear to him that he could only raise such a sum with convenience by distributing it in instalments over a given time [...] Before he stated the terms of the loan, he must observe, that at the time the tender was made in the money-market he understood, and had reason to believe, that he should have the advantage arising from the competition of two or three parties. [...] But it so happened that two out of three parties declined availing themselves of it, and he this day found that the only tender made was by the house of Rothschild and Co., a firm the name of which was a sufficient guarantee to the House. [details of the negotiations] A more advantageous loan had never been contracted, and he could not but expect that the arrangement, would prove satisfactory to the House and the public, seeing the unparalleled low rate of interest to be paid."

The interest on the loan is fractionally under 3.4% [sub-thread continues at 13th February 1840 ...].

1835 [2nd October] The Tejas/Texas Revolutionary War, 1835-1836: This colonial uprising is fought between the Republic of Mexico [<=1824] under Antonio López de Santa Anna [Wikipedia biography] and the increasingly ornery Mexican province of Tejas, now no longer a stable and willing member of a catholic Hispanic republic thanks to recent ethnic migration from the United States and/or Europe. The secessionists - Tejanos in Spanish, "Texians" in English - are organised by Masonic secret societies fronted by the aforementioned Stephen Fuller Austin [1823 (19th March)<=]next entry]. The Mexicans have already been at odds with the Texian lodges for some ten years, having outlawed them by statute in 1828, but they now have little choice but to resort (unsuccessfully as it turns out) to force of arms. Here are some of the major engagements...

The Battle of Gonzales, 1835; The Siege of San Antonio, 1835; The Texan Declaration of Independence, 1836; The Battle of the Alamo, 1836; The Battle of Coleto, 1836; The Battle of San Jacinto, 1836

The war will be brought to an end by the Treaties of Velasco [=>1836 (14th May)] and the main outcome is the creation of the Republic of Texas. [THREAD = THE SHAPING OF THE MODERN WORLD]
ASIDE - TEXAS IN WW1: Some 200,000 Texans will serve in WW1, many in the 36th U.S. (Texas) Division and the 90th U.S. (Alamo) Division, and 5171 of these will die in uniform ([source]). The 36th Division was active in the Meuse-Argonne Offensive (=>1918 (26th September)] and the 90th in the St. Mihiel Offensive (=>1918 (12th September)]. The battleship USS Texas ([Wikipedia shipography]=>1911 (17th April]) will carry the state's name throughout WW1 (and, indeed, WW2), and is today a museum ship at San Jacinto, TX [see museum website for current status].

1835 [2nd October] **The Battle of Gonzales**: This battle is fought as part of the Texas Revolutionary War ([preceding entry] between a Mexican cavalry column under Francisco de Castañeda ([Wikipedia biography]=>12th October] and a company of Texian militia under John Henry Moore ([Wikipedia biography]). The Mexican commander has been instructed to recover a cannon in the possession of the Texians but finds them facing him down under a home-made flag bearing the defiant words "Come and Take It". The outcome is a brief skirmish followed by a Mexican withdrawal to San Antonio de Béxar. **Stephen Fuller Austin** ([preceding entry]=>24th October) is elected Texian Commander-in-Chief on 11th October, and as word of the battle gets out so Anglo volunteers start to rally to the flag. [THREAD = THE SHAPING OF THE MODERN WORLD]

**ASIDE - GONZALES IN WW1 AND TODAY**: Check out the tale of Courtney C. Buchanan at http://www.texasescapes.com/MurrayMontgomeryLoneStarDiary/War-to-End-All-Wars.htm. The city of Gonzales nowadays hosts the Gonzales Memorial Museum ([website] and 2nd October is one of 12 publicly celebrated Texas “honour days” ([see the 2013 celebrations]).

1835 [24th October-11th December] **The Siege of San Antonio de Béxar**: This nine-week siege is fought out as part of the Texas Revolutionary War ([<=2nd October] between a besieging Texian army under **Stephen Fuller Austin** [2nd October]=>1836 (21st April]) and the Mexican garrison at San Antonio under **Martín Perfecto de Cos** ([Wikipedia biography] and **Francisco de Castañeda** [<=2nd October]). The outcome is a negotiated Mexican surrender. However when **Antonio López de Santa Anna** [2nd October]=>1836 (23rd February]) hears the news he starts assembling an army for a major counter-offensive [continues at 1836 (23rd February) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1835 [??th November] **The British and American Steam Navigation Company [II - The Company]**: [...] Continued from 1832 (??th November] Now associated with the Scottish shipbuilder **Macgregor Laird** ([Wikipedia biography] Junius Smith ([<=1832 (??th November]) takes to the capital markets to sell the shares necessary to start expanding their fleet. Because the first of these ships will not be ready for service for another four years (=>1839 (12th July]), the company charters SS Sirius ([Wikipedia shipography]=>1838 (4th April]) as a stop-gap measure [continues at 1838 (4th April) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1835 [7th December] **The Bavarian Ludwig Railway**: The first German steam railway opens between Nuremburg and Fürth. [THREAD = THE SHAPING OF THE MODERN WORLD]

1836 **Sir Thomas Lethbridge** [no convenient biography] develops a second major ironworks - the Victoria Ironworks - at Ebbw Vale, a mile or so south of the older Ebbw Vale Ironworks [1835=>1842]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1836 The brothers **Adolphe and Eugène Schneider** ([Wikipedia biography] buy up a long-established but small iron foundry at Le Creusot, Burgundy, rename it Schneider Frères et Compagnie, and set about a major programme of expansion to profit from the building of the French railway system. Their 1838 *La Gironde* will be the first French locomotive. [THREADS = THE WW1 RAILWAYS and THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]
1836 The British businessman [no convenient biography] James Ashwell takes over the Blaenavon Ironworks [1810<=1875], trading it now as the Blaenavon Iron and Coal Works. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1836 [no convenient biography] Francis B. Keane leads a consortium of Richmond, VA, businessmen in setting up an ironworks. They are assisted in this endeavour by a group of immigrants recently arrived from Tredegar, South Wales, where they worked in the ironworks there [<=1799]. The new works is named after the old, and is destined to become the major weapons foundry in the Confederacy during the Civil War. It will, for example, provide the 723 tons of armour plate used on the ironclad CSS Virginia [Wikipedia shipography=>1861 (25th October)] and produce many of the Dahlgren [=>1854] and Brooke [=>1861] rifled muzzle-loading cannons used in the CS Navy. [THREAD = THE WW1 SURFACE NAVIES]

********** THE FUTURE SHOWS ITSELF **********

1836 Having been working on the concept for 12 years, Johann von Dreyse [1824<=1841] now presents the Prussian Army with a prototype bolt-action breech-loading rifle with a sharp needle as a firing pin and a self-contained paper cartridge complete with internal percussion cap. [THREAD = WW1 SMALL ARMS]

1836 [23rd February - 6th March] The Battle of the Alamo: [... Continued from 1835 (24th October)] This 13-day siege is fought out as part of the Texas Revolutionary War [<=1835 (2nd October)] between a Mexican army under Antonio López de Santa Anna [1835 (2nd October)<=21st April] and a hastily scraped together Texian garrison at the Alamo Mission [modern San Antonio, TX] under William B. Travis [Wikipedia biography] and James Bowie [Wikipedia biography]. Santa Anna is attempting to re-establish Mexican authority in Texas and the Texans are determined to delay his advance long enough for the soldier-politician Samuel Houston's [Wikipedia biography=>next entry] Texian army to build up its strength¹. The outcome is the annihilation of the Texans and the creation of one heck of a legend. On 2nd March, meanwhile, the Texans have declared independence [=>next entry]. [THREAD = THE SHAPING OF THE MODERN WORLD]

¹ASIDE: On 11th March Houston is at Gonzales with a mere 374 recent recruits


ASIDE: Now that the Texans have declared independence we shall cease referring to them as "Texians" (immigrants in the Mexican province of Tejas) and refer to them instead as "Texans" (the conquering ethnic spearhead in ex-Mex Texas).

ASIDE - ETHNICITY IN INTERNATIONAL POLITICS: Declarations of independence by newly arrived ethnic insurgencies have soured world history ever since the practice was invented by cavemen [<=24MYA and follow the thread PREHISTORIC WARFARE]. As far as WW1 is concerned, such confrontations were seen in Alsace-Lorraine, Schleswig-Holstein, Ulster, Greece, and Poland, and all were accompanied by bloodshed at the time and intense resentment afterwards. And it all happened again, of course, in March 2014 with the Russian annexation of the Crimea - simply substitute Russia for America, Ukraine for Mexico, and Texas for Crimea and compare the stories. We also watch with interest the arrival of the migrant Syrians in Germany in Autumn 2015.
1836 [5th March] Samuel Colt [1830 (4th July) – 1841] is finally awarded a patent on his revolver design, and sets up the Patent Arms Manufacturing Company, based in Paterson, NJ, to produce the Colt-Paterson 1835 range of revolvers. The models come in .28", .31", .34", and .36" calibres but remain in production only five years as newer designs come along. [THREAD = WW1 SMALL ARMS]

1836 [19th-20th March] The Battle of Coleto: This battle is fought as part of the Texas Revolutionary War [<=1835 (2nd October)] between a Mexican column under José de Urrea [Wikipedia biography] and a significantly smaller Texan force under James Walker Fannin [Wikipedia biography]. The outcome is a with-the-odds Mexican victory, followed by a punitive massacre of more than 300 Texan prisoners-of-war. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** THE ANDROID PROBLEM FICTIONALISED **********

1817 Automation, Control, and Artificial Intelligence [XXVII - Exploring the Possibilities (Hoffmann)]: The German author Ernst Hoffmann [Wikipedia biography] publishes a short story entitled "Der Sandmann" [= "The Sandman"; Project Gutenberg full text online], in which (amongst other things) an "alchemist" named Coppelius and a physicist named Spallanzani construct a beautiful (but extremely dumb) female-form android named Olimpia. A young student, Nathaniel, falls for the female automaton, only to descend into suicidal madness when he finally finds out the truth [sub-thread continues at 1819 (Mälzel) ...]. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

********** THE MECHANICAL DIGITAL COMPUTER CONCEIVED **********

1819 Automation, Control, and Artificial Intelligence [XXVIII - Voice Synthesis (Mälzel)]: For his latest exhibition tour of Britain, Mälzel/Maelzel [1809 – 1823] has now fitted The Turk with an artificial voice-box, enabling it to vocalise the word "check!" at the appropriate stage of the game. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

********** THE MECHANICAL DIGITAL COMPUTER CONCEIVED **********

1821 Automation, Control, and Artificial Intelligence [XXIX - Industrial Calculation (Babbage)]: The British mathematician Charles Babbage [Wikipedia biography] and the astronomer [Sir] John Herschel [1st Baronet] meet to check accuracy of the pre-press manuscript of the mathematical tables they have been preparing for the Astronomical Society.

Exasperated by the number of errors they find, one of the two men (neither can afterward recall which) reportedly exclaims: "I wish to God these calculations had been executed by steam" (Swade, 2001, p10). In fact it was the "awesome drudgery" (p15) of the work which was to blame, for the arithmetic itself was entirely straightforward, relying as it did upon a mathematical procedure known as "The Method of Differences" [see Companion Resource for a tutorial]. The need was simply for computers who did not get tired and whose attention never wandered. Babbage duly got to work on a scaled-up calculating machine to take their place. He called it the

ASIDE: Readers unfamiliar with the mechanical calculators available in 1821 should see the entries for Pascal’s [=1642] Pascaline and Leibniz’s [=1671] Machina Arithmetica before proceeding. The story of "computers" - clerks employed to do sums on an industrial scale begins with de Prony [=1791].
1823 Automation, Control, and Artificial Intelligence [XXX - Voice Synthesis (Mälzel Again)]: Capitalising on the voice synthesising technology he had recently installed in the Turk [1819], Mälzel/Maelzel obtains a patent on a doll which can vocalise "Ma-ma" and "Pa-pa". [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

1826 Automation, Control, and Artificial Intelligence [XXXI - The Turk (Second Grand Tour)]: Mälzel/Maelzel now demonstrates The Turk in New York City, Boston, and Philadelphia, exciting great public interest. He will continue to tour in this way for the remaining 12 years of his life. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

1833 [3rd September] The American publisher Benjamin Day [Wikipedia biography] starts publication the "New York Sun" [Wikipedia factsheet], history's first advertisement-subsidised daily newspaper. It is deliberately aimed at working people, and reports on items of everyday interest. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

ASIDE: 20th Century historians will assess the importance of this event as follows ...

"The introduction of new forms of communication also created a new historical phenomenon - the mass audience. For the first time in history the means now existed to disseminate information to large, heterogeneous, groups of people within a relatively short period of time. With the introduction of the New York Sun on September 3, 1833, the era of the 'penny press' was begun and the entire shape of news was altered. [...] Its founders recognised that there was a growing audience of middle- and working-class readers willing to pay for a newspaper on a daily basis [citation]" Jowett and O'Donnell (1992, p80).

1836 [April] Automation, Control, and Artificial Intelligence [XXXII - Exploring the Possibilities (Poe)]: Edgar Allan Poe [Wikipedia biography] sees Mälzel/Maelzel's Turk in action, and is inspired to publish an essay on the broader implications of the technology under the title "Maelzel's Chess Player" [University of Virginia full text online]. He begins by reviewing a number of previous automatons, such as Maillardet's Magician [<=1805] and Vaucanson's Duck [<=1738], before drawing an explicit comparison with Babbage's Difference Engine. The problem which concerns him is one of determinacy in the problem-solving procedure, as follows ...

"Arithmetic or algebraic calculations are, from their very nature, fixed and determinate. Certain data being given, certain results necessarily and inevitably follow. These results have dependence upon nothing, and are influenced by nothing but the data originally given. And the question to be solved proceeds, or should proceed, to its final determination by a succession of unerring steps liable to no change, and subject to no modification."
In *The Turk*, however, (were the whole thing not to be a hoax) this would not be the case ...

"With him there is no determinate progression. No one move in chess necessarily follows upon any one other [... and] from the first move in the game of chess no especial second move follows of necessity. [...] There is then no analogy whatever between the operations of the Chess-Player and those of the calculating machine of Mr. Babbage ..."

For Poe, however, it is all a hypothetical issue anyway, for "it is quite certain" that the machine is a hoax. It is "regulated by mind, and by nothing else". He then discusses in some detail the possible deceptions which would allow this to be so, reviewing earlier theories and suggesting one of his own - namely that a certain Mr. Schlumberger in the concert party (who was never to be seen during a performance) secretes himself within the structure and works its playing arm for it [sub-thread continues at 1837 ...]. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

**ASIDE - CHESS AND THE MODERN COMPUTER**: Poe is here anticipating by 120 years the debate into the nature of computer-assisted problem-solving which arose with Alan Turing's *Entscheidungsproblem* paper [=1937], and which we have summarised elsewhere [see Companion Resource (Section 4.3) and Companion Resource (Section 1.12)].

1836 [21st April] **The Battle of San Jacinto**: This battle is fought out as part of the Texas Revolutionary War [=1835 (2nd October)] between the main Texian army under Samuel Houston [2nd March<=1845 (29th December)] and the Mexican army under Antonio López de Santa Anna [23rd February<=1846 (25th April)], fresh from its victory at the Alamo [<=23rd February]. The outcome is a crushing Mexican defeat and the taking of Santa Anna as prisoner-of-war. Santa Anna signs the Treaties of Velasco on 14th May [=], and Houston will be elected inaugural president of the Republic of Texas on 22nd October 1836 with Stephen Fuller Austin [1835 (24th October)<=d.27th December] as his Secretary of State. The modern cities of Austin, TX, and Houston, TX, are named after these two men. The battle is noteworthy in the present context for delivering Texas nine years later as a U.S. State [=1845 (29th December)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1836 [14th May] **The Treaties of Velasco**: These treaties (a public one and a secret one) between Mexico and the Republic of Texas bring the Texas Revolutionary War [=1835 (2nd October)] to an end. [THREAD = THE SHAPING OF THE MODERN WORLD]

1836 [21st June] **The Taff Vale Railway [I - The Authorisation]**: The British Parliament passes the Taff Vale Railway Act, authorising the construction of a steam railway between Merthyr Tydfil and the new Bute Docks at Cardiff, with a branch line out of Pontypridd up to Treherbert in the Rhondda Valley. Investors include Sir John Josiah Guest [1816 (19th October)<=1838] and Walter Coffin [=1809]. The Dowlais Ironworks [1830<=1838] provides it with 20,000 tons of rails. Its consulting engineer is Isambard Kingdom Brunel [Wikipedia biography=26th June] [continues 1840 (9th October) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1836 [26th June] Working to a design by Isambard Kingdom Brunel [21st June<=1839 (??th July)] construction work begins on the SS *Great Western* [Wikipedia shipography=1838 (8th April)], a large wooden side-paddle steam-sail hybrid passenger liner. [THREAD = THE SHAPING OF THE MODERN WORLD]

1836 [6th November] [...] Continued from 1830 (2nd August)] Upon the death of Charles X [of France] Pretender [=1830 (2nd August)] the throne passes without further dispute to Louis-Philippe of Orléans [=1830 (2nd August)] as Louis-Philippe I of France [=1848 (24th February)]. [THREAD = THE SHAPING OF THE MODERN WORLD]
1837 Automation, Control, and Artificial Intelligence [XXXIII - Industrial Computing (Babbage Again)]: [Continued from 1836 (April)] After 15 years struggling to complete his Difference Engine Babbage (=1826 (April)) now switches his efforts to a more powerful "Analytical Engine" [Wikipedia factsheet], to be equipped with a Jacquard-style pre-programmed input (=1801). At this juncture, however, the Swedish engineer Georg Scheutz [Wikipedia biography], having read of Babbage's undertaking in 1834, and understanding the basic principles, was inspired to produce his own design for a difference engine. Scheutz, however, kept it simple, so that when the plans and prototypes were ready, he was able to set his 15-year old son Edvard to work at putting it together. It took father and son only six years to complete it (whereupon the British government promptly placed their own order for one). As Swade (op. cit.) puts it, "a Swedish teenager had succeeded where the best of British had failed" (p197). Babbage's second machine was still incomplete at the time of his death in 1871, a quarter of a century later, although a working facsimile was built in 1991 to celebrate Babbage's bicentenary and is in the Science Museum in London. Between 1833 and 1852, Babbage was assisted in his work by Countess Augusta Ada Lovelace [Wikipedia biography], daughter of the poet, Lord Byron, and a woman of great influence in British society. A keen student of mathematics herself, Lovelace soon grasped Babbage's programming concepts, lobbied on behalf of the project in high places, and published a number of historically valuable technical memoranda. This enthusiastic contribution to the newly born software industry will be honoured in 1979 when the US Department of Defence name their ADA programming language after her [sub-thread continues at 1838 (21st July) ...]. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

********** THE "DAGUERROTYPE" INVENTED **********

1837 The Development of Photography [VI - Daguerre Again]: [Continued from 1835 (Fox Talbot)] After four years of experimentation with silver halide photosensitive emulsions Daguerre [1827<=1838] has now perfected a photographic process requiring an exposure time of only a few minutes. He now starts to release the resulting system commercially under the trade name "Daguerrotypes" [sub-thread continues at 1838 ...], [THREAD = THE SHAPING OF THE MODERN WORLD]

1837 William Browne [Wikipedia biography=>1838], Superintendent Physician at the Montrose Lunatic Asylum, publishes a paper entitled "What Asylums Were, Are, and Ought to Be", in which he blames most of society's evils upon uncontrolled rapid industrialisation and calls for asylums to be as idyllic as money will allow to help counter-balance such evils. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1837 Reoch Brothers and Company found the Parkhead Forge at Parkhead, Glasgow. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1837 [10th May] The Panic of 1837: Led by a number of imprudent New York City banks [no change there, then], stock markets around the world crash. There follows an economic depression lasting more than five years. Not coincidentally, the people who suffer the most are those least responsible. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1837 The Russian metallurgist Pavel Anosov [no convenient biography] chances upon the lost ancient formula for high specification "Wootz steel" (=1795 (1st January)), calling it "bulat steel". He also demonstrates that gas carburisation of molten iron is as effective as contact carburisation with a solid layer of charcoal or coke. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]
1837 In organising the clearance of the wreck of **HMS Royal George** [Wikipedia shipography] from the Spithead Anchorage outside Portsmouth Harbour, the British military engineer **Charles Pasley** [Wikipedia biography] demonstrates a system for the "hot-wire" electrical detonation of underwater charges. [THREAD = WW1 MILITARY ENGINEERING]

1837 [...] Under **Leonard Gale**'s guidance and thanks in no little part to **Alfred Vail**'s and **William Baxter**'s enthusiastic development work, **Samuel Morse** [<=1835] has pushed the effective transmission range of his telegraph system up to ten miles, and can cope with longer distances by using repeater relays to refresh the signal every ten miles. Vail and Baxter have also improved the sending key and the receiving register, and perfected the dot-dash code which still bears Morse's name [it is a matter of historical dispute whether Morse or Vail had the original idea]. The system will be demonstrated to **President Martin Van Buren** [Wikipedia biography] the following year, and the code which goes with it will be patented in 1840. It takes longer to train a good operator for the Morse system than the rival Wheatstone-Cooke system [=>10th June], but transmission speeds are higher (a skilled operator can transmit 40-50 words per minute). [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1837 The Polish chemist **Filip Walter** [no convenient biography] isolates **toluene** [Wikipedia chemistry], a 1-methylated derivative of benzene. This compound is noteworthy in the present context for the fact that, when nitrated [<=1832 (ASIDE)], it creates the high explosive **TNT** [=>1863]. [THREAD = WW1 ARTILLERY]

1837 In the spirit of James Macpherson's "**Ossian**" [see the Companion Resource (1765)], the Scottish historian **William F. Skene** [Wikipedia biography] publishes "**The Highlanders of Scotland, their Origin, History, and Antiquities**". [THREAD = WW1 ROMANTIC NATIONALISM]

1837 The American gunsmiths **Ethan Allen** [Wikipedia biography] and **Charles T. Thurber** [no convenient biography] market a six-shot pepperbox pistol in .32" and .36" calibre [image]. [THREAD = WW1 SMALL ARMS]

1837 [17th February] **Crawshay Bailey** [1833<=1845] acquires the Aberaman Estate, near Aberdare. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1837 [30th April-1st May] **The Battle of Jamrud**: This battle is fought as part of the Afghan-Sikh Wars [<=1819 (3rd July)] between an Afghan army under **Amir Akbar Khan** [Wikipedia biography] and the Sikh Empire garrison at Jamrud under **Hari Singh Nalwa** [1834 (6th May)<=>dies this day]. The outcome is an Afghan withdrawal into Afghanistan, establishing the Khyber Pass as the western limit of the Sikh Empire. [THREAD = THE SHAPING OF THE MODERN WORLD]

1837 [10th June] The British engineers **Charles Wheatstone** [Wikipedia biography] and **William Cooke** [Wikipedia biography] patent the **Five Needle Telegraph** [=>1839 (9th April)]. This system consists of six parallel wires (five switched positives and a common negative) connecting five local switches to five remote electromagnets. Each electromagnet acts upon a carefully mounted compass needle, and can flick this needle left or right from a vertical resting position. When this happens, the needle points to a matrix of letters set out on a backing panel, and, when two arrows were simultaneously keyed, the operator simply reads off the single letter at the point of their intersection, and writes it down. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]
1837 [20th June] Upon the death of William IV of Britain [<=1830 (24th June)] the British crown passes to Alexandrina Victoria [<=1819 (24th May)] as Queen Victoria [=>1839 (12th July)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** THE GREAT GAME PLAYS ON **********

1837 [22nd November - 9th September 1838] The Siege of Herat: This ten-month siege is fought out as part of the "Great Game" [<=1834 (2nd July)]. The Russians are now supporting an invasion of Afghanistan by a Persian army under Mohammed Shah Qajar [Wikipedia biography]. The British are monitoring the situation both from Teheran (in the person of special envoy Sir John McNeill [Wikipedia biography]) and also from Herat itself (in the person of an undercover intelligence officer named Eldred Pottinger [Wikipedia biography]). The Afghan garrison at Herat is commanded by Yar ["the greatest scoundrel in Central Asia"] Mohammed [no convenient biography]. After months of intense fighting on the walls of Herat diplomatic pressure in Teheran eventually persuades the Persians to lift the siege. [THREAD = THE SHAPING OF THE MODERN WORLD]

1838 The Development of Photography [VII - Daguerre Again]: [Continued from 1837] One of Daguerre's [1837<=1839 (19th August)] latest Daguerrotypes - "Boulevard du Temple" [view it now] includes the first photographic image of a person [sub-thread continues at 1839 (25th January)]... [THREAD = THE SHAPING OF THE MODERN WORLD]

1838 Impressed by his theories of lunacy and its treatment with a variety of self-actualising therapies, not least art therapy, the philanthropist Elizabeth Crichton [no convenient biography] appoints William Browne [<=1837] as Superintendent Physician at the new Crichton Royal Hospital [Wikipedia factsheet], Dumfries. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1838 [29th October] The Berlin-Potsdam-Magdeburg Railway [I - Berlin to Potsdam]: The first trains run on the 26 km Berlin-Potsdam Railway, Prussia's first railway line [continues at 1846 (12th September)]... [THREAD = THE SHAPING OF THE MODERN WORLD]

1838 [4th/8th/22nd/23rd April] ... Continued from 1836 (26th June)] On 4th April the side-paddle SS Sirius [<=1835 (7th November)] departs Cork, Ireland, for New York City. On 8th April, having been completed just over a week before, the SS Great Western [1836 (26th June)<=1840 (1st August)] departs Bristol on her maiden voyage in hot pursuit. Sirius will arrive on 22nd April, Great Western on 23rd, having made up three days on her rival. Great Western continues to service this route until 1846, making 45 round trips in all. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1838 [7th May] The Chartists [I - The People 's Charter]: "A committee of twelve persons, six Members of Parliament and six members of the London Working Men's Association", led by William Lovett [Wikipedia biography] and the campaigning pamphleteer Henry Hetherington [Wikipedia biography], publishes the "People's Charter", a six-point agenda for British parliamentary reform. The six points are (1) a vote for every male citizen aged 21 years of more, of sound mind, and not in prison, (2) a secret ballot, (3) no property qualification for Members of Parliament, (4) salaried Members of Parliament, (5) constituencies of equal size, and (6) annual general elections. Those who support the Charter style themselves as "Chartists" [continues at 24th September]... [THREAD = THE WW1 WORKING CLASS SOLDIER]

1838 [firstly 1832 (Bracannot) and insets] The French chemist Théophile-Jules Pelouze [Wikipedia biography] synthesises nitrocellulose by treating paper pulp with nitric acid [continues at 1845 (Schönbein)]... [THREADS = WW1 SMALL ARMS and WW1 ARTILLERY]
1838 Having been a Welsh speaker for only six years, but with lots of spare time on her hands while her husband Sir John Josiah Guest [1836 (21st June)–1845] runs the Dowlais Ironworks [1836–1843], the society hostess Lady Charlotte Guest [Wikipedia biography] resolves to translate the Red Book of Hergest [<=1382] into English, and chooses the title "The Mabinogion" for the resulting anthology. [THREAD = WW1 ROMANTIC NATIONALISM]

1838 The Grosser Zapfenstreich: The present Director of Music for the Prussian Army, Wilhelm Wieprecht [Wikipedia biography] composes and choreographs a "Grosser Zapfenstreich" [= Great (military) tattoo], a concert-length music and prayer military ceremonial [watch one now]. [THREAD = WW1 ARMIES AND TACTICS]

1838[4th June] The Great Western Railway [II - London to Maidenhead Bridge]: [... Continued from 1834 (10th March)] With work still in hand at the western end of the line the first 36 kilometres of line open from London Paddington Station to Maidenhead [continues at 1840 (30th March)] [...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1838[21st July] Automation, Control, and Artificial Intelligence [XXXIV - The Turk (Another Owner)]: [...Continued from 1837] Returning from his American tour Mälzel/Maelzel [<=1836] dies at sea, and The Turk is eventually acquired by Poe's [<=1836 (April)] personal physician John Kearsley Mitchell [Wikipedia biography] =>1857 (January), who restores the machine and then donates it to the Chinese Museum, Philadelphia [use Schofield (1989 online) as factsheet], where it will remain until destroyed by fire in 1854 [sub-thread continues at 1840 (Faber) ...]. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

1838[10th September] The First Anglo-Afghan War, 1838-1842: [See firstly 1834 (6th May [ASIDE]) and 1837 (22nd November)] The Governor-General of India, George Eden, 1st Lord Auckland [Wikipedia biography] =>10th December issues orders to deploy a force beyond the north-west frontier of India into Afghanistan, thereby to counter growing Russian influence there by installing its own puppet government there under Shuja Shah Durrani [1834 (2nd July)–10th December]. Auckland sets out his justification for this action on 1st October 1838 in what will become known as the "Simla Manifesto". The main events are ...

The Auckland Expedition, 1838; The Battle of Ghazni, 1839; The Retreat from Kabul, 1842; The Pollack Expedition, 1842; The Battle of Kabul, 1842

The war is brought to an end after the catastrophic British retreat from Kabul by a better resourced counter-offensive during 1842. [THREAD = THE SHAPING OF THE MODERN WORLD]

1838[24th September] The Chartists [II - The Kersal Moor Assembly]: [...Continued from 7th May] The Chartist leadership presents its ideas to a mass meeting at Kersal, near Salford, Lancashire [continues at 1839 (20th April) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]


1838[10th December] The Auckland Expedition [I - The Initial Advance]: Acting on the orders issued by George Eden, 1st Lord Auckland [<=10th September], three separate British/Shuja-ite Afghan forces have by now mobilised. Firstly the British Bengal Division under Sir Willoughby Cotton [Wikipedia biography] has assembled at Karnal [map, etc.], secondly the Shuja-ite Afghans under Shuja Shah Durrani [10th September–1839 (7th
have assembled at Ludhiana [map, etc.], and thirdly the British Bombay Army under [Sir]\textsuperscript{1839} John Keane [Wikipedia biography] has transhipped to the mouth of the Indus. These three columns now converge on the North West Frontier passes and safely establish a base at Kandahar on 25th April 1839. They set off again toward Kabul in early May [continues at 1839 (23rd July) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1839 The British psychiatrist John Conolly [Wikipedia biography] experiments with non-restraint techniques at the Middlesex County Asylum, Hanwell. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1839 McArther and Alexander found the "Govan Old Yard" at Glasgow. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1839 The British scholar Sir Frederick Madden [Wikipedia biography] publishes "Sir Gawain and the Green Knight" [Amazon new translation précis/purchase] an updated version of the mediaeval manuscript [=1380]. [THREAD = WW1 ROMANTIC NATIONALISM]

1839 The Development of Photography [VIII - Fox Talbot Again]: [Continued from 1838] Fox Talbot [1835\texttilde1840] presents his technique and specimen photographs [=1835 (Fox Talbot)] to a scientific gathering at the Royal Institution, London [sub-thread continues at 1839 (19th August) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1839 The First Opium War: This war between Britain and Qing Dynasty China is fought for control of the opium trade into China (from which the British have been deriving great profits of late). The British Commander-in Chief is Sir Hugh Gough [1st Viscount]\textsuperscript{1849} [Wikipedia biography]=1845 (11th December)]. The war will be brought to an end as a victory for industrial power over agricultural by the Treaty of Nanking [=1842 (29th August)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1839 The Leipzig-Dresden Railway: The first long-distance German railway opens between Leipzig and Dresden. [THREAD = THE SHAPING OF THE MODERN WORLD]

1839 The world's first commercial telegraph line - a Wheatstone-Cooke Five-Needle Telegraph [=1837 (10th June)] - goes live between Paddington Station, London, and West Drayton. Members of the public will pay a shilling a time just to see it sending other people's messages! [THREAD = WW1 TELECOMMUNICATION]

********** NEUTRAL BELGIAN IS CONFIRMED **********
********** NEUTRAL BELGIAN IS CONFIRMED **********
********** NEUTRAL BELGIAN IS CONFIRMED **********

1839 The Belgian Revolution [V - The Treaty of London]: [... Continued from 1831 (2nd August)] This diplomatic agreement between Britain, Austria, Prussia, France, Russia, and the Netherlands recognises the Grand Duchy of Luxembourg [=1814 (Congress of Vienna)] and guarantees the "perpetual neutrality" of Belgium [=1831 (21st July)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

\textbf{ASIDE - BELGIUM IN WW1:} As guaranteed by this treaty the "permanent neutrality" of Belgium gets conveniently overlooked by the Germans when the Schlieffen Plan is conceived, and it will be the eventual German violation of Belgian neutrality [=1914 (4th August)] which is the proximate cause for Britain's involvement in WW1. It is the treaty which the German Chancellor Theobald von Bethmann-Hollweg will in those later days describe as a "mere scrap of paper".

1839 The Chartists [III - The Llanidloes Assembly]: [... Continued from 1838 (24th September)] Following an inspirational address by Henry Hetherington [=1838 (?7th May)]
and **Henry Vincent** [Wikipedia biography], two Chartist leaders, the people of Llanidloes, Mid-Wales, come to blows with the 300 Special Constables sworn in to police the event. 32 of the rioters are arrested, tried, and variously punished.  

**1839** [??th May] The British Admiralty's Comptroller of Steam Machinery **Sir William Parry** [Wikipedia biography] awards a contract for the carriage of mail between Liverpool, Halifax, Nova Scotia, Boston, and Montreal to a business consortium led by the Nova Scotian entrepreneur **[Sir]1879 Samuel Cunard [1st Baronet]1879** [Wikipedia biography]. Cunard now gets together with other investors to form what will become the **Cunard Line** [continues at 1840 (4th July) ...].  

**1839** [24th June] **The Second Turko-Egyptian War**: This war was dealt with when listing the First Turko-Egyptian War [=1830 (31st October)].  

**1839** [24th June] **The Battle of Nezib**: This battle is fought as part of the Second Turko-Egyptian War [=1831 (31st October)] between an Egyptian army under **Ibrahim Pasha** [=1832 (21st December)] and a considerably larger Prussian-aided Ottoman army under **Hafiz Osman Pasha** [no convenient biography]. The Ottoman artillery is organised by a 38-year-old graduate of the **Allgemeine Kriegsschule** [=1818] named **Helmuth von Moltke [the Elder]** [Wikipedia biography] [=1843]. The outcome is an Ottoman rout.  

**1839** [27th June] Upon the death of the Sikh emperor, **Ranjit Singh** [=1834 (6th May)] his throne passes to his eldest son **Kharak Singh** [Wikipedia biography]. There follows a period of internal unrest and international unpredictability culminating in the First Anglo-Sikh War [=1845 (11th December)].  

**1839** [??th July] Construction work begins on the **SS Great Britain** [Wikipedia shipography] [=1843 (19th July)], a screw-propelled iron passenger ship designed by **Isambard Kingdom Brunel** [=1836 (26th June)].  

**1839** [12th July] Named in tribute to the recently ascended **Queen Victoria** [1837 (20th June)] [=1840 (10th February)] the **SS British Queen** [Wikipedia shipography] departs London en route for New York City. At 245-feet length she is presently the largest passenger ship in the world, and has been fitted with engines by **Robert Napier** [1823<=>1842].  

**1839** [23rd July] **The Auckland Expedition [II - The Battle of Ghazni]**: [... Continued from 1838 (10th December)] This battle is fought as part of the First Anglo-Afghan War [=1838 (10th September)] between the Auckland Expedition [=1838 (10th December)] and the Afghan garrison at Ghazni under **Hyder Khan** [no convenient biography], son of the (disputed) Emir of Afghanistan, **Dost Mohammad Khan** [1834 (2nd July)<=>d. 1863 (9th June)]. The battle begins with a 3 a.m. surprise attack on the main gate of the city by Indian assault engineers, followed, once the gate has been blown up, by several hours of vicious street-to-street fighting. The outcome is a British/Indian victory and a continuation of the expedition toward Kabul. Dost Mohammad Khan escapes into hiding leaving another of his (27!) sons, **Akbar Khan** [Wikipedia biography] [=1842 (6th January)] to rule in his stead [continues at 7th August ...]. He will become Emir again after the death of **Shuja Shah Durrani** [=1842 (6th January)] and remain in post until his own death on 9th June 1863. **[THREAD = THE SHAPING OF THE MODERN WORLD]**


1839 [8th October] Cardiff Docks [IV - Bute West Dock Formal Opening]: [...] Continued from 1834 (22nd May)] After five years in construction the Bute West Dock is finally formally opened [continues at 1859 (?7th September) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1839 [3rd-4th November] The Chartists [IV - The Newport Assembly]: Angered at the imprisonment of their fellows following the abortive Llanidloes Assembly [=20th April] one John Frost [Wikipedia biography], activist and sworn enemy of the Establishment, organises an estimated 8000-strong protest march down from the South Wales industrial valleys toward Newport, with the intention of physically occupying it. However due to crossed communications the various columns of protesters are poorly synchronised and Frost arrives ahead of the others with only around 2000. Unfortunately for the protesters the authorities are ready for them, and in a confrontation outside the Westgate Hotel 22 of the protesters are shot dead and another 50 or so wounded. In reprisal Frost is transported to Tasmania. The mayor of the town, on the other hand, one Thomas Phillips [Wikipedia biography] is knighted a month later for his action this day [continues at 1842 (3rd May) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1840 Automation, Control, and Artificial Intelligence [XXXV - Voice Synthesis (Faber)]: [Continued from 1838 (21st July)] The Austrian engineer-inventor Joseph Faber [no convenient biography] demonstrates a mechanical-pneumatic machine for producing synthesised human speech in response to input instructions from a keyboard. Its internals include bellows (artificial lungs), reeds (artificial vocal cords), resonance cavities (artificial pharynx and larynx), and articulating stops (artificial tongue, palate, and teeth), and it is displayed under the name "Euphonia" [there are several technical summaries available online] [sub-thread continues at 1850 (William Elliott and Sons) ...]. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

1840 The Development of Photography [X - Fox Talbot Again]: [Continued from 1839 (25th January)] Fox Talbot's [=1839 (25th January)] latest technical advance is to reduce the exposure time for an image and to rely instead on its post-exposure chemical "developing". He uses silver iodide paper to take the exposure and sodium thiosulphate, or "hypo", as fixing agent. He names the process the "calotype", and will receive a protective patent on it the following February [sub-thread continues at 1840 (20th February) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

************ ANOTHER IMPORTANT GADGET ************
************ ANOTHER IMPORTANT GADGET ************
************ ANOTHER IMPORTANT GADGET ************

1840 Charles Wheatstone [=1837] is now working on an instrument - the "Wheatstone Chronoscope" - to measure the duration of target events with great accuracy. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

ASIDE - CHRONOSCOPY IN WW1: As its name suggests, a chronoscope is a device for "seeing" time. This, of course, cannot be done directly, because our eyes see only two dimensional space and colour. Movement and time both have to be conceptualised. Time,
indeed, has to be analogued, that is to say equated to or represented by a spatial dimension such as angular position (as in a clock face). Chronoscopes are noteworthy in the present context because if an artillery spotter can time the delay between the flash of an enemy gun going off and the subsequent bang then he can quickly calculate its distance and engage it with counter-battery fire.

********** ANOTHER DANGEROUS IDEA **********
********** ANOTHER DANGEROUS IDEA **********
********** ANOTHER DANGEROUS IDEA **********

1840 The French political activist Pierre-Joseph ["The Father of Anarchism"] Proudhon [Wikipedia biography] publishes "What is Property?" [Project Gutenberg full text online], in which he promotes an historically innovative way of looking at property, namely that "property and society are utterly irreconcilable institutions". Property, Proudhon argues, is theft, and brings with it the power to "use and abuse" those who have less of it than you do. The work is noteworthy in the present context because it is more than just a theoretical socio-economic argument - it is the very stuff of class revolution. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1840 The French Prime Minister Adolphe Thiers [Wikipedia biography] authorises the immediate construction of a ring of sixteen forts détachés [= detached forts] around Paris. These forts - the Enceinte de Thiers [= "Thiers' girdle/belt"] - include the Fort de Mont-Valérian, the Fort d'Issy, and the Fort de Montrouge. The forts will be ready for service about six years later, and will see action during the Siege of Paris [=1870]. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE: Each fort had a carefully cleared field of fire to its front. Readers who have ever driven in Paris will already be familiar with the line taken by Thiers' circle of forts because the dreaded Périphérique ring road was built through these frontal clearances a century later!

1840 The British surveyor John R. Chapman [no convenient biography] uses the optics available within his profession to design an early telescopic sight. He then collaborates with the Utica, NY, gunsmith Morgan James [no convenient biography] to fit the optics to the Morgan James Rifle [image], thereby producing one of the most accurate weapons ever made (Roberts, 1940). It will be popular, for example, with Berdan's Sharpshooters [=1862] during the Civil War. [THREAD = WW1 SMALL ARMS]


1840 [13th February] The 1833 Slavery Compensation Loan [III - The Top-Up £5 Million]: [Continued from 3rd August 1835] On 13th February 1840 the Chancellor of the Exchequer Francis Baring [1st Baron Northbrook] mentions the 1833-1834 loan as part of a general statement on the public finances ... "... During that period there had been not only the reduction of six millions of taxation, but the public had been enabled to bear the additional burden of the twenty millions for the emancipation of the negroes, and the interest upon it of about 750,000l. a-year. With regard to the Post-office ..." (Hansard this day, 209).

We note this statement as indicating that the £5 million loan initially left unborrowed (which has not been further mentioned in Hansard) has in the meantime somehow been successfully brokered, lender unknown, interest unknown [sub-thread continues at 19th January 1927 ...]. [THREAD = SOVEREIGN DEBT, HOW IT REALLY WORKS] [THREAD = STOCK MARKET AND FINANCIAL SHARP PRACTICE]
1840 (20th February) **The Development of Photography [XI - Herschel]**: (Continued from 1840 (Fox Talbot)) The British scientist **Sir John Herschel, 1st Baronet** (1821) presents a paper to the Royal Society of London entitled "On the Chemical Action of the Rays of the Solar Spectrum" [full text online at http://www.jstor.org/stable/108209?seq=14#page_scan_tab_contents], in which he meticulously explains the photochemistry of the competing processes. He has been particularly studying techniques of colour photography, using emulsions of various citrate and ferricyanate salts mounted on glass plates. The final image is stored as a deposit of ferric ferrocyanide, or "Prussian Blue", inviting the generic names "cyanotype" and (more colloquially) "blueprint". In his writings Herschel standardises on the terms "photography", "negative", "positive", and "fixing". [thread continues at 1851 ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1840 (30th March) **The Great Western Railway [III - Maidenhead Bridge to Reading]**: [... Continued from 1838 (4th June)] The eastern end of the line is now extended to Reading [continues at 31st August ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1840 (7th June) Upon the death of **Frederick William III of Prussia** (1817) his titles pass to his son as **Friedrich Wilhelm IV of Prussia** [Wikipedia biography] 1842 (23rd October), [THREAD = THE SHAPING OF THE MODERN WORLD]

1840 (4th July) [... Continued from 1839 (??th May)] The first of the Cunard liners **RMS Britannia** [Wikipedia shipography] departs Liverpool for Halifax, Nova Scotia. Cunard will remain a largely unblemished corporate brand until the present day. [THREAD = THE SHAPING OF THE MODERN WORLD]

1840 (19th July) Upon the death at the hands of footpads (= muggers) Of the British businessman **John Bibby** [Wikipedia biography] control of the **Bibby Shipping Line** [modern corporate website] passes to his sons, led by **James J. Bibby** [no convenient biography]. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1840 (1st August) The side-paddle passenger liner **SS President** [Wikipedia shipography] departs Liverpool for New York City on her maiden voyage. At 243 feet in length she is presently the largest passenger ship in the world, albeit more than a knot slower than her rival, the **SS Great Western** (1838 (4th April)). [THREAD = THE SHAPING OF THE MODERN WORLD]

1840 (31st August) **The Great Western Railway [IV - Bristol to Bath]**: [... Continued from 30th March] With the eastern end of the line already completed as far as Reading the first western section opens between Bristol and Bath [continues at 17th December ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1840 (9th October) **The Taff Vale Railway [II - The Low Section Opens]**: [...Continued from 1836 (21st June)] The southern section of the Taff Vale Railway, between Cardiff and Abercynon, is formally opened [continues 1841 (12th April) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1840 (3rd November) **The Bombardment of Acre**: This sea-land engagement is fought as part of the Second Turko-Egyptian War (1831 (31st October)) between a British/Austrian/Ottoman fleet under **Sir Robert Stopford** [Wikipedia biography] and the Egyptian garrison at Acre. The outcome is a British/Austrian/Ottoman victory. [THREAD = THE SHAPING OF THE MODERN WORLD]
1840 [21st November] A daughter is born to Queen Victoria [10th February<>1856 (23rd April)] and Prince Albert of Saxe-Coburg-Gotha [10th February<>1848] and named Victoria, Princess Royal [1834<>1858 (25th January)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1840 [27th November] The Convention of Alexandria: This treaty between Egypt and the Ottoman Empire brings the Second Turko-Egyptian War [<=1831 (31st October)] to an end. The main outcome is that Egypt renounces her claim to Syria. [THREAD = THE SHAPING OF THE MODERN WORLD]

1840 [17th December] The Great Western Railway [V - Reading to Swindon]: [... Continued from 31st August] The eastern end of the line is now extended to Swindon [continues at 1841 (31st May) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1841 The Cwm-y-Felin Ironworks [<=1830] has now grown into the Neath Abbey Ironworks, specialising in wrought iron and cast components for iron ships, boilers, static steam engines (including winding engines for deep mines), and locomotives. Around the same time the British industrial historian Harry Scrivenor [no convenient biography] publishes "A History of the Iron Trade" [full text online]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1841 The German chemist Richard Marchand [no convenient biography] synthesises 2,4,6-trinitrophenol, more commonly known as picric acid [Wikipedia chemistry]. [THREAD = WWI ARTILLERY]

********** THE BOLT-ACTION RIFLE IS BORN **********

1841 Johann von Dreyse [1836<>1867 (9th December)] patents the Leichtes Perkussionsgewehr Model 1841 [Wikipedia images] a .61" single shot bolt-action weapon known colloquially as the "Needle-Gun". The Dreyse will become, thanks to its high rate of fire of 10 to 12 rounds per minute, popular with the military. Indeed in the Austro-Prussian War [>=1866] it is credited with being the deciding factor in the Prussian victory at Kôniggrätz [>=1866 (3rd July)]. Around the same time Samuel Colt [1836 (5th March)<=>1847 (4th January)] demonstrates a prototype metal cartridge system to the US Army, but sales are not impressive so he diversifies for a while into the telegraph cable business. [THREAD = WWI SMALL ARMS]

KEY BALLISTICS VOCABULARY - "BOLT-ACTION" BREECH: Dreyse's bolt-action system for breech exposure and reloading is both ergonomically and ballistically sound, and will eventually replace the underlever.

1841 [11th March] SS President [1840 (1st August)<=>lost this voyage] is lost in a storm a day or two out of New York City bound for Liverpool. The forensic technical opinion will be expressed that she was both underpowered and top-heavy. Her loss brings about the financial collapse of the British and American Steam Navigation Company [<=1835 (7th November)]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1841 [12th April] The Taff Vale Railway [III - The Upper Section Opens]: [... Continued from 1840 (9th October)] The section of line between Abercynon and Merthyr Tydfil is now formally opened. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1841 [7th May] Upon the death of Thomas Barnes [Wikipedia biography] he is replaced as managing editor of The Times - now popularly known as "The Thunderer" - by the lawyer-journalist John T. Delane [Wikipedia biography>=1848 (28th July)]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]
1841 [14th June] The first patients are admitted to the new **Surrey County Asylum** at Springfield Park, Wandsworth. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

**ASIDE - SPRINGFIELD PARK ASYLUM IN WW1 AND 2014:** Springfield Park Asylum will see service during WW1 as the "Springfield War Hospital", turning over its pre-war "Annexe for Idiot Children" for the treatment of shell-shocked soldiers. Since 1999 Springfield Park Hospital has been part of the South West London and St. George's Mental Health NHS Trust - see their website for current status.

1841 [30th June] **The Great Western Railway [VI - Swindon to Bath]:** [... Continued from 1840 (17th December)] The final section of the line is opened between Swindon and Bath, having been slightly delayed by construction of the Box Tunnel, at three kilometres in length the longest railway tunnel in the world [continues 1886 (Severn Tunnel) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

**ASIDE:** The Box Tunnel plays a private joke on all who pass through her. It is perfectly straight and aligned so that every 9th April - Brunel's birthday - the rising sun shines straight through it.

1841 [13th July] **The London Straits Convention:** This treaty between Russia, Britain, France, Austria, and Prussia reverses the **Treaty of Hünkâr İskelesi** [*<=1833 (8th July)] by leaving it to the Ottomans alone to decide which nation's shipping should be allowed through the Dardanelles into the Black Sea. [THREAD = THE SHAPING OF THE MODERN WORLD]

1842 **Robert Napier** [1839<=>1843 (29th June)] acquires the **Govan Old Shipyard** on Clydebank [1839<=>1843 (29th June)]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1842 **Robert L. Stevens** - one of John Stevens' sons [*<=1812] - presents the case for iron-over-wood ships' armour to a Committee of Congress. [THREAD = THE WW1 SURFACE NAVIES]

1842 The German Egyptologist **Karl Richard Lepsius** [Wikipedia biography] is commissioned to lead a three-year archaeological expedition to Egypt and the Sudan. [THREAD = PRE-WW1 ACADEMIC RIVALRY]

1842 The British start to evaluate competing fulminated artillery primers, rejecting most candidates as unsafe under field conditions. [THREAD = WW1 ARTILLERY]

1842 The **Ebbw Vale Ironworks** [1836<=>1850] is taken as an asset during U.S. insolvency proceedings against the **Harford and Partridge Partnership** [*<=1818] and sold on to **Abraham Darby IV** [Wikipedia biography]1868 (24th March). [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

********** "THE MOST VISITED PLACE IN AMERICA"**********

1842 [1st January] The American showman **Phineas T. Barnum** [Wikipedia biography] opens "**Barnum's American Museum**" [Wikipedia factsheet], a five-storey entertainment complex on New York City's Broadway,. complete with menagerie, museum, freak-show, oyster bar, rifle-range, and theatre [take the CUNY Virtual Museum tour]. It will soon be attracting 15,000 visitors a day. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

This phrase from the CUNY tribute website as linked above.

1842 [6th-13th January] **The Auckland Expedition [IV - The Retreat from Kabul]:** [... Continued from 1839 (7th August)] This week-long massacre brings the First Afghan War [*<=1838 (10th September)] to a most emphatic end, there being no British soldiers left to fight it. The retreat begins when **Sir William G. K. Elphinstone** [Wikipedia biography], having been
promised safe passage, attempts to lead the 16,000 British garrison (split roughly one-to-three soldiers to civilians) out of Kabul southwards to Jalalabad. The safe passage does not materialise, however, and the column is constantly harried by Afghan freedom fighters under Akbar Khan [<=1839 (23rd July)], losing a couple of thousand lives each day to sniper fire and frostbite. On the fifth day Elphinstone offers himself hostage in return for safe passage of the column. Off he goes into captivity, but the attacks continue nonetheless, culminating in a defiant last stand by the remnants of the 44th Regiment of Foot. The best-remembered survivor [a few other stragglers will be picked up later in the year] will be the surgeon William Brydon [Wikipedia biography], who gets to Jalalabad 13th January. Another 100 or so prisoners of war will be ransomed alive in September. The retreat is noteworthy in the present context [three British soldiers just reported killed in the same theatre, 1st May 2013] as an example of how not to conduct wars in Afghanistan. Shuja Shah Durrani [1839 (7th August)<=d. 5th April] will be assassinated on 5th April. [THREAD = THE SHAPING OF THE MODERN WORLD]

**ASIDES:** Elphinstone died in captivity of natural causes before he could be ransomed. The telegraph system was not yet available so intercontinental news travelled at the speed of the fastest frigate. The first mention of the debacle in Parliament was not until 8th February and even then the Conservative Prime Minister, Sir Robert Peel, carefully gave nothing away for another four months. The first substantive statement was given to the House of Lords 3rd June [full text online], followed by a 42,000 word history to the House of Commons on 23rd June [full text online - note the references to the role of the “Secret Committee”].

**WAR ART:** Check out Elizabeth Butler's (1879) "Remnants of an Army" and William Barnes Wollen's (1898) "Last Stand of Her Majesty's 44th Foot".

1842 [6th February] **The Pollack-Nott Expedition:** This expedition is fought out as part of the First Afghan War [=1838 (10th September)] and represents Britain's initial response to the massacre during the Kabul-Jalalabad retreat [=6th January]. The new expeditionary force - "the Army of Retribution" - is led by George Pollock [Wikipedia biography] out of Jalalabad and William Nott [Wikipedia biography] out of Kandahar, and will be active in southern Afghanistan throughout 1842. [THREAD = THE SHAPING OF THE MODERN WORLD]

1842 [3rd May] **The Chartists IV - The National Petition:** [... Continued from 1839 (3rd November)] Against a background of nationwide industrial unrest, Parliament debates a 3,500,000-signature promoting the Chartist agenda [=1838 (?7th May)] asking - above all - for "equality before the law". Again the ringleaders are either imprisoned or sentenced to transportation [continues at 1848 (10th April) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1842 [29th August] **The Treaty of Nanking:** This treaty between Britain and Qing Dynasty China brings the First Opium War [=1839 (18th March)] to an end. The main provision is that Britain acquires Hong Kong as a crown colony. [THREAD = THE SHAPING OF THE MODERN WORLD]

**ASIDE - THE PROBLEM OF "UNEQUAL" TREATIES:** The Chinese have been aggrieved ever since that this had been an "unequal" treaty, signed by them at the point of a gun. However we prefer to apply Rule #4 on the grounds that all peace treaties are by their nature unequal.

1842 [10th October] **Newport Docks II - The Town Dock Opening:** [... Continued from 1835 (?7th July)] After seven years in the construction Newport Town Dock is formally opened for trade [continues at 1854 (?7th July) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

**ASIDE:** The Town Dock will be closed in 1930 and filled in in 1939. The area is presently under redevelopment, in line with a 2005 urban redevelopment brief [details at http://www.newport.gov.uk/stellent/groups/public/documents/plans_and_strategies/cont047047.pdf].
1842 [23rd October] **Friedrich Wilhelm III of Prussia** [1840 (7th June)→1849 (3rd April)] approves general issue of the *Pickelhaube* helmet [Wikipedia factsheet] in the Prussian Army. [THREAD = WWI ARMIES AND TACTICS]

1842 The French inventors **Louis-François-Clement Breguet** [Wikipedia biography] and **Alphonse Foy** [no convenient biography] develop a *needle telegraph*, in which the active movement of a pointer from letter to letter around a dial at the sending station passively moves a matching pointer at the receiving station [see explanatory image](the dial with the handle is the sending unit). [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

**ASIDE - "REMOTE POINTER" AND "FOLLOW THE POINTER" FIRE CONTROL SYSTEMS:** Set-ups such as these will be heavily used in WW1 gunnery control systems whenever fire controllers need somehow to communicate the results of their calculations to their gun-layers at some considerable distance. We shall review the technology involved in due course, although readers wishing to check it out now may jump to Arthur H. Pollen's work with the "Argo clock" [=1901] and follow the onward pointers.

1843 **Seeing is Believing [II - Early Moving Images (Childe)]:** [Continued from 1832 (December)]

[REMEMBER: Remember that Kircher had been experimenting with magic lantern micro-puppetry as long ago as 1646 [=q.v.]]

At around this time the British showman **Henry L. Childe** [Wikipedia biography] is popularising the magic-lantern effect known as "dissolving" [Wikipedia factsheet], that is to say the use of overlapping images from two or more projectors, faded in and out for either aesthetic effect (if non-figural stimuli) or dramatic effect (if figural) [sub-thread continues at 1849 (Plateau) ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

**RESEARCH ISSUE - THE PERCEPTION OF NARRATIVE DISSOLVES:** [See firstly the more general issue of narrative continuity [=1832 (December) [RESEARCH ISSUES]]]. Dissolves were destined in due course to be recognised as one of the standard methods of handling time and/or location transitions in cinematographic narrative (others being "fades", "cuts", and "wipes"). There is a deliberately overplayed dissolve in the closing minutes of the 1992 movie "Wayne's World" [view it now].

1843 **The Dowlais Ironworks** [1838->1865 (5th June)] starts exporting rails (50,000 tons this year alone) to Imperial Russia to support that nation's industrialisation. [THREAD = WW1 RAILWAYS]

1843 U.S. Congressman **Francis O. Smith** [Wikipedia biography], Chairman of his government's Commerce Committee, is taken into the Morse Partnership in return for speaking on its behalf in high places. His efforts bear fruit, and the U.S. government duly grants $30,000 to build an experimental line from Washington, DC, to Baltimore, 40 miles away. [THREAD = WW1 SIGNALLING AND TELECOMUNICATIONS]

1843 **Helmuth von Moltke** [the Elder] [1839 (24th June)→1857] publishes an essay entitled "Reflections on the Routing of Railway Lines" in which he analyses the early Welsh and English experience with a view to better informing the development of the **Berlin-Hamburg Railway** [=>1846 (15th December)], of whom he is a Director. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

**ASIDE:** Von Moltke will get the chance to put his ideas into practice when as Chief of the Prussian General Staff he makes railways a tool of army mobilisation in the run-up to the Franco-Prussian War [=>1870 (19th July)].

1843 [27th March] **The Battle of Hyderabad:** This battle is fought as part of the British Annexation of Sindh Province between a British column under **Sir Charles Napier** [Wikipedia biography] and the Sindhi garrison at Hyderabad under **Sher Mohammad** [no
convenient biography]. The outcome is a British victory. [THREAD = THE SHAPING OF THE MODERN WORLD]

1843 [29th June] Now based in the Govan Old Shipyard on Clydebank [1842<=1844 (28th October)] Robert Napier [1842<=1844 (28th October)] launches the PS Vanguard [no convenient factsheet], an all-iron side-paddle steamer intended to ply the Glasgow-Dublin route. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1843 [6th July] The Rebecca Riots: Agricultural workers in West Wales stage a series of direct action protests against property, dressing up as "Rebecca and her daughters" in order to avoid identification. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1843 [19th July] The SS Great Britain [1839 (??th July)<=1845 (26th July)] is launched. At 322 feet overall length this iron-hulled and screw-propelled vessel will remain the largest passenger ship in the world for the next 15 years. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

ASIDE: The Great Britain is nowadays a museum ship at Bristol [see museum website at http://www.ssgreatbritain.org/].

1844 A young American named James H. Burton [Wikipedia biography=>1849] takes a position as a machinist at the Harper's Ferry Armoury, where he learns the gunsmith's craft. [THREAD = WW1 SMALL ARMS]

1844 The French industrialist Jean-François Cail [Wikipedia biography=>1882] sets up in business fabricating steam locomotives. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1844 On the run from the authorities in Russia, and having already been declared unwelcome in Switzerland, the Russian revolutionary socialist Mikhail Bakunin [Wikipedia biography=>1864 (11th January)] takes lodgings in Paris, where he falls in with the radical political theorist Karl Marx [Wikipedia biography=>28th August] and the anarchist Pierre-Joseph Proudhon [1840<=1849]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1844 The German philosopher Max Stirner [Wikipedia biography] publishes "Der Einzige und sein Eigentum" [literally = "the self/autonomous/agent and its properties/qualities" but traditionally in English as "The Ego and its Own"], in which he promotes an early Existentialist view of the human self and an anarchist theory of state, property, and society. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1844 The Irish physician Francis Rynd [Our Ireland biography] devises a rudimentary hypodermic syringe. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1844 [24th May] The Morse Partnership's Washington to Baltimore telegraph line [=1843] is officially opened, and will be operational through to New York City by 1846. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1844 [19th July] The Bank Charter Act, 1844: The British Parliament passes an Act (a) restricting the issue of banknotes to the Bank of England alone, and even then (b) only when backed by gold or strictly rationed government debt. This emphasis on grounding a country's finances on real riches rather than paper or promissory riches becomes known as the "gold standard". [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]
1844 [28th August] The German political philosopher Friedrich Engels [Wikipedia biography] publishes "The Condition of the Working Class in England", in which he records his personal observations of working class life in the Manchester slums. His friend Karl Marx (top of year<=1848 (1st March)) is impressed with the work and will incorporate key ideas into his own political theories. [THREAD = THE WW1 WORKING CLASS SOLDIER]

********** FIRST ROYAL NAVY IRON SHIPS **********
1844 [28th October] The side-paddle armed iron schooner HMS Jackal [Wikipedia shipography], the Royal Navy's first iron-built ship, is launched from the Robert Napier Shipyard at Govan (<=1843 (29th June)). Her sister ship HMS Lizard [Wikipedia shipography] will follow a month later. [THREAD = THE WW1 SURFACE NAVIES]

1844 [21st December] Working to many of the principles laid down by William King (<=1828 (1st May)), and having struggled for some months to raise the necessary capital, a consortium of 28 Rochdale would-be businessmen finally forms the Rochdale Society of Equitable Pioneers, and leases shop premises at 31 Toad Lane, Rochdale. Their unique selling proposition is shareholder-free high street trading, with all customers participating in a retrospective share-out of any trading surplus in the form of a "dividend" (or "divi" for short). The principles of this co-operation - the "Rochdale Principles" - are so successful that within ten years nigh on a thousand similar co-operatives will have sprung up across the country. [THREAD = THE WW1 WORKING CLASS SOLDIER]

ASIDE: Local historians presently maintain 31 Toad Lane as a heritage museum [see museum website].

1845 Pontymister Ironworks (<=1801) is re-tooled as a tinplating works. Around the same time a tinplating works is established at Abercarn, Gwent. Also Crawshay Bailey [1837 (17th February)<=1859 (?1st August)] and Sir John Josiah Guest (<=1838) start drawing up plans for the Vale of Neath Railway [=1846 (3rd August)]. Also upon the retirement of David Mushet (<=1826) control of the Darkhill Ironworks (1818<=1848) passes to his sons, most notably Robert Mushet [Wikipedia biography] (1848). [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1845 The American inventor Edward Maynard [Wikipedia biography] patents a paper tape dotted with separate buttons of percussive material which is automatically advanced across the firing nipple each time the weapon is cocked. This "tape primer" system will be fitted to the Springfield Model 1855 rifled musket (=>1855) but will prove less than totally reliable in the field, especially if damp. The technology will survive into the 21st century in children's "cap guns". [THREAD = WW1 SMALL ARMS]

1845 The Health of Towns Report: A Parliamentary Special Commission publishes the results of its enquiries into the health of the residents of Merthyr Tydfil, lamenting the standard of drainage and cleansing. Records of the marriages in Merthyr Tydfil this year will reveal, when subsequently analysed, that "out of 695 couples married in 1845, 1016 persons signed with marks", that is to say, were illiterate [some 70% of the town's marrying population] (Bradshaw's Guide, 1863). [THREAD = THE WW1 WORKING CLASS SOLDIER]

1845 (<=firstly 1838 (Pelouze)) The German-born Swiss chemist Christian Schönbein [Wikipedia biography] accidentally syntheses nitrocellulose by soaking cotton cloth (reportedly one of his wife's chemises) in a mixture of nitric and sulphuric acids. He finds that the new compound is highly unstable, flaring violently when exposed to heat. [THREADS = WW1 SMALL ARMS and WW1 ARTILLERY]
1845 [9th January] The side-paddle iron-built armed schooner HMS *Bloodhound* [Wikipedia shipography](http://en.wikipedia.org/wiki/HMS_Bloodhound) is launched from the Robert Napier Shipyard at Govan [1843 (29th June) => 1850]. She is the Royal Navy's third iron ship, after HMS *Jackal* and HMS *Lizard* [<=1844 (28th October)]. [THREAD = THE WW1 SURFACE NAVIES]

**********  "THE FATHER OF MODERN MAGIC"  **********
**********  "THE FATHER OF MODERN MAGIC"  **********
**********  "THE FATHER OF MODERN MAGIC"  **********


**ASIDE - "SECONDE VUE" SHOWMANSHIP:** There are a number of ways to carry out the "seconde vue" party-piece subterfuge, which we, in the spirit of the illusion, will not divulge.

Robert-Houdin's stage persona was given added gravitas by his use of formal attire [sub-thread continues at 1856 ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1845 [26th July] The Great Western Steamship Company's new SS *Great Britain* [1843 (19th July) => 1852 (18th August)] departs Liverpool on her maiden voyage to New York City. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]


1845 [11th December] The First Anglo-Sikh War, 1845-1846: This war is fought between the British and Sikh empires for control of the Punjab, the area of north western India where the head waters of the Indus River flow down from the southern slopes of the Himalayas in five tributary rivers [Punjab = "five waters"]; The respective Commanders-in-Chief are Sir Hugh Gough [1st Viscount] [1839 (18th March) => 1848 (18th April)] and Tej Singh [Wikipedia biography]. The war will be brought to an end by the Treaty of Lahore [=>1846 (9th March)], the overall outcome being a British victory. [THREADS = THE SHAPING OF WW1 EUROPE]

1845 [29th December] The State of Texas: The U.S. Congress formally proclaims Texas as the 28th state of the union. [THREAD = THE SHAPING OF THE MODERN WORLD]

1846 The British artillery quartermaster James Freeburn [Wikipedia biography] demonstrates a tolerably safe, precise, and usable wooden fuse for impact detonation. [THREAD = WW1 ARTILLERY]

**ASIDE - "PERCUSSION" FUSES:** The problem with impact detonation fuses is that they must be protected against handling errors and bumps during storage, in transit, during preparation for firing, and upon receiving counter-fire. Otherwise they will kill more friends than enemies. There are therefore two vitally important safety procedures. Firstly fuses are fitted to their shells only shortly before the action is due to commence. Secondly an inbuilt safety mechanism blocks off the internal match from the main charge. Freeburn used a shear wire to deactivate this safety mechanism automatically at the moment of firing.
1846 A young Edward Harland [Wikipedia biography] is taken on as an engineering apprentice at Robert Stephenson and Company, Newcastle-upon-Tyne. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1846 The American entrepreneur William Kelly [Wikipedia biography] sets up an ironworks at Eddyville, KY, and devises an "air-boiling process" similar to that patented by Henry Bessemer a decade later [=1855]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1846 The American inventor Royal E. House [Wikipedia biography] patents a printing telegraph. What House has done is to link two 28-key piano-style keyboards by wire. Each piano key represents a different letter of the alphabet, and, when depressed, causes the corresponding letter to print at the receiving end. A "shift" key gives each main key two optional values. The working principle of the machine is that the rotation of a 56-character type-wheel at the sending end is synchronised to coincide with a similar wheel at the receiving end [no mean technological feat, in fact - Ed.]. If the key corresponding to a particular character is depressed at the home station, it actuates the type-wheel at the distant station just as the same character moves into the printing position [readers familiar with the "daisywheel" word processors of the 1970s will recognise this layout immediately]. House's equipment can transmit around 40 instantly readable words per minute, but is difficult to manufacture in bulk. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1846 [14th January] An underground explosion at the Risca Black Vein Colliery [=1860 (1st December)] kills 35 men. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1846 [9th/16th March] The Treaties of Lahore and Amritsar: These treaties between Britain and the Sikh Empire bring the First Anglo-Sikh War [=1845 (11th December)] to an end. The main provision of the Lahore Treaty (6th March) is that the Sikhs cede Kashmir, Jammu, and lands south of the River Sutlej. The main provision of the Amritsar Treaty (16th March) is that Gulab Singh [Wikipedia biography] becomes the first maharaja of Kashmir-Jammu, the second largest of the Indian states. The British also establish the 14th Ferozepur Sikh Regiment, manned by Sikhs and Punjabi Muslims. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE - THE FEROZEPUR SIKHS IN WW1: The 14th Ferozepur Regiment will contribute battalions to the Gallipoli [=1915 (25th April)] and Mesopotamian [=1914 (6th November)] campaigns.

1846 [25th April] The Mexican-American War, 1846-1848: This war between the U.S. and Mexico begins with the "Thornton Affair", a skirmish between Mexican and U.S. forces south of the Nueces River, in which 16 U.S. troopers are killed. War is then formally declared by the U.S. on 13th May and by Mexico on 7th July. Antonio López de Santa Anna [1836 (21st April)] is re-appointed Commander-in-Chief of the Mexican Army. Here are the main events ...

IN ARIZONA/NEW MEXICO AND CALIFORNIA
The Battle of Sonoma, 1846; The Kearney Expedition, 1846; The Battles of Rio San Gabriel and La Mesa; The Treaty of Cahuenga, 1847; The Baja California Campaign, 1847

IN TEXAS
The Siege of Fort Texas, 1846

The war will be brought to an end by the Treaty of Guadalupe Hidalgo [=1848 (2nd February)]. The overall outcome is a U.S. victory and considerable gains in territory. [THREAD = THE SHAPING OF THE MODERN WORLD]
1846 [3rd-9th May] The Siege of Fort Texas: This week-long siege is fought out as part of the Texas Campaign of the Mexican-American War [<=25th April] between a besieging Mexican army under Mariano Aristo [no convenient biography] and the U.S. defenders of Fort Texas (an earthwork outpost on the U.S.-claimed northern bank of the Rio Grande) under Jacob Brown [no convenient biography=/>dies in this engagement]. The outcome, after some spirited artillery exchanges, is a Mexican withdrawal. [THREAD = THE SHAPING OF THE MODERN WORLD]

1846 [15th June] The Battle of Sonoma: This small and bloodless battle is fought as part of the California Campaign of the Mexican-American War [<=25th April] between a group of civilians directed by the local U.S. military leader John C. Frémont [Wikipedia biography] and the Mexican garrison at Sonoma, CA. The outcome is a local Mexican surrender and an immediate declaration of a Republic of California. In the event this republic will be replaced after only 25 days by a period of U.S. military occupation pending the end of the war [=>1848 (2nd February)] when the Mexicans cede the territory. It will then be adopted as a full U.S. state on 9th September 1850. [THREAD = THE SHAPING OF THE MODERN WORLD]

1846 [26th June] The Kearny Expedition: This expedition is mounted as part of the Mexican-American War [<=25th April]. The U.S. government sends a 2000-man column under Stephen W. Kearny [Wikipedia biography] from Fort Leavenworth in Kansas [map, etc.] to drive westward through the Mexican provinces of New Mexico, Arizona, and California to link up with the U.S. forces active on the Pacific Coast. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE - FORT LEAVENWORTH IN WW1: We shall be dealing in due course with Fort Leavenworth, KA, when explaining the role of African American soldiers in the U.S. armed forces - see 1877 (3rd March) for the creation of the negro 10th U.S. Cavalry Regiment and then 1917 (15th October) for the incorporation of African American volunteers into the 92nd U.S. Infantry Division of the WW1 American Expeditionary Force.


ASIDE - THE LNWR IN WW1: The LNWR Railway Society maintain an online Roll of Honour dedicated to the 3700 employees of the railway killed in WW1 [see their website at http://www.lnwrs.org.uk/SHG/RollHon/index.php].

1846 [3rd August] The Vale of Neath Railway [I - The Authorisation]: The British Parliament approves the construction of a new railway line [<=1845] to run up the Clydach Valley from Neath to Hirwaun, and thence via Aberdare to Merthyr Tydfil [continues at 1851 (24th September)...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1846 [12th September] The Berlin-Potsdam-Magdeburg Railway [II - Potsdam to Magdeburg]: [...Continued from 1838 (29th October)] The extension of the earlier Berlin-Potsdam Railway to Magdeburg is opened. [THREAD = THE SHAPING OF THE MODERN WORLD]

1846 [24th October] The Chartist Co-operative Land Company: With most of Britain's useful land owned since Norman times by aristocratic landlords, the Chartist Feargus O'Connor [Wikipedia biography] masterminds the establishment of a real estate investment company by which workers can subscribe individually small amounts of money to buy tracts of farmland to be worked as small holdings by ballot-selected subscribers. The popularity of the scheme and its early success will be enough to get O'Connor elected
to Parliament as the member for Nottingham in the 1847 election [continues at 1848 (6th June)]

1846 [5th December] Upon the death of Sir Charles Morgan, 2nd Baronet Morgan of Tredegar [<=1807] his title passes to his son Sir Charles Morgan, 3rd Baronet Morgan of Tredegar [1st Baron Tredegar] [1859] [1792 (10th April)<=d. 1875 (16th April)]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1846 [12th December] Panama Switches Empires [II - The Mallarino-Bidlack Treaty]: [Continued from 28th November 1821] In 1831 Gran Colombia was broken down into smaller countries, including modern Colombia. The 1846 treaty between Colombia (which still includes Panama, of course) and the United States grants the latter transit rights across the Panamanian Isthmus [sub-thread continues at 12th March 1881] [THREAD = THE SHAPING OF THE MODERN WORLD]


1847 The Russian physician Nikolay Pirogov [Wikipedia biography]=>1854 (11th December)] experiments with ether as an anaesthetic. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1847 The Krupp Company [1810<=1851] produces its first single casting steel cannon. Around the same time J. and G. Thomson establishes the "Clydebank Foundry" at Anderston, Glasgow, there to make marine engines [continues at 1851 ...]. [THREAD = WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1847 The French ballistics engineer Claude-Étienne Minié [pronounce "minyay"] [Wikipedia biography] demonstrates an improved version of the conical lead bullet [<=1823 (John Norton)] soon affectionately known as the "Minié Ball" [pronounced "minyay-ball" by French-aware English speakers and "mini-ball" by the others] and is working on a rifle - the Minié Rifle - to go with it [continues at 1851 ...]. [THREAD = WW1 SMALL ARMS]

1847 [4th January] Samuel Colt [1841<=1853 (1st January)] gets a surprise order from the Texas Rangers for 1000 Colt-Walker Revolvers. He uses the profits from this order to found the Colt Patent Firearms Manufacturing Company. [THREAD = WW1 SMALL ARMS]

1847 [8th/9th January] The Battles of Rio San Gabriel and La Mesa: These battles are fought as part of the Californian Campaign of the Mexican-American War [<=1846 (25th April)] between Kearny's and Frémont's brigades, now joined up, and a Mexican army under José Flores [Wikipedia biography]. The outcome is a U.S. victory, followed by the Ceasefire of Cahuenga [=> next entry]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1847 [13th January] The Ceasefire of Cahuenga: This ceasefire between the U.S. and Mexico brings the military aspects of the California Campaign of the Mexican-American War [<=1846 (25th April)] to an end pending a political solution a year later [=>1848 (2nd February)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1847 [8th March] The French military surgeon Jean-Baptiste Baudens [no convenient biography] reports on the use of etherisation to detect possible military malingering ...

ASIDE - ANAESTHETISATION AND MALINGERING: To "malinger" [= (colloquially) "to swing the lead", "work one's passage"] is to avoid duty whenever possible and by any means, and
in the armed forces one of the best ways of doing this is to obtain a false medical certificate. This might involve (a) deliberate self-injury passed off as accidental, (b) deliberate self-infection, (c) simulated physical sign such as a falsified limp or stutter, or (d) false claims of pain, hearing voices, and the like. That said, here is a formal definition: "Malingering is the purposeful simulation or exaggeration of mental or physical illness in order to gain some end" (Connor, 2006 online). Even in the early years of anaesthesiology ether and chloroform were used to depress conscious bodily control to the point where it became possible to see through the patient's feigned behaviours, if indeed they were feigned. Detected feigners were then punished and returned to duty. We return to this subject at 1863 (8th October) and then again at 1915 (13th February [ASIDE]) and 8th April).

The thrust of Bauden's paper is that he had anaesthetised two suspected malingerers, and found that only one of the two had been feigning his symptoms. We mention this because WW1 medical officers will be required to screen for malingering when dealing with cases of shellshock (=>1914 (4th December) and subsequent sub-thread). [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1847 [10th May] The Panic of 1847: The British Parliament debates "the present state of the money market", following a balance of payments crisis resulting from a poor home harvest in 1846 and the consequently higher cost of food imports. This in turn seems to have precipitated a rash of debt defaults in over-valued companies and speculative schemes set up in the period of "railway mania" throughout the 1840s. The bursting of this "bubble" of unrealistically priced and unsustainable investments costs many gullible investors their life savings. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1847 [24th May] The Dee Bridge Disaster: Metal fatigue in a cast iron railway bridge at Chester causes it to collapse under the weight of a passing train. The incident will be investigated by the recently established Railway Inspectorate and attributed to design error. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]


1847 [1st July] The Factory Act, 1847: The main provisions of this Act as finally Assented are that the working week in Britain’s textile mills is reduced to a maximum 63 hours, with a further reduction to 58 hours to follow on 1st May 1848. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1847 [14th July] Having only recently licensed guncotton technology from its inventor Christian Schönbein (<=1845) John Hall and Company (<=1825) of Faversham, Kent, suffer a guncotton explosion which kills 18 workers. The company retreats into gunpowder manufacture for the time being (=>1873). [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

ASIDE - EXPLOSIVES MANUFACTURE: All complex chemicals degrade over time and complex man-made chemicals are no exception. The fact that nitrated organic substances such as guncotton, nitroglycerine, and (especially) picric acid also contain all the oxygen they need to detonate means that there is nothing to gain by simply sealing them up tightly. The risk of spontaneous ignition (as in the incident above) can be reduced somewhat by using high purity ingredients in scrupulously clean reactor and storage vessels, and the risk of spontaneous detonation can be reduced by extreme care in materials handling. Fundamentally, however, explosives are accidents waiting to happen, and laboratories are
only marginally safer than factories. Contemporary newspaper reports of this particular disaster make sobering reading - check out http://www.kenthistoryforum.co.uk/index.php?topic=4841.0.

1847 [28th July] Upon the death of John Walter [II] [<=1817] ownership of The Times passes to his son John Walter [III] [Wikipedia biography] [1894 (3rd November)]. Delane [1841 (7th May)]<=1854 (25th October) stays on as editor. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1847 [12th October] The German inventor Ernst Werner (von) Siemens [Wikipedia biography], having noted that one of the problems with the Morse telegraph is that it requires a highly trained operator at both ends of the line, devises a Zeigertelegraf [= "pointer telegraph"] for use at the receiving station. This instrument receives the incoming Morse Code signal, and then automatically rotates a pointer to the equivalent letter on a matching clock-face. Siemens then sets up in business with the engineer Johann G. Halske [Wikipedia biography] to produce and market this instrument, and it becomes known in the English-speaking world as the "Siemens automatic dial telegraph" [continues at 1853 ...]. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

********** 1848, YEAR OF REVOLUTIONS **********

The Sicilian Revolution, 1848 [=>12th January]
The (Third) French Revolution, 1848 [=>24th February]
The German Revolution, 1848 [=>27th February]
The Austrian and Hungarian Revolutions, 1848-1849 [=>13th March]
The Poznán/Posen Polish Revolution, 1848 [=>20th March]
The Danish Revolution, 1848 [=>21st March]
The Serbian Revolution, 1848 [=>1st May]
The Wallachian Revolution, 1848 [=>23rd June]
The Irish Revolution, 1848 [=>23rd July]

1848 At this time Robert Mushet [1845<=1856 (24th August)] is redeveloping his late father's Darkhill Ironworks [<=1845] as the Forest Steelworks. Here he works patiently and scientifically on his "Spiegel-Eisen Process", a process so named because it uses an imported feedstock material named Spiegeleisen from "Rhenish Prussia", that is to say, the area of the Rhineland awarded to Prussia by the Treaty of Vienna [=>1815 (9th June)] ...

ASIDE - RHENISH PRUSSIAN HEAVY INDUSTRY: "Rhenish Prussia" is centred upon the city of Koblenz, and includes the industrial towns of Essen, Oberhausen, Duisburg (and its suburb Ruhrotr), Düsseldorf (and its suburb Hochdahl), Cologne, Hamm, and Unna. It is thus the area better known to students of Britain's WW2 strategic bombing campaign as "the Ruhr". Heavy industries emerged here in the late 18th/early 19th centuries thanks to the availability of coal, iron ore (Siegen and the Harz Mountains to the east), and water (the Rhine, Moselle, and Ruhr Rivers). The iron ores were of two basic chemical compositions, namely (1) "carbonate of iron and manganese", and (2) "red or brown haematite" (Hartmann, 1874 full text online). These ores were routinely pre-treated, concentrated, and (ideally) desulphurised, and then sold on as Spiegeleisen bloom to steelworks down the line for final processing. The Germans have long been using this resource for small high-price items such as swords and tools, but not in any great volume due to the technical difficulties involved (which is why ships, bridges, engines, and cannons are still being made of iron).

By chemical analysis Mushet has already determined that this Spiegeleisen bloom contains 86.25% iron, 8.5% manganese, and 5.25% carbon, and now senses that it is somehow the key to the manufacture of high quality steel in bulk [continues at 1850 (Franz Lohage) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]
ASIDE: The Hartmann (1874) paper is highly recommended to readers still confused about the difference between iron and steel.


1848 In his "Book of South Wales", the British social commentator Charles F. Cliffe [no convenient biography] describes Merthyr Tydfil as follows ...

"The scene is strange and impressive in broad daylight, but when viewed at night is wild beyond conception. Darkness is palpable. The mind aids reality - gives vastness and sublimity to a picture lighted up by a thousand fires. The vivid glow and roaring of the blast furnaces near at hand - the lurid light of distant works - the clanking of hammers and rolling mills, the confused din of massive machinery - the burning headlands - the coke hearths, now if the night be stormy, bursting into sheets of flame, now wrapt in vast and impenetrable clouds of smoke - the wild figures of the workmen, the actors in this apparently infernal scene - all combined to impress the mind of the spectator wonderfully" (quoted in Hayman, 2005, p7). [THREAD = THE WW1 WORKING CLASS SOLDIER]

1848 The British inventor Frederick Bakewell [Wikipedia biography] constructs what he calls an "image telegraph", that is to say, a machine for the electrical transmission of whole-page drawings and other images. His system involves electrically insulating areas on a piece of flexible metal foil using shellac as ink. The prepared foil is then wrapped around a rotating cylinder, and a metal stylus tracked slowly around and along it, transmitting when it crosses a bared metal area and not transmitting when it crosses the shellac. A similar drum at the receiving end carries a sheet of chemically impregnated paper, to receive the image. Bakewell demonstrates this system at the 1851 World's Fair in London [=>1851 (1st May)], but for one reason or another it will be another 50 years before there is much of a market for fax technology of this sort. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1848 The British clergyman Henry Richard [Wikipedia biography] becomes Secretary of the Peace Society [1816 (14th June)<=>1900], and sets out on a 37-year campaign of peaceful activism. [THREAD = WW1 CONSCIENTIOUS OBJECTION]

1848 David Davidson [<=1832] returns to Britain and engages gunmakers John Dickson and Sons and optical equipment manufacturer Alexander Adie, both of Edinburgh, to develop a portfolio of telescopically sighted weapons. He will show these at the 1851 World's Fair in London [=>1851 (1st May)], where Prince Albert [1840 (21st November)<=>1859 (27th January)] himself will inspect them with interest. Around the same time the French inventors Montgomery and Henri-Gustave Delvigne [Wikipedia biography] devise a ribbed conical lead bullet which, by expanding slightly under acceleration, grips the firing weapon's rifling to better effect. [THREAD = WW1 SMALL ARMS]

1848 [12th January] The Sicilian Revolution, 1848: For its part in the pan-European civil unrest of 1848, the Sicilian people rebel against the ruling Bourbon Kingdom of Sicily and establish a short-lived independent state, the Bourbons not reasserting control until 15th May 1849. [THREAD = THE SHAPING OF THE MODERN WORLD]

By the end of the year get-rich-quicker from around the world are flooding into California in the hope of making a life-changing "lucky strike". [THREAD = THE SHAPING OF THE MODERN WORLD]
**KEY TERM - "PROLETARIAT":** Marx derived this term from the Latin word "proletarius", the fifth and lowest possible taxation class within the Roman citizenry, specifically, those with little or no property worth taking (they were expected, for example, when called for military service, to report for duty armed only with a sling). We shall continue to use the term "working class" as less bound to a particular theoretical position.

**KEY TERM - "NOUVEAU RICHE":** This everyday English term (borrowing the French words for "new rich") is used to describe people with more money than breeding ...

**KEY TERM - "BREEDING":** The point about being bourgeois is that it requires money, because the extent to which you have money directly determines (a) the extent to which you can live life like a prince even though you were not born a prince, and (b) your social standing in most people's eyes (including most probably your own). Nevertheless money alone is not enough, and "your betters" will always look down on the nouveau riche as lacking "breeding" (which usually requires you to be able to trace your ancestry back to one of the knights of the Normal Conquest).

**KEY TERM - "HAUTE BOURGEOISIE" VERSUS "PETITE BOURGEOISIE":** Marx and his followers used these terms to distinguish between those who owned the means of production (entrepreneurs, executives, etc.) and those who merely serviced the production process (shop-keepers, merchants, etc.). Bosworth (1973) argues that the petite bourgeoisie are the social class most likely to support right-wing political regimes.

The thrust of the Manifesto is then that the nobility and the bourgeoisie conspire together to exploit the proletariat, who must therefore "wrest, by degrees, all capital from the bourgeoisie, to centralise all instruments of production in the hands of the State" (op. cit., §2). [THREADS = THE WW1 WORKING CLASS SOLDIER and THE WW1 MIDDLE CLASS OFFICER]

**ASIDE - SOCIAL CLASS IN WW1:** We shall be dealing in detail with this issue in due course [= 1888 (3rd April) and follow the onward pointers].

****** 1914 IN SIGHT AT LAST ******
****** 1914 IN SIGHT AT LAST ******
****** 1914 IN SIGHT AT LAST ******

1848 [13th March-14th October 1849] The Austrian and Hungarian Revolutions, 1848-1949 [I - The Uprisings]: For their part in the pan-European civil unrest of 1848, Austrian agitators stage mass demonstrations in Vienna, forcing the Austrian Minister-President Klemens von Metternich [Wikipedia biography] to resign his post and flee to London. The various Habsburg states - not least the Hungarian, Polish, Czech, Piedmontese, and Serbian kingdoms and duchies - then follow suit until the right-wing nobleman-politician Prince Felix of Schwarzenberg [Wikipedia biography] (=>27th November), is appointed Minister-President on 21st November. His first actions are (a) on 2nd December to arrange for the mentally incapable Ferdinand I of Austria [Wikipedia biography] to abdicate in favour of his nephew Franz Josef I [Wikipedia biography] (=>1849 (7th March)], (b) to recall the Austrian representatives from the Frankfurt Assembly (=>18th May)] (thereby robbing it of its pretension toward representing all the German-speaking peoples), and (c) to bring the Habsburg lands together under a new Constitution [continues at 7th March 1849 ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

**ASIDE - FRANZ JOSEF I OF AUSTRIA IN WW1:** Franz Josef was at the time only 18 years old. In 1914, approaching his 84th birthday, he was one of the main players in the "July Crisis" which led to WW1 (=>1914 (28th June)).

1848 [18th March] Upon the death of John Crichton-Stuart, 2nd Marquis of Bute [<=1831 (1st June)] his titles pass to his (six-month-old) son John Patrick Crichton-Stuart [Wikipedia]
It will later be estimated that the 2nd Marquis' debts at the time of his death are some £500,000; the names of the individual creditors are not readily accessible. [THREAD = THE SHAPING OF THE MODERN WORLD]

1848 [21st March] **The Danish Revolution, 1848:** For their part in the pan-European civil unrest of 1848, Danish liberals mount protests at Christiansborg, demanding greater human rights. The newly ascended king, [Frederick VII of Denmark](https://en.wikipedia.org/wiki/Frederick_VII_of_Denmark) agrees, only for the issue to be side-lined by the Schleswig-Holstein issue. [THREAD = THE SHAPING OF THE MODERN WORLD]

1848 [24th March] **The First and Second Schleswig Wars, 1848-1852 and 1864:** These wars are fought between Prussia and Denmark for control of the Duchies of Schleswig and Holstein, initially part of Denmark. In the first war the Danes put down an attempt by the two duchies to break away, and then engage in four years of battles with the Prussians while their diplomats try to devise a workable solution to the problem. In the second war the Prussians are more clinically efficient, invading Schleswig on 1st February 1864 and quickly pushing the Danes northward onto their islands. The first of the wars will be brought to an end by the [Second London Protocol](https://en.wikipedia.org/wiki/Second_London_Protocol) and the second by the [Treaty of Vienna](https://en.wikipedia.org/wiki/Treaty_of_Vienna). [THREAD = THE SHAPING OF THE MODERN WORLD]

1848 [20th March-9th May] **The Poznán/Posen Polish Revolution, 1848:** For their part in the pan-European civil unrest of 1848, Polish nationalists in the Grand Duchy of Poznán/Posen mount protests demanding independence from Prussia¹, and establish a presumptive National Committee. To begin with the Prussians are not unsympathetic to their demands but on 4th April place Poznán/Posen under siege. The eventual outcome is a return to the status quo ante on 9th May. [THREAD = THE SHAPING OF THE MODERN WORLD]

¹**ASIDE:** We are talking here about the western extremity of the old Polish-Lithuanian Commonwealth, not the (far larger) central and eastern lands. In the west the external influence is Prussia, whilst further east it is Russia. In the west the revolution comes in 1848, whilst further east it comes as the "January Revolution" in 1863 (22nd January).

1848 [23rd March-9th August 1849] **The First Italian War of Independence, 1848-1849:** For their part in the pan-European civil unrest of 1848, Italian nationalists in Lombardy, Sardinia, and Piedmont rise up against Austrian rule. The deciding event is ...

The Battle of Novara, 1849

The overall outcome is an Austrian victory. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** THE REVOLUTION THAT NEVER WAS **********

1848 [10th April] **The Chartists [V - The Kennington Assembly]:** [... Continued from 1842 (3rd May)]

The Chartists hold a peaceful² protest assembly on Kennington Common, London. [THREAD = THE WW1 WORKING-CLASS SOLDIER]

²**ASIDE:** With the rest of Europe already in flames it might be thought that Kennington would have made an ideal springboard for an English Revolution, and it might well have turned out that way had the English Establishment not recruited some 100,000 special constables to police the event - perhaps even outnumbering the protesters.

1848 [18th April] **The Second Anglo-Sikh War, 1848-1849:** This war is fought between the British and Sikh empires following Sikh resentment at the outcomes of the First Anglo-Sikh War (11th December). The respective Commanders-in-Chief are [Sir Hugh Gough](https://en.wikipedia.org/wiki/Hugh_Gough) and [Sher Singh Attariwala](https://en.wikipedia.org/wiki/Sher_Singh_Attariwala).
The overall outcome is a British annexation of the Punjab. [THREAD = THE SHAPING OF THE MODERN WORLD]

1848 [1st-3rd May] The Serbian Revolution, 1848: For their part in the pan-European civil unrest of 1848, Serbian nationalists gather in Sremski Karlovci [map, etc.] to proclaim their independence from the Habsburg Kingdom of Hungary and to establish a presumptive National Assembly known as the "May Assembly". [THREAD = THE SHAPING OF THE MODERN WORLD]

1848 [18th May-31st May 1849] The Frankfurt Assembly [I - The Beginnings]: [...] Continued from 27th February] The various German-speaking states come together in an experimental all-German parliament. Top of the agenda is the drafting of a suitable constitution for a unified northern Germany and the appointing of its first emperor [continues at 27th November]. [THREAD = THE SHAPING OF THE MODERN WORLD]

WAR ART - "GERMANIA": The German artist Philipp Veit produces "Germania", a national heroine and symbol of German unity and strength.

1848 [23rd June] The Wallachian Revolution, 1848: For their part in the pan-European civil unrest of 1848, Romanian dissidents stage a peaceful mass demonstration in Bucharest, resulting in the abdication of the pro-Russian Gheorghe Bibescu [Wikipedia biography] and his replacement with a pro-Ottoman revolutionary council. The province will be duly occupied by both Russians and Turks, and remain so until the Romanian Coup of 1866 [=>1866 (23rd February)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1848 [26th June] The Public Health Act, 1848: Responding to the findings of the Health of Towns Report [<=1845] the British parliament passes an Act sponsored by [Sir] Edwin Chadwick [Wikipedia biography] authorising the creation of regional "Local Boards of Health", each responsible for coordinating proactive and reactive measures to fight epidemic diseases such as cholera. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1848 [23rd-29th July] The Irish Revolution, 1848: For their part in the pan-European civil unrest of 1848, Irish dissidents combine their proletarian and nationalist grievances in a brief uprising at Ballingarry, South Tipperary. It is a small affair given what is going on elsewhere in Europe, because the main body of Irish nationalist resentment against British rule is not particularly revolutionary in the class-political sense, and holds off, biding its time. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE - TIPPERARY IN WW1: Every British soldier killed in WW1 will have heard, and probably sung, this song.

1848 [1st August] The Chartist Co-operative Land Company: [...] Continued from 1846 (24th October)] Parliament investigates the Chartists' "National Land Scheme" only to learn that the scheme's books of account have been accidentally lost. They are therefore unable to sponsor expansion of the scheme at present. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1848 [10th August] The American inventor Walter Hunt [Wikipedia biography] receives U.S. Patent 5701 for a lead slug with a deeply hollowed out base filled with gunpowder and sealed over with a thin cork disk [image]. He called this one-piece round the "rocket ball". [THREAD = WW1 SMALL ARMS]

1848 [12th September] The American gunsmith Christian Sharps [Wikipedia biography] patents a .52" calibre dropping block breech-loading rifle. It will come on the market the following year as the Sharps Rifle [Wikipedia factsheet], and thanks to its long range and
accuracy will sell well to both military [=>1862 (Berdan's Sharpshooters)] and sporting customers for the next two decades. A carbine version will be particularly popular with cavalry on both sides in the Civil War. Paper cartridges will be replaced by metal from the 1874 upgrade onwards. [THREAD = WW1 SMALL ARMS]

**ASIDE:** Sharps Rifles are featured in the movies *Quigley Down Under* (Simon Wincer, 1990 [Pathe Entertainment]) [video clip] and *True Grit* (Ethan and Joel Coen, 2010 [Paramount Pictures]).

1848 [27th November] **The Frankfurt Assembly [II - The Austrian Problem]:** [... Continued from 18th May] The Prussians and the Austrians both have much the same problem, namely that not all their imperial possessions are German-speaking. Both have Slavic minorities to contend with, and the Austrians also have Hungarians and Italians, all of whom are now pressing for independence. Progress towards an acceptable Imperial German Constitution is therefore painfully slow, and on 27th November Prince Felix of Schwarzenberg [13th March<=>1849 (7th March)] is forced to declare the "indissolubility" of Austria [continues at 1849 (3rd April) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1849 [10th December] **Louis Napoléon Bonaparte [III of France]** [1844<=>1868 (6th September)] publishes a collection of papers under the general title "The Solution of the Social Problem", in which he warns would-be socialists that production, credit, and a vibrant marketplace are to be encouraged, not stifled, whilst taxation and money are both intrinsically counter-productive. Four particular habitual "prejudices" have to be carefully overcome, namely (1) the desire to reform socio-economic ills in isolation rather than systematically, (2) the belief that labour needs best be centrally controlled, (3) the belief that individual initiative is a bad thing and needs to be discouraged, and (4) the belief that differences in opinion are bad and need to be discouraged. Here is the nub of the problem as Proudhon conceptualises it ...

"The State, an unproductive organism, an entity without property and without capital, cannot offer anything as security for a mortgage except its budget; always a borrower, always bankrupt, always in debt, it cannot involve itself without involving everyone
with it. In consequence, the lenders themselves, outside of it, finally developed spontaneously all the institutions of credit [...] The proposition to make the State at once source and distributor of credit [...] is, therefore, of supreme importance, and merits our attention" (Op. cit., p56; emphasis added). [THREADS = THE WWI WORKING CLASS SOLDIER and THE WWI FINANCIAL AND ARMAMENTS INDUSTRIES]

1849 The American ordnance engineer John A. Dahlgren [Wikipedia biography=&gt;1854] witnesses a proving ground accident in which an artilleryman is killed by a bursting cannon barrel. Five years later he will remember this incident when designing cannons of his own. [THREAD = WWI ARTILLERY]

1849 [See firstly 1840 (Charles Wheatstone [ASIDE]) concerning the relevance of micro-timing techniques to artillery ranging] The German clockmaker-inventor Matthias Hipp [Wikipedia biography] develops the "Hipp Chronoscope", a device for measuring the Fallzeit [= "falling time"] of a dropped object in 500ths of a second. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1849 [See firstly 1814 (Hermann) and 1824 (Gonnella)] The Swiss inventor Kaspar Wetli [Wikipedia biography] is awarded a German patent for an "orthogonal planimeter", the latest in a series of analog computing devices for calculating the area bounded by an irregular two-dimensional outline. [THREAD = WWI CYBERRNETICS, COMPUTATION, AND FIRE CONTROL]

1ASIDE: Wetli's patent failed to recognise the earlier planimeter prototypes by Hermann [=1814] and Gonnella [=1824] because these earlier works had attracted little international publicity.

1849 A young American physician named William A. Hammond [Wikipedia biography=&gt;1861 (28th May)] joins the American Army and spends the next decade learning the army surgeon's craft. [THREAD = WWI MILITARY MEDICINE AND COGNITIVE SCIENCE]

1849 James Burton [=1844] begins experimentation on bullet technology, including improvements to the Minie bullet [=1847]. One of his most effective innovations is the hollow-based slug, because it "flares" well into the rifling. [THREAD = WWI SMALL ARMS]

KEY BALLISTICS VOCABULARY - FLARE: To "flare" in the technical sense used here is to expand slightly against the walls of the gun-barrel due to the pressure of the hot gases behind. This creates additional resistance but by the same token helps the projectile take the designed spin of the rifling.

1849 [17th February] Construction work begins on HMS Royal Sovereign [Wikipedia shipography], but stops soon afterwards when the decision is taken to upgrade her design. [=1864 (20th August)] [THREAD = THE WWI SURFACE NAVIES]

1849 [7th March] The Austrian and Hungarian Revolutions, 1848-1849 [II - The New Constitution]: [...] The Austrian Emperor, Archduke Franz Josef I [1848 (13th March)=&gt;1914 (29th June)] signs a new national constitution prepared for him by his Minister-President Prince Felix of Schwarzenberg [1848 (13th March)=&gt;d. 1852 (5th April) of natural causes]. It grants a number of electoral freedoms, but at the same time imposes an "indissoluble" Austrian hereditary monarchy and makes no special arrangements for the Hungarian half of the old Habsburg empire [continues at 28th July ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1849 [22nd-23rd March] The Battle of Novara: This battle is fought as part of the First Italian War of Independence [=1848 (23rd March)] between a Sardinian army under Wojciech Chrzanowski [Wikipedia biography] and an Austrian army under Josef Radetzky [Wikipedia...
The outcome is a decisive Austrian victory. [THREAD = THE SHAPING OF THE MODERN WORLD]

1849 [3rd April] The Frankfurt Assembly [III - The Kaiserdeputation]: [...] Continued from 1848 (27th November) Somewhat optimistically, given the extent of the opposition from the Habsburg establishment and Tsarist Russia, the assembly invites Friedrich Wilhelm IV of Prussia [1842 (23rd October) => 1861 (2nd January)] to become the first pan-Germanic Kaiser. In the event, however, Friedrich Wilhelm does not feel sufficiently certain of himself to accept this offer and the Austrians pull their delegates out of the Assembly on 5th April. The Assembly will duly stand down on 31st May. It will take another twenty years and a major war between Austria and Prussia [= 1866 (14th June)] for the Prussian nationalists to recover from this setback. The Hungarian issue will resurface to plague the Austrians at around the same time [= 1867 (1st March)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1849 [27th April] The British artillery officer Edward M. Boxer [no convenient biography] => 1855 (18th August) devises an improved time fuse and sets about improving the science of shrapnel [= 1864]. Around the same time deserted marshland on the Thames Estuary at Shoeburyness, Essex, is purchased for use as an artillery proving range, and plays an important part in the development of rifled breech-loading ordnance [= 1854]. [THREAD = WW1 ARTILLERY]

1849 [28th June] The Liverpool shipbrokers John Pilkington [no convenient biography] and Henry Wilson [no convenient biography] lease the barque Iowa to run the Liverpool-Eastern Seaboard routes, and advertise it under the livery of the White Star Line [= 1851 (22nd May)]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1849 [28th July] The Austrian and Hungarian Revolutions, 1848-1849 [III - The "Bach System”]; [...] Continued from 7th March] To help him implement his new centralist constitution, Prince Felix of Schwarzenberg [7th March => d.1852 (5th April) of natural causes] appoints a like-minded lawyer-politician Alexander von Bach [Wikipedia biography] as his Interior Minister. Bach's prisons fill quickly with political prisoners. This state of affairs will hold until further constitutional changes are introduced 18 years later to create the Austro-Hungarian Empire [= 1867 (1st March)]. [THREAD = THE SHAPING OF THE MODERN WORLD] 1849 [21st August] Walter Hunt [<= 1848 (10th August)] receives a further patent [U.S. Patent 6663] - read it at https://www.google.com/patents/US6663 on the Volition Repeating Rifle, in which a number of his rocket balls are stored in a tubular magazine fitted in the stock of the weapon and loaded using a lever action. The weapon will be produced in small numbers by Robbins and Lawrence [Wikipedia factsheet] of Windsor, VT, until 1852. [THREAD = WW1 SMALL ARMS]

1849 [7th December] The Prussian Eastern Railway: Plans are laid before the East Prussian Parliament for the Preussische Ostbahn a railway to be developed between Berlin and (by 15th August 1860) Kybartai in Lithuania, to run via Gdansk, Marienburg, and Kaliningrad, a total of 2200 kilometres. [THREAD = THE SHAPING OF THE MODERN WORLD]

1849 [25th December] The American gunsight Lewis Jennings [no convenient biography] patents [U.S. Patent 6973] A Subtly different action for the Volition Repeating Rifle [= <= 21st August] and produces a number of prototypes of the Jennings Rifle in both single and 20-shot repeating versions [continues at 1851 (26th August) ...]. [THREAD = WW1 SMALL ARMS]

1850 [... Continued from 1848 (Robert Mushet)] The German ironmasters Franz Lohage [Wikipedia biography] and Gustave Bremme [no convenient biography] take out patents for the production
of manganese-rich "mild steel" in a puddling furnace [= Puddelofen]. The process will be licensed into Britain at the Low Moor Ironworks, Bradford, the following year. Meanwhile at the Ebbw Vale Ironworks [1842<=1857 (?7th March)] the production engineer George Parry [no convenient biography=>1857 (?7th March)] devises the "cup-and-cone" arrangement as an aid to blast furnace economy. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1850 Automation, Control, and Artificial Intelligence [XXXVI - Industrial Computation (William Elliott and Sons)]: [Continued from 1840 (Faber)] The British optician and optical instrument maker William Elliott [Grace's Guide biography=>d. 1853] teams up with his two sons Frederick H. Elliott [Grace's Guide biography=>d. 1873 (18th January)] and Charles A. Elliott [Grace's Guide biography=>1870] to form William Elliott and Sons [Grace's Guide factsheet]. William Elliott will die in 1853 but his sons trade on as Elliott Brothers [=1870], and soon make a name for themselves fabricating components for mechanical, optical, and electro-mechanical technical devices [sub-thread continues at 1854 (The Farcots) ...]. [THREAD = WW1 CYBERNETICS, COMPUTATIONAL SCIENCE, AND FIRE CONTROL] [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1850 The Robert Napier Shipyard [1845 (9th January)<=1852] expands into the Govan New Yard. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1850 The British-born American entrepreneur Allan Pinkerton [Wikipedia biography=>1862] sets up the Pinkerton National Detective Agency. [THREAD = WW1 ESPIONAGE AND INTELLIGENCE]

1850 [date to follow] The Bibby Line [1840 (19th July)<=1856 (16th August)] enters into a joint venture with Vianna and Jones Shipping Agents to market the latter's ships Rattler and Osmanli [both built in 1846] under the name Liverpool and Mediterranean Steam Shipping Company. They also commission a series of new builds including the Lydia and the Arno [no convenient shipographies]. One of the new company's employees, a young apprentice named Frederick R. Leyland [Wikipedia biography=>1873], will in due course found his own line. [THREAD = THE SHAPING OF THE MODERN WORLD]


1850 A young Swedish chemist named Alfred Nobel [Wikipedia biography=>1853] starts a one-year placement with Théophile Pelouze [<=1838] in Paris, studying the latter's techniques of nitrating organic compounds. [THREAD = WW1 ARTILLERY]


1850 [28th February] The screwship SS City of Glasgow [Wikipedia shipography=>17th December] is launched at the Tod and Macgregor Shipyard [Grace's Guide Factsheet=>1865 (6th December)], Partick, initially for service in their own name. She will then be sold later in the year to William Inman [Wikipedia biography=>1865 (6th December)] of the Liverpool and Philadelphia Steamship Company, making her maiden voyage under her new flag between Liverpool and Philadelphia, PA, on 11th December. She is historically important because she is screw-propelled and iron built, allowing more space for payload. She also introduces the very low specification/low cost "steerage class". She, together with
480 passengers and crew, will disappear without a trace on or soon after 1st March 1854. [THREAD = THE SHAPING OF THE MODERN WORLD]

1850 (5th August) **The Australian Constitutions Act, 1850:** In passing this Act the British parliament authorises the separation of the Colony of Victoria from that of New South Wales, to take effect on 1st July 1850. [THREAD = THE SHAPING OF THE MODERN WORLD]

**ASIDE - VICTORIA AND NEW SOUTH WALES IN WW1:** Records of the contribution of these two colony-states to the WW1 war effort are presently [April 2014] being collated by Monash University [see the project website] and the State Library of New South Wales [see the project website], respectively.

1850 (9th September) **California, New Mexico [and Arizona]:** The U.S. government admits California as the 31st State and formally establishes the "New Mexico Territory", bringing the modern states of New Mexico, Arizona, and part of Colorado under its jurisdiction. Its capital is at Santa Fe. The territory will shortly acquire further lands in the Gadsden Purchase (=>1853 (30th December)). [THREAD = THE SHAPING OF THE MODERN WORLD]

1850 (4th October) **The Royal Westphalian Railway [I - Hamm to Paderborn]:** The first trains run on the first instalment of the Royal Westphalian Railway between Hamm and Paderborn. [THREAD = THE SHAPING OF THE MODERN WORLD]

1851 **The Development of Photography [XII - Archer]:** [Continued from 1840 (20th February)] The British chemist Frederick Scott Archer [Wikipedia biography] devises the "wet plate collodion" photographic process, whereby the photosensitive emulsion is mixed with liquid gelatin and applied as a thin film to a glass backing plate. The system produces a transparent negative image, requires only seconds to expose, is cheaper than both the Daguerrotype (<=1837) and the calotype (<=1840), and can produce as many prints as desired from a single negative. It is, however, best suited to studio use because the emulsion needs to be prepared only a few minutes before use. [sub-thread continues at 1867 (Muybridge) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1851 **The New York and Mississippi Valley Printing Telegraph Company** (to be renamed the **Western Union Telegraph Company** in 1856) is incorporated to exploit both Morse (<=1835) and House (<=1846) telegraph technologies, and by the following year an intense rivalry has developed between it and the many other companies springing up. Indeed, there are now so many companies involved, that there follows a period of legal squabbling over patent rights. Fortunately for the future Western Union, the US Supreme Court will declare in 1852 in Morse's, and therefore Western Union's, favour. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1851 After four years in development, the **Patent Arms Manufacturing Company** [<=1847 (4th January)] markets the **Colt 1851 Navy Revolver** [Wikipedia specifications and images] (1st May), a .36" calibre six-shooter. Its 22-year production run will produce around a quarter of a million units. Around the same time **Edward Maynard** [<=1845] experiments with a metallic cartridge rifle, finding that in field use the ability to collect and reload spent cartridge cases is cost-effective and well-liked. Around the same time **Claude-Étienne Minié** [<=1847] brings out his **Pattern 1851 Minié Rifle** [Wikipedia factsheet], a 17.8 mm (=.702") muzzle-loading rifle with percussion cap ignition. The weapon will sell in quantity in its own right and then start to appear in derivative form in the U.S. as the **Springfield Model 1855** (=>1855), in Britain as the **Enfield 1853** (=>1853), and in Austria as the **Lorenz Model 1854** (=>1854). [THREAD = WW1 SMALL ARMS]
1851 The German psychologist Hermann von Helmholtz [Wikipedia biography] publishes "Handbuch der Physiologischen Optik" [In English (1924) as "Handbook of Physiological Optics"] [full text online]. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1851 The Belgian army officer Captain Toussaint Fafchamps [Wikipedia biography] and the gunsmith Joseph Montigny [no safe biography] collaborate to build a prototype 50-barrel needle-gun [<=1841]. [THREAD = THE WW1 MACHINE GUN]

1851 The Krupp Company [1847<=1st May] corners the expanding market in single-casting railway wheels. Around the same time J. and G. Thomson [1847<=1854 (27th June)] opens a shipyard at Cessnock, Glasgow, to be serviced by the company's existing Clydebank Foundry [<=1847]. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1851 [1st May] The 1851 World Fair: "The Great Exhibition" [see full list of exhibitors] opens in Hyde Park, London, as a showcase for the "works of industry of all nations". Colt attends with his 1851 Navy pistol [<=above], the Krupp Company [preceding entry<=1860] exhibits its top-of-the-range steel castings [<=1851, above], David Davidson [<=1848] exhibits his telescopically sighted weapons, Siemens and Halske shows their dial telegraph [<=1847 (12th October)] and Tito Gonnella his planimeter [<=1824]. Demonstrates a rudimentary fax machine. Amongst the visitors, James Clerk Maxwell [Wikipedia biography=>1868] will later explain that the various planimeter exhibits set him wondering how a similar mechanism might help him construct an electromechanical "integrator". [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1851 [22nd May/9th August] The Australian Gold Rush: The discovery of gold is confirmed at Bathurst, New South Wales; then on 9th August at Ballarat, Victoria. These discoveries create a surge in demand for ships to carry emigrant gold prospectors. The White Star Line [1849 (28th June)<=1855 (9th May)] meets much of this demand. [THREAD = THE SHAPING OF THE MODERN WORLD]

1851 [17th July] The first patients are admitted to the Colney Hatch Lunatic Asylum at Friern Barnet on the northern suburbs of London. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]


1851 [24th September] The Vale of Neath Railway [II - First Opening]: [... Continued from 1846 (3rd August) The first section of the Vale of Neath Railway is opened from Neath to Aberdare via Hirwaun [continues at 1853 (2nd November) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1852 Seeing is Believing [IV - Early Moving Images (Claudet)]: [Continued from 1849 (Plateau)] In an attempt to overcome the camera-speed problem of image production [...
the French photographer Antoine Claudet [Wikipedia biography] devises equipment to take four successive images on the four quadrants of a rapidly rotating slide [sub-thread continues at 1860 (De Neuville) ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1852 Having trained at the Robert Napier Shipyard at Govan [1845 (9th January)<>1858], the engineer John Elder [Wikipedia biography<>1853] now joins Randolph, Elliott, and Company [no convenient factsheet] to help develop a marine engineering works a mile further up the Clyde River at Tradeston, Glasgow. The new works is duly renamed Randolph, Elder, and Company [=1853]. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1852 The American inventor Moses G. Farmer [Wikipedia biography] experiments with methods of "duplexing" telegraph lines, that is to say, methods of enabling two messages to travel along it simultaneously, in either the same or opposite directions, but without mutual interference. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1852 The American gunsmiths Horace Smith [1851 (26th August)<=>1857] and Daniel B. Wesson [Wikipedia biography] acquire the rights to Walter Hunt's rocket ball technology [=1848], and form the Smith and Wesson Company to work on the "Volcanics", a range of repeating pistols, carbines, and rifles. Around the same time the British gunsmith-and-artist Robert Taylor Pritchett [Wikipedia biography] designs a seven-grooved rifling pattern. [THREAD = WW1 SMALL ARMS]

1852 [8th May] The Second London Protocol: This treaty between Austria France, Prussia, Russia, and Britain brings the First Schleswig War [=1848 (24th March)] to an end. The main provision is that all parties recognise the integrity of the Danish Federation and leave the disputed duchies of Schleswig, Holstein, and Lauenburg in personal union with the king of Denmark. [THREAD = THE SHAPING OF THE MODERN WORLD]

1852 [17th May] A new 700-seat entertainment venue named Canterbury Hall [Wikipedia factsheet><=1856 (27th April) open at 143 Westminster Bridge Road, Lambeth, specialising in an up-market music-and-dinner clientele. So successful is it that it will soon be rivalled (the Alhambra in Leicester Square open on 18th March 1854 and by 1875 London will boast 375 such halls). Its own capacity will be more than doubled in 1856. [THREAD = THE SHAPING OF THE MODERN WORLD]


ASIDE - NEW ZEALAND IN WW1: Some 100,000 New Zealanders will serve in WW1, suffering 16,697 dead and 41,317 wounded (not counting further deaths amongst the wounded after the war). They will take part in the Battles of Gallipoli [=1915 (25th April)], the Somme [=1916 (15th June)], Messines [=1917 (7th June)], and Passchendaele [=1917 (31st July)].

1852 [18th August] After an early career dogged by groundings and breakdowns the SS Great Britain [1845 (26th July)<=>1882] departs Liverpool en route for Melbourne, Australia. She will continue to ply this route for the next 30 years. [THREAD = THE SHAPING OF THE MODERN WORLD]
1852 [2nd December] Having contrived a national referendum in November on whether France should have another emperor named Napoléon, and having received a thumping 97% “Oui” vote, Louis Napoléon Bonaparte [<=1848 (10th December)] becomes Napoléon III of the Second French Empire [=1859 (4th June)]. The new emperor will spend the next 18 years rebuilding France’s international prestige, seeking new colonies [e.g.=1858 (1st September)], turning Paris into a city of style and sophistication [=1853 (22nd June)], stimulating French industry [e.g.=1860 (The Bourges Atelier)], engineering [e.g.=1858 (15th December); 1873 (Jean-Joseph Farcot)], medical research [e.g.=1859 (Louis-Jules Béhiers)], scientific research [e.g.=1857 (26th January)], military R. & D. [e.g.=1859 (Joseph Montigny)], and banking [1880-November]<=1863 (6th July)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** IMPORTANT WW1 WEAPON **********
********** THE NAVAL MINE "HORN" FUSE **********

1853 Alfred Nobel [1850<=1863] returns to his father’s munitions works in St. Petersburg, Russia, where he collaborates with the Russia-based electrical engineer Moritz von Jacobi [Wikipedia biography=>1855 (9th June)] on a project to produce naval mines for the Imperial Russian Ministry of Defence. [THREAD = THE WW1 SURFACE NAVIES]

**ASIDE - THE HORN DETONATOR:** Nobel and Sons’ main invention is a means of detonating "sown" underwater mines when brushed against by passing vessels. They do this by fitting the body of the mine with a crushable lead horn containing a priming compound of potassium chlorate (an oxygen-rich molecule with an effect not unlike saltpetre) and sugar and a glass vial of sulphuric acid. When the lead horn is crushed the sulphuric acid is released to mix with the potassium chlorate/sugar mix, which then reacts violently, detonating the mine’s main charge a fraction of a second later.

********** STEAM GOES LONG-HAUL **********

1853 John Elder [1852<=1869 (17th November)] is awarded a patent on a "compound engine", that is to say, a steam engine in which the steam expands [i.e., delivers its energy] twice on its journey from boiler to flue, the first time in a small "high pressure cylinder" fed directly from the boiler, and the second time in a larger "low pressure cylinder" fed by the exhaust steam from the first. Since steam is coal, of course, and since bunkerage takes up a lot of space, the new Randolph, Elder, and Company [1852<=1856 (15th March)] engines give ships greater range for a given size1. Among the first vessels to receive the new engines is the SS Brandon [no convenient shipography=>1854 (?7th August)]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1**ASIDE:** Steam has made little impact on the Pacific shipping routes precisely because of the bunkerage problem. This will now change as increasingly frugal power units become available.

1853 [... Continued from 1847 (12th October)] The Siemens and Halske Company [1851 (1st May)<=1858 (1st October)] begins a two-year project to install a telegraph network between key cities in Imperial Russia. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1853 The Royal Small Arms Factory [<=1816], Enfield, increases production to cope with the increased demands of the Crimean War. It also updates its machine tools and introduces a more efficient mass production system. Its main product at this time is the Pattern 1853 Enfield Rifle [Wikipedia factsheet], a .577" calibre muzzle loading rifle. Around the same time a young German gunsmith named Franz Mauser [no convenient biography] studies American production methods at the Remington and Sons Factory [1816<=1879]. Also around this time the British gunsmiths Philip and James Webley [no convenient biography] patent a single-action1 cap and ball revolver. [THREAD = WW1 SMALL ARMS]
1853 [1st January] **Samuel Colt** [1851 (1st May)<=1873] opens a workshop in Bessborough Place, Vauxhall, London [just across the Thames from the modern MI5 Headquarters]. Business will be brisk during the Crimean War, but the ensuing peace will result in Colt ceasing production in Britain in December 1856. [THREAD = WW1 SMALL ARMS]

1853 [16th April] **The Bombay-Thane Railway**: The line is completed between Bombay and Thane, making it the first operational element of the Indian Railway system. [THREAD = THE SHAPING OF THE MODERN WORLD]

1853 [7th May] The paddleship **SS Atrato** [Wikipedia shipography] is launched at **Caird and Company** [Wikipedia factsheet] Greenock, for service with the **Royal Mail Steam Packet Company**. At 3184 tons she is presently the world's largest passenger ship. [THREAD = THE SHAPING OF THE MODERN WORLD]

1853 [15th June] **The Vale of Neath Railway [III - Neath to Swansea]**: [...] Continued from 1851 (24th September) The second section of the Vale of Neath Railway [<=1846 (3rd August)] is opened from Neath to Swansea [continues at 2nd November ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1853 [21st June] **The Royal Westphalian Railway [II - Paderborn to Warburg]**: [...] Continued from 1850 (4th October) The Royal Westphalian Railway is now extended eastward from Paderborn to Warburg [map, etc.] [continues at 1855 (7th May) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]


1853 [8th October] **The Russo-Turkish War, 1853-1854**: This war is fought between the Russian and Ottoman Empires following a diplomatic spat between Russia and the new French Empire. At issue is a French insistence that Roman Catholicism rather than Eastern Orthodoxy should be the permitted version of Christianity with the otherwise Muslim Ottoman Empire. The French have therefore sent a fleet into the Dardanelles and the Russians have replied by sending armies into the Ottoman territories of Moldavia and Wallachia. There will be neither military nor diplomatic breakthrough over the winter, and the issue will form a *casus belli ante* to the broader Crimean War [=>1854 (28th March)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1853 [2nd November] **The Vale of Neath Railway [IV - Hirwaun to Merthyr Tydfil]**: [...] Continued from 15th June The third section of the Vale of Neath Railway [<=1846 (3rd August)] is opened from Hirwaun to Merthyr Tydfil. [THREAD = THE SHAPING OF THE MODERN WORLD]

1853 [30th November] **The Battle of Sinope**: This battle is fought as part of the Russo-Turkish War [<=8th October] between an Imperial Russian naval task force under Pavel Nakhimov [Wikipedia biography] and an Ottoman Navy fleet under Osman Pasha [no convenient biography]. Heavily outgunned, the outcome is a crushing defeat for the Ottomans. The battle is noteworthy in the present context as a historical marker for sounding the death knell for wooden warships. [THREAD = THE WW1 SURFACE NAVIES]
1853 [30th December] The Gadsden Purchase: Mexico agrees to sell the U.S. a tract of land across southern Arizona and south-western New Mexico, thereby simplifying the U.S.-Mexico border to its present position. [THREAD = THE SHAPING OF THE MODERN WORLD]

1854 Automation, Control, and Artificial Intelligence [XXXVII - Control Technology (The Farcots)]: [Continued from 1850 (William Elliott and Sons)] The (father and son) French engineers Marie-Joseph Farcot [Wikipedia biography] and Jean-Joseph Farcot [Grace's Guide biography] obtain a patent on an improved centrifugal governor [<=1787 (Thomas Mead, and the ASIDES)] [sub-thread continues at 1854 (5th July) ...]. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL] [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1854 A young Royal Navy technician named Nathaniel Barnaby [Wikipedia biography] joins the Department of Naval Construction. One of his first tasks is to assist the team designing the first ironclad British warship, HMS Warrior [<=1861 (24th October)]. Around the same time the French navy begins construction work on its five-ship Dévastation-class floating batteries. [THREAD = THE WW1 SURFACE NAVIES]

1854 The British traveller-author George Borrow [Wikipedia biography] undertakes a journey of discovery through Wales, from Wrexham via Betws-y-Coed to Anglesey, and then southward to the industrial towns of South Wales. He will publish his account in 1862 under the title "Wild Wales". His comments on Merthyr Tydfil are slightly more upbeat than those of Charles Cliffe a few years before [<=1848], thus ...

"I saw enormous furnaces. I saw streams of molten metal. I saw a long ductile piece of red-hot iron being operated upon. I saw millions of sparks flying about. I saw an immense wheel impelled round with frightful velocity by a steam engine of some two hundred and forty horse power. I heard all kinds of dreadful sounds. The general effect was stunning. [...] All the hills around the town, some of which are very high, have a scorched and blackened look" (Op. cit., p504). [THREAD = THE WW1 WORKING CLASS SOLDIER]

1854 John A. Dahlgren [<=1849] designs a range of rifled and smoothbore muzzle-loading "Dahlgren Guns" for naval use. Remembering the barrel explosion he had seen five years previously he gives these weapons an elongated "soda bottle" shape for maximum strength at the chamber end [image]. These are immediately put into volume production in a range of calibres, but a further barrel failure in 1862 led to them being used at half charge thereafter. At around the same time the British engineer [Sir] William Armstrong [Wikipedia biography] proposes a novel design for artillery, namely a rifled breech-loader [Wikipedia technical specifications and images]. By 1858 the "Armstrong Gun" will be available for evaluation on field, naval, and siege mountings, and in a range of calibres. [THREADS = WW1 ARTILLERY and THE WW1 SURFACE NAVIES]

1854 The British chemist [Sir] Frederick Abel [Wikipedia biography] is appointed resident chemist at the Royal Arsenal, Woolwich. He has a new chemistry laboratory erected by the name "Building 20", in which to conduct the search for potential "smokeless" propellants, and arranges for the Royal Gunpowder Mills, Waltham Abbey, to expands its interests to include the new nitrated explosives. Around the same time the Austrian gunsmith Joseph Lorenz [no convenient biography] produces the Lorenz Rifle [Wikipedia factsheet], a .54” calibre rifled muzzle-loader which will be widely used not just by the Austrian military but also by both sides in the American Civil War [=>1861 (17th April)]. [THREAD = WW1 SMALL ARMS]
1854 [24th February] Sir Stafford Northcote, 1st Baronet [Wikipedia biography] and Sir Charles Trevelyan, 1st Baronet [Wikipedia biography] publish a report entitled "On the Organisation of the Permanent Civil Service", in which they recommend recruitment by qualifying examination. The recommendation will be implemented in 1855, and the examination papers - because they test specific arithmetic skills and rote-learned general knowledge - are soon serviced by "crammers", handy revision texts requiring little more than rote-learning. [THREAD = THE SHAPING OF THE MODERN WORLD]


1854 [24th March] The British open a telegraph line between Agra and Calcutta (800 miles), and get to work extending it to Bombay, Peshawa, and Madras. The engineer in charge is [Sir]1856 William O'Shaughnessy [Wikipedia biography], of the East India Company. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

Research Issue: Amin (1999/2002 online) explains how the introduction of western postal and telegraph services in the sub-continent gave the Indians a new sense of their own political identity, thereby elevating humble cable and keys to being one of the causes of the Indian Mutiny (<=1857). The rebellious Sepoys certainly fully appreciated the telegraph's tactical significance, and regularly targeted telegraph offices and the lines themselves. This in turn prompted acts of bravery such as that of the 18-year old Delhi telegraph operator George Brendish, who, with his officer killed, remained at his equipment keying warnings until the last possible moment [WAR ART = John Graham's (2002) "The Last Post" at http://home.alphalink.com.au/~agilbert/paintin1.html]. Woods (1974) dates the first Indian field telegraph (that is to say, the deployment of equipment mobile enough to stay close to the action and deliver real time tactical support) to 1858, when a wiring party accompanied the British relief column on its way up to Lucknow.

1854 [28th March] The Crimean War: Following a short dispute superficially over the status of Orthodox Christians in the Ottoman Empire [= modern Turkey, plus Ottoman possessions in the Middle East], Britain and France declare war on Russia in support of the Ottomans. The war is conveniently considered under the following headings ...

The Kalamita Bay Landings, 1854; The Battle of the Alma, 1854; The Battle of Balaclava, 1854; The Battle of Inkerman, 1854; The Baltic Blockade, 1854-1855

The overall outcome is an Allied victory. The war is noteworthy in the present context for being the first (a) to use a light railway tactical supply system, (b) to use the electronic telegraph, and (c) to permit, nay encourage, daily war reporting [=>14th September (William H. Russell) and 1855 (Roger Fenton)]. It also famously exposes inadequacies in administration, training, and equipment in military medicine [e.g.=>21st October], logistics, and staff work. The war will end with the Treaty of Paris [=>1856 (30th March)]. [THREAD = THE SHAPING OF THE MODERN WORLD]


1854 [9th May] Having served the Australia routes well during the gold rush years, the White Star Line [1851 (22nd May)<=1867 (21st October)] is awarded the government contract to carry mail between Liverpool and Melbourne, Australia. Thus contracted, their ships are entitled to the prefix RMS [= Royal Mail Ship], rather than SS [= steamship] Or PS [= paddle steamer]. [THREAD = THE SHAPING OF THE MODERN WORLD]
1854 [26th June] Construction work begins at Millwall, London, on the **SS Great Eastern** [Wikipedia shipography=>1860 (17th June)], a large iron side-paddle/screw steam/sail hybrid passenger liner. At 32,000 tons displacement and 692 feet in length she will for nearly half a century be the largest ship ever built. [THREAD = THE SHAPING OF THE MODERN WORLD]

1854 [27th June] **SS Jura** [no convenient shipography] is launched at the **J. and G. Thomson Shipyard** [1851<=>1864 (10th May)], Govan, for service with the **Cunard Line** [1839 (??th May)<=>1867 (20th March)]. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1854 [5th July] **Automation, Control, and Artificial Intelligence [XXXVIII - The Turk (destroyed by fire)]:** [Continued from 1854 (The Farcots)] A fire at the Chinese Museum, Philadelphia, destroys *The Turk* (we may safely dismiss the story that it was heard crying "Check! Check!" as its end drew nigh) [sub-thread continues at 1857 (January) ...]. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

1854 [5th July] **The Newport Docks [III - Authorisation to extend]:** [... Continued from 1842 (10th June)] Parliament approves plans to extend Newport Town Dock [continues 1858 (2nd March) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1854 [7th August] **Robert Barclay and Curle**, Glasgow, deliver the **SS Brandon** [<=1853] for service with the **London and Limerick Steam Navigation Company**. It is the first vessel to be fitted with a Randolph-Elder **compound engine** [<=1853]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1854 [14th September] **The Kalamita Bay Landings:** The main body of the Franco-British expeditionary force begins to arrive in the Crimea, anchoring in Kalamita Bay on the west of the peninsula and establishing a bridgehead at the port of Balaclava. The campaigns which follow are the first to be fought in the age of the electric telegraph, and give the new technology a thorough baptism of fire. The Crimean telegraph has two distinct aspects, namely (a) an eight-station theatre telegraph system around Balaclava, and (b) a submarine cable link to Varna, 340 miles away across the Black Sea (on the coast of what is today Bulgaria). The theatre system will be laid by a cable-laying party under **George M. Stopford** [no convenient biography] of the Royal Engineers, and is ready for service after only a few weeks. The submarine cable will follow in April 1855, and, for the first time in the history of warfare, puts field commanders in direct and nearly immediate touch with their respective war departments. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

**ASIDE:** One of Lieutenant Stopford's two cable wagons, and other equipment from this period, is on display in the Royal Signals Museum, Blandford, Dorset [museum website].

********** "THE FIRST & GREATEST WAR CORRESPONDENT"! **********

1854 [14th September or hereabouts] *The Times* send [Sir]1895 **William H. Russell** [Wikipedia biography=>25th October] as war correspondent to the Crimea. He quickly "embeds" himself with the rank and file and his despatches gain him a reputation for searching out command "fool" and War Office "oversights". [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1**ASIDE:** This description from his headstone. In fact the full inscription continues with the three words "OF THE TIMES", so no world-historic claim was being made.

********** RIFLES DEFEAT MUSKETS **********

1854 [20th September] **The Battle of the Alma:** This battle is fought as part of the Crimean War [<=28th March] between a French/British/Ottoman army under **FitzRoy Somerset, 1st**
Baron Raglan [henceforth simply "Lord Raglan"] and Jacques St. Arnaud advancing southward from their landing beaches at Kalamita Bay to capture the port/naval base at Sevastopol, and a Russian army under Aleksandr Menshikov. Menshikov's troops are well dug in across the Allies' line of advance atop the steep southern bank of the River Alma. These prepared positions, plus the difficulty actually getting across the river in the first place, present the attackers with a theoretically impossible task. However as the battle some otherwise bad tactical decisions on the part of the Allies turn to their advantage and the Russian line crumbles in a number of key places. This, combined with the fact that the rifle-armed Allies significantly outrange the musket-armed Russians, delivers an against-the-odds Allied victory. [THREAD = THE SHAPING OF THE MODERN WORLD]

1854 [4th October] Impressed by the French Dévastation-class floating batteries, the Royal Navy begins construction work on a five-ship programme of Aetna-class vessels. Each ship is designed to deliver a number (typically 14 or 16) of 68-pounder smoothbore cannons for the short-range bombardment of the Russian coastal defences on the Black Sea. The war will be over before they can get to the Black Sea, and there is no record of any shots being fired in anger. One of the class - HMS Trusty - will be used for target practice between 1859 and 1861. [THREAD = THE WW1 SURFACE NAVIES]

ASIDE: At the Great Review one commentator describes the public reaction to this class of vessel as follows: "The most curiosity was excited by the [... floating batteries ...] - four low, flat, squat, black, unwieldy constructions [...] more brilliantly 'dressed' that any other vessels in the harbour [but in vain, for] their ugliness is irredeemable; garlands of roses would not give grace to these hippopotami" (The Times, 24th April 1856, and online).

1854 [21st October] The British nurse-philanthropist Florence Nightingale and a staff of 38 volunteer nurses set sail for the Crimea to establish a base hospital at Scutari/Üsküdar, where they work alongside army surgeons caring for the sick and wounded. Her work is efficient enough but her enduring fame as the "Lady of the Lamp" is largely thanks to some rather fulsome newspaper coverage and a mention in Longfellow's (1857) poem "Santa Filomena". [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1854 [25th October] The Battle of Balaclava: This battle is fought as part of the Crimean War between a French/British/Ottoman expeditionary army under Lord Raglan and Francois Canrobert, the Russian garrison at Sevastopol under Pavel Liprandi, and the Russian Army of the Crimea under Aleksandr Menshikov. After a month spent building up their strength the Allies have created a fortress/supply port of their own at Balaclava, some eight miles south of the main Russian stronghold at Sevastopol, and separated from it by the heights of the Chersonese Peninsula. The Allies have been positioning themselves for a south-to-north land assault on Sevastopol, but the Russians are trying to neutralise this threat with a pre-emptive attack on Balaclava. The British lose control of their outer ring of defences but the port itself holds out. The battle is noteworthy in the present context (a) for a spirited performance by the 93rd (Sutherland Highlanders) Regiment in forming the famous "thin red line" to hold off a Russian cavalry attack, and (b) for the even more famous Charge of the Light Brigade, a textbook example of military confusion. [Sir] Godfrey Morgan takes part in the charge and both he and his horse Sir Briggs...
survive. The relative importance of artillery at this point in time is clearly to be seen in the statistic that approximately one man in five of those present is an artilleryman (Terraine, 1982). The battle is additionally noteworthy in the present context for the presence at Lord Raglan's headquarters of The Times' war correspondent, Russell [<=14th September], who later confides to his editor Delane [1847 (28th July)<=1877 (15th October)] that he considers the Commander-in-Chief "no more fit" than he is himself "to cope with any leader of strategic skill" (quoted in Knightley, 1982, p11). [THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1854 [5th November] The Battle of Inkerman: This battle is fought as part of the Crimean War [<=28th March] between a French/British/Ottoman expeditionary army under Lord Raglan [<=20th September] and François Canrobert [1854 (25th October)<=1859 (4th June)] and a Russian army under Aleksandr Menshikov [<=25th October]. Inkerman is situated on the northern shore of the Chersonese Peninsular, about five miles upstream from Sevastopol itself, and is presently anchoring the northern end of the Allied siege line. Menshikov has therefore prepared a surprise break-out attack by Fyodor I. Soymonov [no convenient biography= killed this day] against British fortifications under [Sir]1855 John L. Pennefather [Wikipedia biography] atop the heights known as "Home Hill" [coordinates], where they initially outnumber the defenders by 5:1. Attack follows counter-attack all day as reserve units become available to both sides but again the accuracy of the new Enfield rifles provides a winning edge and the eventual outcome is an Allied tactical victory with disproportionate Russian casualties. Strategically, however, the battle has to be scored as a draw because the surviving Russians manage to withdraw into the main Sevastopol fortress there to sit the war out for another two years. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** "AN ALL-SMELLING NOSE" **********

1854 [??th December] His apprenticeship completed, Edward Harland [1846<=1858 (1st November)] is taken on as manager at the Robert Hickson Shipyard, Queen's Island, Belfast, where he soon establishes a reputation for hawk-eyed quality control. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1854 [11th December] The surgeon-academic Nikolai Pirogov [<=1846 (15th December)] arrives in the Crimea from Saint Petersburg to help organise the field surgery services available to the Russian forces there. Among his innovations are the use of plaster-castings for setting broken bones, anaesthesis in the field, and a five-category variant of triage [cf. 1797 (Larrey)]. His efforts are complemented by a volunteer nursing corps sponsored by Grand Duchess Elena Pavlovna [Wikipedia biography]. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1855 Charged with the bombardment of the Russian city of Taganrog on the Black Sea, the Royal Navy's Cowper Coles [Wikipedia biography=1862 (29th April)] has a heavy cannon fitted to a makeshift raft, proudly named Lady Nancy [image at http://www.amazon.co.uk/RUSSIA-Lady-Nancy-attacking-Taganrog/dp/B0030MY2B8]. [THREAD = THE WW1 SURFACE NAVIES]

1855 The Syracuse, NY, telescope maker William Malcolm [no convenient biography] produces a range of advanced range of telescopic sights [=1832 (Davidson) and 1840 (Morgan James)] in magnifications from 3x to 20x, and with accurate elevation and windage adjusting screws. Around the same time the Smith and Wesson Company [=1852=1857] is refinanced by Oliver Winchester [Wikipedia biography=1857 (25th April)] under the name Volcanic Repeating Arms Company. Smith and Wesson resign shortly afterwards to form a second Smith and Wesson Company, concentrating on pistol production, leaving Winchester to develop the repeating rifle business. Around the same time James Burton [=1848] has his hollow-based slug accepted by the U.S. Army. The
Springfield Armoury produces the Model 1855 Springfield Rifled Musket, a .58" calibre rifled musket chambered for the Burton-Minié slug and using the Maynard tape primer system. Burton also accepts a five-year contract to help modernise the Royal Small Arms Factory at Enfield. [THREAD = WW1 SMALL ARMS]

**ASIDE:** Malcolm’s scopes were “achromatic”, that is to say, their lenses were so arranged that they compensated for the differential refraction of the different colours of the light spectrum, preventing a coloured “halo” around the target and thereby making it easier to sight on.

**TELLING IT LIKE IT IS:** Here is a contemporary account of what happens to anyone unlucky enough to be hit by a Minié slug: “When a minie ball struck a bone it almost never failed to fracture and shatter the contiguous bony structure, and it was rarely that only a round perforation, the size of the bullet, resulted” (Charles Johnson, Military Surgeon, cited in Commager, 1950, p196).

1855 The British businessman [Henry Bessemer](https://en.wikipedia.org/wiki/Henry_Bessemer) patents the "Bessemer Converter", a combined pouring crucible and reaction vessel in which an air-blasted coke furnace (a) melts a pig-iron load, (b) chemically purifies the resulting melt, and finally (c) re-carbonates it as high quality steel. A typical converter will stand some 50 feet high, weigh several hundred tons on its swivels, and hold up to 30 tons of charge at a time. In due course the Bessemer system will be supplemented by the Siemens-Martin open hearth system.[THREAD = THE SHAPING OF THE MODERN WORLD]

**ASIDE:** A Bessemer Converter can be inspected at the Kelham Island Industrial Heritage Museum, Sheffield [museum website].

1855 [8th March] Acting on a War Department commission the society photographer [Roger Fenton](https://en.wikipedia.org/wiki/Roger_Fenton) lands at Balaklava and begins a 15-week photographic tour of the Crimea battlefields, becoming thereby history’s first official war photographer. His output will later be criticised (Knightley, 1982) as systematically avoiding the darker side of war. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1855 [17th January] Having re-applied his experience with telescopic sights to the problems of targeting artillery pieces, [David Davidson](<=1848) patents a two-scope arrangement intended to reposition a gun accurately after firing. One of the two scopes is fixed to the gun itself and is therefore subject to recoil, and other - the "detached collimator" - is fixed on a frame a few feet away and therefore remains sighted on the intended target. When the gun fires it is simply re-sighted against the fixed instrument before firing again [for image and detailed procedures for use, see Roberts (2010 online, p5)]. [THREAD = WW1 ARTILLERY]

1855 [29th January] Parliament begins to debate the disbandment of the Board of Ordnance, leaving the Royal Artillery to report directly to the War Office. [THREAD = WW1 ARTILLERY]

1855 [2nd March] Upon the death of [Nicholas I of Russia](<1830 (29th November)) his throne passes to his son [Alexander II of Russia](=>1863 (7th January)). [THREAD = THE SHAPING OF THE MODERN WORLD]

1855 [5th May/7th July] The screw-propelled SS Hammonia and her sister ship SS Borussia are launched at Caird and Company, Greenock, for service with the Hamburg-America Line. [SESSION = THE SHAPING OF THE MODERN WORLD]

********** THE MARINE MINEFIELD IS BORN **********

1855 [9th June-9th August] The Baltic Blockade [II - Kronstadt and Viapori/Sveaborg]: [... Continued from 1854 (11th March)]. These battles take place as part of the Baltic Campaign of the Crimean War [=1854 (28th March)] between a British/French naval taskforce now under Richard S. Dundas [Wikipedia biography] and Charles Penaud [Wikipedia biography] and the Finnish/Russian coastal forts defending the approaches to Helsinki and St. Petersburg. They are noteworthy in the present context for the effectiveness of the Russian underwater mines, particularly the chemical contact mines developed by Moritz von Jacobi [=1853] at Immanuel Nobel's [Wikipedia biography] at his St. Petersburg factory. [THREAD = THE SHAPING OF THE MODERN WORLD]

1 Aside: The combination of minefield and shore battery is particularly difficult to deal with because the ships capable of engaging the shore battery on even terms are too valuable to risk in the minefield before it has been swept, and the smaller minesweeping vessels are too lightly armoured to expose to sustained artillery fire.

1855 [18th August] The British Army formally accepts the Boxer Time Fuse [1849 (27th April)]=>1860 (William Armstrong)] into operational service. [THREAD = WW1 ARTILLERY]

1855 [4th December] Upon the death of the Austrian gunsmith Leopold Werndl [Wikipedia biography] the family business passes to his son Josef Werndl [Wikipedia biography] [=1864 (16th April)]. [THREAD = WW1 SMALL ARMS]

********** MAGIC GOES TO WAR **********

********** MAGIC GOES TO WAR **********

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1856 Belief Systems [XXVI - Superstition, Witchcraft, and Magic (Robert-Houdin Sent to War)]: [Continued from 1845 (3rd July)]. Having retired in 1852 Robert-Houdin [1845 (3rd July)]=>1888 (Méliès)] suddenly receives a summons from the French government to help stem an Islamic insurgency in Algeria. Much of the popular appeal of the insurgents comes from their use of tribal magic to legitimise their grievances. Robert-Houdin is sent to perform a number of anything-you-can-do-we-can-do-better tricks to reinforce their colonial rights [full story online at http://www.rense.com/general81/rfr.htm, or in Steinmeyer (2003: Chapter 7)] [sub-thread continues at 1858 ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1856 The Birkenhead shipbuilders William Laird and Company [modern corporate website] relocate to a new and larger docking facility at Tranmere, a mile or so to the south of their original yard. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1856 The U.S. Army artillery officer Henry J. Hunt [Wikipedia biography] heads up a three-man committee charged with compiling a manual of field artillery best practice [continues 1861 ...]. [THREAD = WW1 ARTILLERY]

1856 The British Army's Corps of Engineers [=1717] becomes the Corps of Royal Engineers. [THREAD = WW1 MILITARY ENGINEERING]

1856 The American army surgeon Albert J. Myer [Wikipedia biography] draws on his civilian experience teaching sign language to the deaf to devise a one-flag [at night, one lantern] system of line-of-sight signalling. The system will be accepted for field testing in 1859 and duly approved. [=1860 (21st June)] [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1856 [1st January] The former British penal colony of Van Diemen's Land is granted self-government as the colony-state of Tasmania [=1901 (1st January)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

Aside - Tasmania in WW1: Early Tasmanian volunteers were recruited along with others from South Australia and Western Australia into the 12th Battalion of the Australian Imperial Force. They arrived in Egypt on 2nd December 1914 and then took part in the Gallipoli Campaign [=1915 (25th April)] and the Battles of the Somme [=1916 (1st July)], Passchendaele [=1917 (31st July)], and Amiens [=1918 (8th August)]. Later volunteers were recruited into the 40th Battalion and fought in the Battles of Messines [=1917 (7th June)], Broodseinde Ridge [=1917 (4th October)], and Amiens [=1918 (8th August)]. Records of the contribution of this colony-state to the WW1 war effort are presently being collated by the University of Tasmania [see the project website].

1856 [15th March] Randolph, Elder, and Company [=1853<=1858] patent a V-arrangement version of their compound engine which become known as a "compound inverted" engine. One of the first installations is in the SS Inca [no convenient shipography], launched this year at Caird and Company [=1855 (5th May)<=1857 (23rd June)], Greenock, for service with the Pacific Steam Navigation Company [Wikipedia factsheet]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1856 [30th March] The 1856 Treaty of Paris: With the signing of this treaty, the Crimean War is officially ended. The treaty provides for the Black Sea to be declared neutral territory and closed to warships, and generally restricts Russian influence in the Balkan states. [THREAD = THE SHAPING OF THE MODERN WORLD]

War Art: Check out Édouard Dubufe's (1856) "Le Congrès de Paris".

1856 [4th April] The newly fitted out SS Borussia [=1855 (5th May)] arrives amidst some fanfair at Hamburg, there to prepare for her maiden voyage to New York City on 6th June. It will be a record-breaking trip, securing the Hamburg-America Line [=1855 (5th May)<=1857 (23rd June)] Valuable mail, freight, and passenger contracts. [THREAD = THE SHAPING OF THE MODERN WORLD]

1856 [23rd April] With hostilities in the Crimea at an end, the Royal Navy hosts a major celebratory fleet review in the presence of Queen Victoria [=1840 (21st November)<=19th May] at the Spithead anchorage off Portsmouth. Here are assembled 22 battleships and more than 200 lesser vessels [see full list] to demonstrate what naval power looks like under bunting. [THREAD = THE WW1 SURFACE NAVIES]

1856 [19th May] Concerned that the Crimean War [=1854 (28th March)] has exposed deep-seated inadequacies in Britain's treatment of its injured and sick soldiers and sailors, the Prime Minister, Henry Temple, 3rd Viscount Palmerstone [Wikipedia biography], has authorised the building of a new 1000-bed military hospital at Netley, near Southampton. Queen Victoria [23rd April<=1859 (27th January)] ceremonially lays the foundation stone on 19th May [continues at 1863 (11th March) ...]. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

Student Exercise: A time capsule was placed beneath the foundation stone. Research when it was uncovered and what it contained.

1856 [24th August] The Sheffield-based [Sir]1879 Henry Bessemer [1855<=>1865 (Open Hearth Process)] presents a paper entitled "The Manufacture of Iron without Fuel" to a meeting of the British Association in which he describes the use of a carefully timed airblast to burn out carbon and other impurities in molten pig iron, leaving steel. However, when he starts licensing this technology to client steelworks, they have difficulty getting the timing - and therefore the all-important carbon content - right. Robert Mushet [1848<=>1857 (??th March)] now realises the value of his own experimentation at the Forest Steelworks [1848<=>1857 (?7th March)] with manganese as an additive. Mushet's approach, it will be recalled, is to burn out all the carbon and then add back a controlled amount in the form of Spiegeleisen [=1848] at the very end of the heat. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1856 [24th September] The British government's Board of Trade publishes an evaluation of 13 signalling systems vying for acceptance as the International Code of Signals. They winning system is published the following year and uses on 18 flags to service a lexicon of 70,000 pre-defined signals. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1856 [23rd October] The Second Opium War, 1856-1860: This war between Britain, France, and the U.S. on the one hand, and Qing Dynasty China on the other, is fought to establish trading enclaves in Chinese coastal territories. There are a number of incidents as western troops force themselves into Guangzhou and Hankou, and up the Yangtze River, and Russian troops establish a new port at Vladivostok. Eventually a major campaign in 1860 reaches Beijing and puts the Imperial government to flight. The war will be brought to an end by the Convention of Peking [=1860 (24th October)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1856 [6th November] A consortium of British and American businessmen forms the Atlantic Telegraph Company [Wikipedia factsheet], in order to lay a submarine telegraph cable across the Atlantic. The British physicist [Sir]1866 William Thomson [1st Baron Kelvin]1892 [Wikipedia biography=>1865 (?7th July)] is taken on as technical advisor. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1857 The Smith and Wesson Company's Horace Smith [=1852] perfects a .22" metallic rim-fire cartridge, a method of loading ball, powder, and percussive primer in a single unit (unlike the centre-fire cartridge [=1866], where the cap and the body of the cartridge are separate elements pressed together). The company immediately puts its seven-shot .22" calibre Model 1 Revolver [image] on the market. Around the same time Edward Maynard [=1851] forms the Maynard Arms Company to market .35" and .50" calibre versions of the Maynard Carbine [image]. This weapon will sell moderately well during the Civil War, and remain in production until 1890. Around the same time the French inventor Antoine A. Chassepot [Wikipedia biography=>1866] is working on a breech-loading rifle for the French military. [THREAD = WW1 SMALL ARMS]

1857 Basing himself in Britain, the German-born industrialist Carl Wilhelm Siemens [Wikipedia biography=>1859] develops a "regenerative furnace" for iron smelting in which gas flow is periodically reversed through brick side chambers so as not to waste its heat. In this way Siemens reduces his fuel costs by better than 70%. [=1859 (Siemens) and 1865 (open-hearth steel)] [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]
1857 **Pelling, Stanley, and Company** start importing canned foods into Britain from canneries around the world. Their sources will in due course include John West and Company [=>1868]. [THREAD = WW1 LOGISTICS]

1857 Having been a staff officer for 17 years, **Helmuth von Moltke [the Elder]** [1843<=>1864 (30th April)] is appointed Chief of the Prussian General Staff. He will hold this position for the next 30 years, turning the Prussian Army (and therefore the German Army in its turn) into the best equipped, best led, and best trained in Europe. They will pass their first three practical examinations - against Denmark [=1864 (30th April)], Austria [=1866 (14th June)], and France [=1870 (19th July)] - with flying colours. [THREADS = THE WW1 ARMIES and THE SHAPING OF WW1 EUROPE]


1857 (January) Automation, Control, and Artificial Intelligence [XXXIX - The Turk (The Secret Disclosed)]: [Continued from 1854 (5th July)] Following the loss of The Turk in the Philadelphia fire, the physician **Silas Weir Mitchell** [Wikipedia biography] [=1864], son of the one-time owner of the machine **John Kearsley Mitchell** [=1838 (21st July)] publishes a paper entitled "The Last of a Veteran Chess-Player" [full text online] in which he finally spills the beans as to how the machine was operated [sub-thread continues at 1870 (25th May) ...]. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

1857 (26th January) The French inventor **Édouard de Martinville** [Wikipedia biography] patents a "phonautograph", a device for generating a visible signature of sounds. The device consists of an external horn, an elastic membrane, a series of delicate levers activated by vibrations of the membrane, and a bristle stylus for tracing output movements of the levers onto a lamp-blackened plate of some sort. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

**ASIDE:** Although the phonautograph produced sound wave traces, de Martinville’s system had no playback stylus mechanism and so could not play back the sounds it had visualised. However in 2008 physicists at the University of California, Berkeley, succeeded in reverse engineering two of de Martinville’s 1860 tracings into audible sound using a "virtual stylus". Both specimens are of a male voice, presumed to be de Martinville himself. They currently stand [2013] as the oldest human voice recordings in history [listen now].

**ASIDE - VISUALISED SOUND WAVES IN WW1:** We have already noted [=1841 (Wheatstone Chronoscope [ASIDE])] how accurate timings can be used to aid artillery ranging.

1857 (20th February) The German businessmen **Hermann H. Meier** [Wikipedia biography] and **Eduard Crüsemann** [Wikipedia biography] establish the Norddeutscher-Lloyd Shipping Company [modern corporate website] [=1858 (30th January)] to service the Bremerhaven-North America route. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1857 (??th March) **George Parry** [=1850] is presently upgrading the **Ebbw Vale Ironworks** [=1850] to be a steelworks [=1868 (24th March)]. Meanwhile at the **Forest Steelworks** [1856 (24th August)]=1862 (??th October)] **Robert Mushet** [1856 (24th August)=1862 (??th October)] demonstrates that he had overcome the brittleness problem with his **Spiegeleisen Process** [=1848] by producing steel rails with a service life measured in decades rather than months. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]
1857 [3rd March] The Royal Military School of Music opens at Kneller Hall, Twickenham. [THREAD = WW1 ARMIES AND TACTICS]


1857 [10th May] The Indian Mutiny: A dispute over the nature of the grease used to waterproof the cartridges used with the newly issued Pattern 1853 Enfield Rifle [<=1853] causes an uprising of native Indian troops in British military service. To the extent that the grease does or might contain beef lard then it is religiously anathema to the Hindu troops, and to the extent that it does or might contain pork fat then likewise for the Muslims. After initial focal disturbances at Meerut and Delhi the main events are ...

The Siege of Delhi, 1857; The Siege of Cawnpore, 1857; The Siege of Lucknow, 1857

The overall outcome is the restoration of British rule, accompanied by civil and military reorganisation. It has also been suggested (Dalrymple, 2009) that Hindus will be more favoured by the ensuing peace than Muslims. [THREAD = THE SHAPING OF THE MODERN WORLD]


1857 [30th May-27th November] The Siege of Lucknow: This six-month siege is fought out as part of the Indian Mutiny [<=10th May] between an Insurrectionist army under Begum Hazrat Mahal [Wikipedia biography] and the British garrison at Delhi under Sir Henry Lawrence [Wikipedia biography] killed in action 4th July]. The outcome is a British withdrawal, abandoning the town to the rebels until the following spring. [THREAD = THE SHAPING OF THE MODERN WORLD]

1857 [5th-25th June] The Siege of Cawnpore: This three-week siege is fought out as part of the Indian Mutiny [<=10th May] between an Insurrectionist army under Nana Sahib [Wikipedia biography] and the British garrison at Delhi under Sir Hugh Wheeler [Wikipedia biography]. The outcome is the massacre of the entire garrison, civilians and all, save for a lucky half dozen or so. [THREAD = THE SHAPING OF THE MODERN WORLD]


around the world soon follow, making this the first world-wide economic crisis.

ASIDE - RULE #4 APPLIES: The life insurance business model involves taking premiums from clients well in advance of any likely pay-out, in exchange for a promise of a profitable return upon death or after a stated number of years. The insurance company then invests its premium income (net of claims and operating expenses), duly compounding and reinvesting returns. Strict policy conditions prevent fraudulent claims by policyholders, but there is little to protect the policyholders from fraudulence by the company or its representatives. The most likely frauds, given the business model as described, are (a) to overstate operating expenses, and (b) to route the monies invested to cronies and other givers of backhanders; then to file for bankruptcy.

1857 [10th October] **SS Japan** [no convenient shipography] is launched at the **Caird and Company Shipyard** [23rd June<=1858 (30th January)], Greenock, for service with the **Hamburg-America Line** [23rd June<=1858 (13th September)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1858 Belief Systems [XXVII - Superstition, Witchcraft, and Magic (Dircks)]: [Continued from 1856] The British engineer **Henry Dircks** [Wikipedia biography=>1862 (24th December)] devises a theatrical illusion called the "Dirksian Phantasmagoria", by which an actor/actors can make a ghostly entrance without moving a muscle [see Wikipedia factsheet for the secret] [sub-thread continues at 1862 (24th December) ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1858 The French artillery officers **Antoine Treuille de Beaulieu** [Wikipedia biography] and **Jean-Ernest Ducos de la Hitte** [Wikipedia biography] devise an early rifling system for muzzle-loading cannon whereby elongated shell or shot is fitted to relatively deep rifling by using raised studs [image]. [THREAD = WW1 ARTILLERY]

1858 **James Napier and Hoey** [no convenient factsheet=>1860] acquire the **Govan Old Yard** from the **Robert Napier Shipyard** [<=1852]. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1858 The German gynaecologist **Eduard Arnold Martin** [Wikipedia biography] is appointed Director of the **Entbindungsanstalt** [= "childbirth institute"] at the Charité Hospital in Berlin. [=>1859 (27th January)] [THREAD = THE SHAPING OF THE MODERN WORLD]


1858 [30th January] **SS Bremen** [no convenient shipography=>19th June] is launched at **Caird and Company Shipyard** [1857 (10th October)<=1862 (25th November)], Greenock, for service with the **Norddeutsche-Lloyd Line** [1857 (20th February)<=1862 (25th November)]. She will make her maiden voyage from Bremerhaven to New York City on 19th June. [THREAD = THE SHAPING OF THE MODERN WORLD]

1858 [2nd March] **The Newport Docks IV - Extended Town Dock Opening**: [...] Continued from 1854 (7th July)] The extended Newport Town Dock is now formally opened [continues 1865 (6th July) ...]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1858 [14th May] Supplied by **William Laird and Company** [1856<=1861], the prefabricated river launch **Ma Robert** [no convenient shipography] arrives by freighter in the Zambezi Delta to convey **David Livingstone** [Wikipedia biography] on his historic survey expedition up the River Zambezi. Once assembled, she will be the first all-steel vessel in history. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]
1858 [1st September] **The Cochin-China Campaign, 1858-1862:** This campaign of imperial ambition is fought between a French/Spanish/U.S. taskforce and Nguyen Dynasty Cochin-China [= modern South Vietnam] for trading privileges. The French and Spanish capture Saigon on 17th February 1859 but by 1861 will have got themselves bogged down in a jungle war against Vietnamese guerillas. Only after considerable Allied reinforcement and the capture of the Vietnamese stronghold at Vinh Long on 23rd March 1862 do the Vietnamese finally agree to terms. The war will then be brought to an end by the **Treaty of Saigon** [=1862 (5th June)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1858 [13th September] A fire breaks out on the **Hamburg-America Line's** [1857 (10th October)<=1864 (2nd May)] **SS Austria** [<=1857 (23rd June)]. Nearby ships manage to rescue 65 passengers and crew, but a further 471 souls are lost. [THREAD = THE SHAPING OF THE MODERN WORLD]

1858 [1st October] **The German Siemens and Halske Company** [1853<=1867 (31st December)] sets up a British subsidiary to capitalise on the market for submarine telegraph cable. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1858 [1st November] With financial assistance arranged by Gustav C. Schwabe [Wikipedia biography] [=1868 (18th January)], Edward J. Harland [1854 (?th December)<=1895 (24th December)] buys out the **Robert Hickson Shipyard** [<=1854 (?th December)] and renames it **Harland and Company** [=1861 (11th April)]. The company's first two ships are **SS Bebington** [no convenient shipography] and (launched 30th July 1859) **SS Venetian** [no convenient shipography], both for service with the **Bibby Line** [1856 (16th August)<=1873 (1st January)] [continues 1861 (11th April) ...]. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1858 [6th November] The first patients are admitted to the new **Fulbourn Hospital**, the country asylum for Cambridgeshire. [THREAD = THE SHAPING OF THE MODERN WORLD]

1858 [15th December] **The Suez Canal [I - The Beginnings]:** The French engineer Ferdinand de Lesseps [Wikipedia biography] establishes the **Suez Canal Company** to excavate a ship canal between the Mediterranean and Red Seas. Work on the project starts the following spring [continues at 1869 (17th November) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** THE MITRAILLEUSE IS BORN **********

1859 Having spent eight years improving the Fafchamps multi-barrel volley gun [<=1851], Joseph Montigny unveils a 37-barrel version under the name "**Montigny Mitrailleuse**" [image]. It fires 11mm bullets from preloaded honeycomb magazines, releasing 37 firing pins simultaneously, but will soon be upgraded to fire one chamber at a time controlled by a hand crank. Around five magazines can be fired off per minute. [=1866 (de Reffye)] [THREAD = WW1 MACHINE GUNS]

**ASIDE:** The French word mitraille is related to the English word "mite" [= a small coin (as in "widow's mite") via the Old French mitaille [= "small coins"]. As with the use of the word "shrapnel" in 21st century English to denote a handful of pound coins, the French artillerymen of the late eighteenth century extended the word's use to include any collection of old iron, stones, or whatever was at hand, used as grapeshot against personnel targets. By further extension we get the word "mitrailleuse". For our own part, we like Alley's (2005 online) term "rifle-calibre artillery" because it forces us to remember that the early machine guns - being very heavy - were manned by artillerymen and were not, therefore, infantry weapons.

1859 The French naval designer Siméon Bourgeois [Wikipedia biography] starts work on a compressed-air powered submarine (all previous full submersibles having been hand-cranked). [THREAD = THE WW1 SUBMARINE NAVIES]
1859 The British engineer Joseph Whitworth [Wikipedia biography] displays the Whitworth Rifle [image], a .451" calibre weapon intended to replace the Pattern 1853 Enfield Rifle [<=1853]. It is accurate but will prove too expensive in manufacture to compete effectively on price [the Whitworth gun's accuracy and high price both derive from the weapon's idiosyncratic hexagonal bore]. Around the same time a young Württenberg artilleryman named Paul Mauser [Wikipedia biography] is assigned to the Ludwigsburg Arsenal to work on a major upgrade project for the Dreyse Model 1841 Needle-Gun [1841 <=>1862]. [THREAD = WW1 SMALL ARMS]

1859 HMS Queen Charlotte [Wikipedia shipography] is retired from front-line service, renamed HMS Excellent, and moored permanently at Whale Island, Portsmouth Harbour, as a gunnery training ship. Since it is common practice in the Royal Navy to name shore complexes as if they were ships, all future buildings and open spaces are included in the entity "HMS Excellent (Shore Establishment)". [THREAD = THE WW1 SURFACE NAVIES]

1859 Upon the death of his friend Sir Robert Vaughan, William Wynne [Wikipedia biography] is bequeathed what will become known as the National Library of Wales' "Peniarth Collection" of ancient Welsh manuscripts. [THREAD = WW1 ROMANTIC NATIONALISM]

1859 The French physician Louis-Jules Béhier [no convenient biography] improves the use of hypodermic syringe. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1859 [16th April] Sir Charles Morgan Robinson Morgan [<=1834 (24th May)] is made 1st Baron Tredegar [=d. 1875 (16th April)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1859 [29th April-11th July] The Second Italian War of Independence, 1859: This war of national self-assertion is fought between Italian freedom fighters supported by France and Sardinia and the Austrian Empire. The Italians are led by Giuseppe Garibaldi [Wikipedia biography=>1864 (11th January)], the French by Patrice de MacMahon [1st Duke of Magenta] 5th June [Wikipedia biography=>1870 (19th July)], the Sardinians by Victor Emmanuel II of Savoy [Wikipedia biography=>1866 (20th June)], and the Austrians (initially) by their Governor in Lombardy, Ferenc Gyulay [Wikipedia biography=>4th June] and (after the defeat at Magenta) by their emperor, Franz Josef I of Austria [1849 (7th March) <=24th June], personally. The main engagements are ...

The Battle of Magenta, 1859; The Battle of Solferino, 1859

The overall outcome is a Franco-Sardinian victory with little substantive advantage to the Italians. The war will be brought to an end by the Ceasefire of Villafranca [=11th July]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1859 [27th January] Britain's Queen Victoria [1856 (19th May) <=1876 (1st January)] and Prince Albert [1848 [=d. 1861 (14th December)]] are blessed with their first grandson, Wilhelm [Wikipedia biography=>1888 (15th June)]. This birth celebrates the strategically important royal marriage on 25th January 1858 of their daughter Victoria, Princess Royal [1858 (25th January) <=1870 (14th June)], to Crown Prince Friedrich of Prussia [1858 <=1870 (14th June)]. Sadly it is a complicated birth and the infant suffers significant injury to his left arm. [THREAD = THE SHAPING OF THE MODERN WORLD]

**ASIDE - THE BIRTH:** Princess Victoria was attended by a team of nine physicians, including the British royal family's court surgeon Sir James Clarke [<=1834] and the German Frauenarzt [= "gynaecologist"] Eduard Martin [<=1858]. Sir James was an ex-naval surgeon turned society general practitioner, but not a specialist obstetrician.
1859 [4th June] The Battle of Magenta: This battle is fought as part of the Second Italian War of Independence \(\leq 29\text{th April}\) between a French-Sardinian army under Napoléon III of France \(\leq 24\text{th June}\) and an Austrian army under Ferencz Gyulai \(\leq 29\text{th April}\). The outcome is a victory for the French-Sardinians. [THREAD = THE SHAPING OF THE MODERN WORLD]

**WAR ART:** Check out Gerolamo Induno’s (1861) “The Battle of Magenta”.

********** THE BATTLE THAT NEEDED RULES **********

1859 [24th June] The Battle of Solferino: This battle is fought as part of the Second Italian War of Independence \(\leq 29\text{th April}\) between a French-Sardinian army under Napoléon III of France \(\leq 1870 (1\text{st September})\) and François Canrobert \(\leq 1870 (19\text{th July})\) and an Austrian army under their Emperor Franz Josef I of Austria \(\leq 1861 (8\text{th December})\), attempting to counter-attack after the Austrian defeat at Magenta three weeks earlier \(\text{[q.v.]}\). The outcome is a victory for the French-Sardinians. The battle is noteworthy in the present context (a) as the last major battle in which the armies are commanded personally by their respective heads of state, and (b) as the battle which initiated moves towards the Geneva Convention. [THREAD = THE SHAPING OF THE MODERN WORLD]

**ASIDE - THE GENEVA CONVENTION:** The Swiss businessman and social activist Jean-Henri Dunant [Wikipedia biography] chanced to be near Solferino and made his way to the battlefield the same evening. He was appalled to discover that the most severely wounded still lay where they had fallen, and the walking wounded were still unbandaged and unfed. He did what he could to organise some sort of local response but it still took weeks to deal adequately with the 20,000 wounded. This led him to publish a memoir entitled “Un Souvenir de Solferino”, in which he proposed a non-partisan organisation to care primarily for the wounded on or near the battlefield. This idea was then picked up by the Geneva Society for Public Welfare [continues at 1863 (9th February) ...].

**IMPORTANT TACTIC - STOSSTAKTIK:** The German verb *Stossen* means "to punch/kick/jab", and in the noun *Stosstaktik* conveys the sense of to attack suddenly, strongly, and with relatively limited objectives.

1859 [11th July] The Ceasefire of Villafranca: This treaty between France, Sardinia, and Austria brings the Second Italian War of Independence \(\leq 29\text{th April}\) to an end. The main provision is the ceding of Lombardy to France. [THREAD = THE SHAPING OF THE MODERN WORLD]

1859 [1st August] The Merthyr, Tredegar, and Abergavenny Railway [I - The Initial Idea]: Crawshay Bailey \(\leq 1845\) leads an initiative to bring together a number of the earlier district tramways into a larger company, linking them where they are separate, and upgrading them to a common engineering standard at the same time. This will be a major infrastructure project in its own right but the end product will dovetail into Bailey’s other railway investment, namely the Vale of Neath Railway \(\leq 1845\) to the west, giving him control of the entire Heads of the Valleys/South Wales Coalfield area [continues at 1862 (29th September) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1859 [27th August] The Switch from Coal to Oil [I - The Titusville Strike]: [New sub-thread] Experimental drillings near Titusville, PA, strike oil, triggering the Pennsylvania Oil Rush [Wikipedia factsheet]. Finding that the light oil fraction known as kerosene was both cheaper and cleaner as a lamp oil than conventional animal fats, a refining industry was soon established. It was also not long before the heavier oils were being trialled as an alternative furnace fuel for steam engines [sub-thread continues at 10th January 1870 ...]. [THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = THE WW1 SURFACE NAVIES]
1859 [18th September] **Cardiff Docks [V - East Bute Dock Fully Opened]**: [...Continued from 1839 (8th October)] After seven years in the construction the new Bute East Dock opens for business [continues at 1866 (10th August) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1860 **Seeing is Believing [V - Early Moving Images (de Neuville)]**: [Continued from 1849 (Claudet)] The French showman Louis Lemercier de Neuville [Wikipedia biography] popularises a magic-lantern show in which the images are micro-animated cut-out figures in the slide plane. These can either be lit from behind (in which case they are billed as the "Pupazzi Noirs" [= "black puppets"; Wikipedia factsheet], or from in front (in which case they are billed as "Les Pupazzi de Lemercier de Neuville") [sub-thread continues at 1866 (Beale) ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1860 **Randolph, Elder, and Company** [1858<=>1868] acquire the Govan Old Yard from James Napier and Hoey [<=1858], and start installing experimental "triple expansion" reciprocating engines, that is to say, engines in which steam is supplied at such high pressures that it can be passed through a succession of three co-ordinated cylinders before being exhausted. The first warship to be so equipped is the frigate HMS Constance [Wikipedia shipography], which, being due in any event for a refit this year, is selected for conversion at the same time from sail to steam. She is duly fitted with a single screw and a Randolph-Elder triple-expansion engine and, upon her re-commissioning in 1862 will outperform her unconverted sister-ships. Around the same time two Hartford, CT, machine-tool specialists, Francis A. Pratt [Wikipedia biography] and Amos Whitney [Wikipedia biography], get together to set up the Pratt and Whitney Company [=1874]. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1860 With the advent of rifled ordnance (requiring as it does a tightly fitting projectile) it is becoming increasingly common for barrels to split open along metallurgical faults when fired, the British develop Rifled Large Grain Powder specifically to slow the conversion of the propellant charge into hot gases and thereby reduce peak internal pressure. Around the same time a Royal Commission on the Defence of the United Kingdom recommends new or upgraded defences at Dover, Chatham, Portland, Portsmouth, and many other locations [see full list]. This round of improvements will become popularly known as the "Palmerston Forts". Around the same time the British engineer [Sir]1862 Andrew Noble [Wikipedia biography] becomes a member of the Ordnance Select Committee and the Committee on Explosives. He also joins the Armstrong Company at its Elswick works in Newcastle-upon-Tyne, where he will contribute significantly to their research programme in ballistics. Around the same time [Sir]1887 William Armstrong [1854<=>1867] now unveils his company's latest advances in artillery fuse technology, required because the tight rifling in his Armstrong Gun [1854<=>1861 (24th October)] prevents the driving explosion from simultaneously igniting a Boxer-type fuse [=1855 (18th August)]. The new device is supplied as the A-Pattern Time Fuse and is initiated by an internal inertial hammer striking down on a percussion igniter as the projectile accelerates up the barrel of the gun when fired [continues at 1867 ...]. [THREAD = WW1 ARTILLERY]

**ASIDE - THE BREAKTHROUGH IN ARTILLERY FUSE TECHNOLOGY:** This is a period of intense competition between ballistics engineers across the world. For an account of British experimentation see Ibbetson (2014 ISBN=099285380X), and for American see Jones (2001 ISBN=0967073146) or McCaul (2005 online).

********** BARBED WIRE IS INVENTED **********
1860 The French inventor Leonce Grassin-Baledans [no convenient biography] patents barbed wire as quick-to-erect cattle fencing. [THREAD = WW1 ARMIES AND TACTICS]

**ASIDE - BARBED WIRE AT WAR:** The initial surge of barbed wire sales is for agricultural use. The first significant military use is not until the Siege of Santiago in the Spanish-American War [=1898 (3rd July)]. The technique is then widely used by the British in the Second Boer War [=1899 (11th October)] and by 1914 was standard issue for trench fortification.

1860 The German psychologist Gustav Fechner [Wikipedia biography] publishes "Elemente der Psychophysik" (In English (1912) as "Elements of Psychophysics"), in which he sets out his vision of a science of perceptual ability. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1860 The Châtellerault Arms Works [=1819 (14th July)] is retooled to produce firearms rather than swords. Around the same time the Bourges Atelier is established as a high-capacity "imperial foundry" for the production of field guns. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

**ASIDE:** Check out the Musée des Amis de l'Armement de Bourges [website].

1860 Although specialising in railway-related steelwork, the Gruson Company [1855 (1st June)] begins project work for the Prussian War Department, supplying cupolas and turrets for forts. Around the same time the Krupp Company [1851 (1st May)] installs a 50-ton steam hammer popularly known as "Fritz" for its heavy forging operations. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

********** IMPORTANT WW1 WEAPON **********

==== THE TORPEDO =====


1860 [21st June] The U.S. Signal Corps is officially established, with Albert Myer [=1856], now promoted to Major, in charge. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1860 [16th February] [Sir]^{569} Clarence Paget [Wikipedia biography] opens a six-year Parliamentary debate on how best to modernise the Royal Navy’s disciplinary code, which will culminate in the Naval Discipline Act, 1866 [=1866 (10th August)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1860 [16th October] The Volcanic Company's Benjamin T. Henry [=1857 (25th April)] is awarded U.S. Patent 30466 for a .44" calibre rim-fire cartridge and exhibits the Henry Repeating Rifle to exploit it. This new rifle holds 15 cartridges in a tubular magazine and begins to make sales both to the U.S. military\(^1\) and private citizens. [THREAD = WW1 SMALL ARMS]

\(^1\) **ASIDE:** The biggest military contracts actually go to the Spencer Repeating Rifle [=1863 (16th August)] by virtue of its greater robustness and reliability in combat conditions.
1860 [24th October] **The Convention of Peking**: This treaty between Britain and France on the one hand and Qing Dynasty China on the other brings the Second Opium War [<=1856 (23rd October)] to an end. [THREAD = THE SHAPING OF THE MODERN WORLD]

1860 [1st December] An explosion at the **Risca Black Vein Colliery** [<=1846(14th January)] kills 146 men. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1860 [14th December] Builders’ excavations at Tours, France, uncover the tomb of **Saint Martin of Tours** [371<=1870 (9th October)], worker of pro-Frankish miracles and patron saint of soldiers. Press coverage over the coming weeks reminds the French people, and those whose job it is to suggest the direction of their passions, that Saint Martin's Day in the church calendar is **11th November**. [THREAD = WW1 ROMANTIC NATIONALISM]

**ASIDE - 11th NOVEMBER IN WW1**: We have already noted [<=371 (ASIDE)] that the French High Command has been accused of deliberately delaying the Armistice by several unnecessary days for no better reason than that it might fall on Martinmas, Saint Martin's Day. Those who were killed or wounded on those unnecessary days (and this might even include the war poet **Wilfred Owen** [=>1915 (21st October)], killed on the Sambre-Oise Canal on 4th November) were not consulted.

1861 Upon the retirement of **John Laird I** [Grace's Guide biography=>d. 1874 (29th October)] the **William Laird and Company** [<=1858 (14th May)] shipbuilding business passes to his three sons, **William Laird II** [Grace's Guide biography], **John Laird II** [Grace's Guide biography], and **Henry H. Laird** [Grace's Guide biography], who trade for the time being as **Laird Brothers** [Grace's Guide corporate factsheet=>1862 (15th May)].

**ASIDE**: John Laird I is another entrepreneur who turns to politics after making his fortune, becoming M.P. for the newly created constituency of Birkenhead in 1861.

Around the same time the Sheffield ironmasters **Charles Cammell and Company** [Grace's Guide factsheet=>1863] expand into the railways market. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1861 After five years in the preparation **Henry J. Hunt** [1856<=21st July] now publishes his "**Instructions for Field Artillery**". Around the same time the German-born American **John P. Schenk** [no convenient biography] patents a percussion fuse in which the percussive compound is mounted on, and the priming charge contained within, a small brass cylinder which is free to slam forward onto a hammer plate when the projectile hits the ground. [THREAD = WW1 ARTILLERY]

1861 The **5th (Royal Irish) Regiment of Dragoons** [<=1788] is renamed as the **5th (Royal Irish) Lancers**. [THREAD = WW1 ARMIES AND TACTICS]

**ASIDE - THE 5TH (ROYAL IRISH) LANCERS IN WW1**: See separate regimental history. At 9.30 am on 11th November 1918, with the Armistice due to come into force only an hour and a half later, Trooper **George E. Ellison** [Wikipedia biography] of this regiment has the dubious honour of being the last British soldier to be killed in WW1. He will be buried in **St. Symphorien Military Cemetery** [map, etc.], by gruesome coincidence a mere 15 feet from the grave of Private **John Parr** [Wikipedia biography] of the Middlesex Regiment, the first to have been killed [fuller story at http://www.mirror.co.uk/news/real-life-stories/world-war-graves-pictured-buried-3103974].

1861 **Albert Myer** [<=1856] proposes attaching a telegraph signal unit to every army on the march, and thanks to the foresight of **Thomas A. Scott**, Assistant Secretary of War, this proposal is duly authorised (Woods, 1974). [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]
1861 The Confederate States Navy officer John M. Brooke [Civil War Artillery biography] designs a rifled muzzle-loading cannon for naval and coastal defense applications. The weapon will be produced at the Tredegar Ironworks, Richmond, VA [<=1836] and at the Naval Ordnance Works, Selma, AL, and will be made available in 6.4” [=163mm], 7” [=178mm], and 8” [= 203mm]. The barrels are reinforced at the chamber end by sweating on one or more wrought iron bands [Craig Swain specifications and images]. A small number of smoothbore variants were produced in 8”, 10”, and 11” calibres. [THREAD = THE WW1 SURFACE NAVIES]

1861 In order to keep its wartime telegraph traffic secret, Ohio governor William Dennison [Wikipedia biography] asks the Western Union Company’s Anson Stager [Wikipedia biography] to design and administer the ciphers to be used. So assiduously will Stager do this job that the Confederacy will never manage to crack them (Kelley, 1999 online). Later in the year Stager will move to Washington as a brigadier-general and take charge of the Military Telegraphy Department of the War Office. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

ASIDE: As a basically rural economy, the Confederacy had less access to state-of-the-art hardware than did their enemy. However, they compounded this shortcoming by failing to create a central co-ordinating department like Stager’s, being content instead to leave individual commanders to select their own encryption methods. On balance, Ryan and Ryan (2002 online) have concluded that Union commanders enjoyed significant access to what the Confederates hoped and believed were secret communications: "The South's failure to protect critical information," they argued, "undoubtedly contributed to many Yankee victories".

1861 Returning from his contract with the Royal Small Arms Factory in Enfield, James Burton [<=1848] crosses back across the Atlantic to join the Confederate Army. He is given the rank of Lieutenant-Colonel and placed in charge of all southern armories. Around the same time the Smith and Wesson Company [<=1857] puts its six-shot .32” calibre Model 2 Army Revolver on the market. Some 70,000 units will be produced during the rest of the decade, when the model will be supplanted by the Model 3 [=>1870]. Around the same time the Scottish-born American gunsmith James Paris Lee [Wikipedia biography]=>1879 develops a conversion kit to retrofit the muzzle-loading Springfield 1861 Rifle as a breech-loadable weapon. [THREAD = WW1 SMALL ARMS]

1861 The British engineer William Beardmore [the Elder] [no convenient biography=>1877 (11th October)] acquires an interest in the Parkhead Forge [Grace's Guide factsheet=>1877 (11th October)], Glasgow, helping it to specialise in heavy marine forgings and rolled armour plate. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1861 [2nd January] Upon the death of Friedrich Wilhelm IV of Prussia [<=1849 (3rd April)] his titles pass to his brother Wilhelm I [Wikipedia biography=>1867 (12th February)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1861 [7th February] Robert S. Robinson [Wikipedia biography] is appointed Controller of the Navy, and sets out on a five-year crusade against waste in the nation's dockyards. [THREAD = THE WW1 SURFACE NAVIES]


ASIDE - HARLAND AND WOLFF IN WW1: During WW1 the company produced freighters and monitors in some number; also the battlecruiser HMS Glorious [=1915 (1st May)].

ASIDE - JUNGHANS AND TOBLER IN WW1: From no later than 1916 this company was a supplier of "Gr Z" [= Granate Zünder], artillery time fuses, to the German Army.

1861 [17th April-10th May 1865] The American Civil War, 1861-1865: This war is fought following some years of economic rivalry and philosophical friction between the industrialised states of the northeastern U.S. and the cotton industry states of the southeastern U.S. The textbook cause is that the "Union" - the North - are anti-slavery whilst the "Confederacy" - the South - are in favour of retaining it. Here are the main events ...

The First Battle of Bull Run, 1861; The Battle of Hampton Roads, 1862; The Battle of Malvern Hill, 1862; The Battle of Antietam, 1862; The Battle of Gettysburg, 1863; The Battle of Spotsylvania Court House, 1864; The Siege of Richmond-Petersburg, 1864-1865; The Battle of Mobile Bay, 1864

The overall outcome is a Union victory, but there is no peace treaty as such because the Confederacy will never have been a lawful nation. The war is noteworthy in the present context as the first in which serious attempts are made to include neurological rehabilitation in military medicine. [THREAD = THE SHAPING OF THE MODERN WORLD]

1861 [17th April] Virginia secedes from the Union, taking with it the naval base at Norfolk and all the ships there moored. This includes the USS Merrimack <=1854 (6th April), whose crew, loyal still to the Union, burn her rather than hand her over. [THREAD = THE SHAPING OF THE MODERN WORLD]

1861 [27th May] The first patients are admitted to the new Broadmore Criminal Lunatic Asylum [Wikipedia factsheet=>1912], Crowthorne. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

ASIDE - BROADMOOR ASYLUM IN WW1: Redesignated as Crowthorne War Hospital" one of Broadmoor's blocks was made over to the secure treatment of mentally ill German prisoners-of-war.

1861 [28th May] Having already served as an army surgeon between 1849 and 1860, William A. Hammond [1849<=1862 (25th April)] re-enlists in the Union Army and is set to work designing a new ambulance wagon. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1861 [11th/18th June] Having already spent a couple of years developing balloon technology as a fairground attraction, the American inventor Thaddeus S. Lowe [Wikipedia biography=>next entry] now finds himself appointed "Chief Aeronaut" for the Union Army. On 18th June he succeeds in passing electrical telegraph messages between a balloon and its ground station, thus raising the value of balloons for observation purposes. His equipment will be trialled with further success at the First Battle of Bull Run [=21st July], but by August 1863 the Union Army will decide that the additional cost and effort is not justified by the marginally better reconnaissance acquired. [THREAD = WW1 AVIATION]

1861 [18th June] The American clergyman Henry W. Bellows [Wikipedia biography] and a number of like-minded associates found the US Sanitary Commission, a private relief agency to act alongside the Union Army's field surgery and rehabilitation services, and to carry out independent inspections of Union Army hospitals and prison camps. Funds are
raised at "Sanitary Fairs" across the Union, where local businesses, churches, and individual citizens compete to make donations of cash and kind. The Commission also lobbies to have a suitably proactive Surgeon-General appointed.

ASIDE: After the war, the academic Charles Janeway Stillé produces History of the US Sanitary Commission (1866 full text online).

1861 [25th June] Upon the death of the Ottoman Sultan, Abdülmecid I, his titles pass to his son Abdülaziz. [Wikipedia biography] [1870 (12th March)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1861 [11th July] Desperately short of ships, the CS Navy decides to rebuild the burnt-out wreck of USS Merrimack to a design by John M. Brooke as a mast-less ironclad ram-ship. She is to be armed with six 230mm [9"] Dahlgren guns. [THREAD = THE WW1 SURFACE NAVIES]

1861 [21st July] The First Battle of Bull Run: This battle is fought as part of the American Civil War between the Union army of Northeastern Virginia under Irvin McDowell [Wikipedia biography] and a Confederate army under Pierre Beauregard [Wikipedia biography] and Joseph E. Johnston [Wikipedia biography]. The outcome is a Confederate victory, but valuable experience nonetheless for Henry J. Hunt who is able to put his new Artillery Manual to practical use when commanding one of the Union batteries. [THREAD = THE SHAPING OF THE MODERN WORLD]

1861 [24th October] The Royal Navy's latest warship, HMS Warrior, enters service. Her design famously combines steam engines, rifled breech-loading Armstrong Guns, iron construction, and screw propulsion, all class-defining changes in the history of naval warfare. The ship will survive into the 21st Century as a floating museum at Portsmouth Historic Dockyard. Her sister ship, HMS Black Prince [Wikipedia shipography], will follow into service on 12th September 1862. [THREAD = THE WW1 SURFACE NAVIES]

1861 [25th October] To counter the threat presented by the Confederate capture of the scuttled steam frigate USS Merrimack, presently being rebuilt for the Confederate States Navy as the ironclad CSS Virginia, construction work begins on USS Monitor to a design by John Ericsson. She will be an iron-hulled shallow-draught low-profile gun platform armed with two 11" Dahlgren guns in a heavily armoured twin turret amidships. The design is noteworthy in the present context as an early example of a turret ship. [THREAD = THE WW1 SURFACE NAVIES]

ASIDE: USS Monitor was so named to emphasise its ability to police a particular coastline. In due course, however, its name will be used generically of all coastal defence battery ships with one or two large guns.

1861 [8th December] The Franco-Mexican War, 1861-1867: This war of imperial ambition is fought for non-payment of government debt between the Second French Empire under Napoléon III alongside rebellious Mexican Royalists under Maximilien I of Mexico (the younger brother of Franz Joseph I of Austria) and defending Mexican Republicans under Benito Juárez. The most notable event is ...

The Battle of Camarón, 1863
The overall outcome is a victory for the Mexican Republicans, with the execution of Maximilien I for treason on 19th June 1867. [THREAD = THE SHAPING OF THE MODERN WORLD]

**WAR ART:** Check out Édouard Manet's (1867) "Execution of the Emperor Maximilien".

1861 [29th December] HMS Warrior [Wikipedia biography] is launched at the Thames Ironworks and Shipbuilding Company, Blackwall, [Map etc.] is launched at the Thames Ironworks and Shipbuilding Company, Blackwall, [1863 (12th December)]. [THREAD = THE WW1 SURFACE NAVIES]

1862 The Beaufort Ironworks [1833<->1873] is temporarily taken out of production. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1862 The Union also made use of the pre-war detective agency run by the Scottish emigré (and one-time workers' rights activist), Allan Pinkerton [1850<=>1874 (?7th December)]. [THREAD = WW1 ESPIONAGE AND INTELLIGENCE]

1862 [Sir] Andrew Noble [<=1860] invents an electro-mechanical chronoscope [<=1840 (Charles Wheatstone)] to help the William Armstrong Company [=>1876] measure the barrel exit speed of artillery projectiles, and hence their acceleration while under active propulsion, and hence the relative value of different compositions of propellant, etc. Around the same time the British artillery officer Frederick A. Griffiths [Wikipedia biography] publishes the 9th Edition of his "Artillerist's Manual". [THREAD = WW1 ARTILLERY]

1862 A young John Fisher [Wikipedia biography] is appointed Gunnery Lieutenant aboard HMS Warrior [<=1861 (24th October)], [=>1886] [THREAD = THE WW1 SURFACE NAVIES]


1862 [not specifically dated] Zionism¹ Pre-WW1 [I - A Useful Starting Point]: [New sub-thread] The proto-Communist Moses Hess [Wikipedia biography] publishes a collection of proto-Zionist writings under the title "Rome and Jerusalem" [full text online], in which he raises the issue of a Jewish homeland. The work's historical significance will only later be recognised and it goes largely unnoticed at the time [sub-thread continues at 1877 ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS] [THREAD = THE SHAPING OF THE MODERN WORLD]

¹ASIDE: Zion was the name of the Palestinian mountain on which stood the Jebusite fortress captured by the Israelites under David I of Israel [Wikipedia biography] in around 1003BCE and then incorporated as Mount Zion [Wikipedia factsheet] into the developing city of Jerusalem. When the Israelites were subsequently sent into exile in Babylonia, Zion became a natural focus for Zionism, the struggle one day to return.

RECOMMENDED READING: We find Nizar Sakhnini's essay "Creation of Israel" (2005 online) a gentle brief introduction to what can be a very sensitive subject.

1862 The American engineer Hiram Berdan [Wikipedia biography] is given permission to form two regiments of "sharpshooters" to exploit the battlefield impact of high performance rifles equipped if possible with telescopic sights. The Sharps Rifle [<=1848] will prove particularly effective. [THREAD = THE WW1 ARMIES AND TACTICS]

1862 The Ludwigsburg Arsenal brings its improved Model 1862 Dreyse Needle-Gun [1859<=>1866 (14th June)] into production. [THREAD = WW1 SMALL ARMS]
1862 [5th February] The separate principalities of Moldavia and Wallachia formally agree to merge as the United Principalities of Romania under Prince Alexandru Ioan I [Wikipedia biography]. The new arrangement will be brought down by a coup four years later [=>1866 (23rd February)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1862 [25th February] USS Monitor [<=1861 (25th October)] enters service. [=>1862 (8th-9th March)] [THREAD = THE WW1 SURFACE NAVIES]

1862 [8th-9th March] The Battle of Hampton Roads: This battle is fought as part of the American Civil War [<=1861 (17th April)] between a small Union fleet under John Marston [Wikipedia biography] and a small Confederate fleet under Franklin Buchanan [Wikipedia biography] until he retires wounded, and then under Catesby ap Roger Jones [Wikipedia biography]. The outcome is a tactical draw but a strategic victory for the Union in that their blockade of Chesapeake Bay is still in place. What makes the battle historically significant in the present context is the fact that both fleets include their own ironclad. The US Navy has its brand new USS Monitor [<=1862 (25th February)] and the CS Navy has its newly rebuilt CSS Virginia [<=1861 (25th October)]. [THREAD = THE WW1 SURFACE NAVIES]

1862 [20th April] The French microbiologist Louis Pasteur [Wikipedia biography] demonstrates a heat treatment process capable of prolonging the shelf-life of perishable liquids such as wine, beer, and milk. The process involves bringing the liquid rapidly up to around 60 degrees (well short of its boiling point), and then cooling it equally rapidly. The process will in due course become commonly known as "Pasteurisation". [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1862 [25th April] [...] Continued from 1861 (18th June)] Sponsored by Abraham Lincoln [Wikipedia biography] himself, William A. Hammond [1861 (28th May)<=1871] is appointed Surgeon-General to the Union Army, and given the rank Brigadier-General. As with military physicians past, present, and future, the best medicine turns out to be effective logistics, cleanliness, and sexual health. Antisepsis is one of the greatest practical problems, thus ...

TELLING IT LIKE IT IS - "LAUDABLE PUS": Here is an indicative contemporary report ...

"... wounds were examined and dressed, but never antiseptically, for no one knew the importance of antisepsis or how to put it into practice; consequently every wound suppurated, and so-called laudable pus was welcomed by those in charge as an indication that the patient had reached one of the mile-posts that had to be passed on his road to recovery. Careful handwashing and nail scrubbing was never practised before operations or in dressing recent wounds. [...] When Captain William M. Colby of my company was brought from the firing line to our Division Hospital he was in a comatose state from a bullet that had penetrated his brain through the upper portion of the occipital bone. The first thing our surgeon did was to run his index finger its full length into the wound; and this without even ordinary washing. Next he introduced a dirty bullet probe. The patient died a day or two later ...” (Commager, 1950, pp196-197). [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1862 [15th May] The CSS Alabama [Wikipedia biography=>1864 (19th June)] is launched at Laird Brothers [1861<=>1863 (4th July)], Tranmere, for service with the Confederate States Navy as a commerce raider in the Atlantic and Caribbean. [THREAD = THE WWI SURFACE NAVIES]

1862 [5th June] The Treaty of Saigon: This treaty between France and Spain and the Nguyen Dynasty brings the Cochin-China Campaign [=1858 (1st September)] to an end. The main provision is the ceding of three southern provinces to France, thus establishing the geopolitical entity known as French Indochina. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** "IT WASN'T WAR; IT WAS MURDER!"**********

1862 [1st July] The Battle of Malvern Hill: This battle is fought as part of the American Civil War [=1861 (17th April)] between a Union army under George B. McClellan [Wikipedia biography=>14th September] and a Confederate army under Robert E. Lee [Wikipedia biography=>14th September]. The outcome is a clear and convincing Union victory thanks in large part to the use of massed artillery by Henry J. Hunt [1861 (21st July)<=>1863 (1st July)] to lacerate advancing enemy infantry formations in the open. [THREAD = THE SHAPING OF THE MODERN WORLD]

1*ASIDE: These words from Confederate General Daniel H. Hill [Wikipedia biography] after the battle fairly describe the effectiveness of Hunt's artillery.

1862 [22nd July] The American gunsmith Henry O. Peabody [no convenient biography] patents the Peabody Underlever Action [image], and puts same to work in the Peabody Rifle (1866-1871). [THREAD = WW1 SMALL ARMS]

1862 [14th September] The Battle of South Mountain: This battle is fought as part of the Maryland Campaign of the American Civil War [=1861 (17th April)] between a Union army under George B. McClellan [1st July<=>16th September] and a Confederate army under Robert E. Lee [1st July<=>16th September]. McClellan is trying to force his way southward through the South Mountain passes, whilst Lee is trying to hold on to them. The outcome is a Union victory. [THREAD = THE SHAPING OF THE MODERN WORLD]

1862 [16th September] The Battle of Antietam: This battle is fought as part of the American Civil War [=1861 (17th April)] between a Union Army under George B. McClellan [=14th September] and a Confederate Army under Robert E. Lee [14th September<=>1863 (1st July)], and results in a strategic Union victory. The battle is noteworthy in the present context (a) as the bloodiest single-day battle in American history to date, (b) for the dangerous confusion of political and military objectives [it has been suggested that the real motivation for Lee's advance into Maryland was to solicit France or Britain as allies for the Confederacy - Ed.], (c) for the poor coordination of Union units, whose commanders are not privy to McClellan's overall plan, (d) for being the first "conserved" battlefield, and (e) for some "most catastrophic" cryptological negligence on the part of the Confederate Army. The intercept on this occasion was very low tech - nothing more complex than the loss from an unknown Confederate staff officer's pocket of an en clair [= written in plain language] copy of General Lee's special order #191 for the invasion of Maryland. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE: The Confederates were in fact thrice negligent at Antietam, (a) for not deciphering the order in the first place, (b) for simply losing it, and (c) for not monitoring their enemy's newspapers (specifically, for failing to abort their attack after the New York Herald had stupidly reported the intercept on 15th September); in fact, Lee subsequently claimed that he only learned of the loss early the following year (Fishel, 1996). [THREAD = WW1 ESPIONAGE AND INTELLIGENCE]
1862 [23rd/30th September] Having been appointed Prussian Ambassador in Paris in May, Otto von Bismarck [1851<=1867 (12th February)] is recalled to Berlin as Minister-President. A week later he delivers what will become known as his "Blood and Iron" speech, wherein he concludes as follows ...

"Prussia must concentrate and maintain its power for the favourable moment which has already slipped by several times. Prussia's boundaries according to the Vienna treaties are not favourable to a healthy state life. The great questions of the time will not be resolved by speeches and majority decisions - that was the great mistake of 1848 and 1849 - but by iron and blood." [THREAD = THE SHAPING OF THE MODERN WORLD]

1862 [29th September] The Merthyr, Tredegar, and Abergavenny Railway [II - Abergavenny to Brynmawr]: [... Continued from 1859 (1st August)] The first leg of the new MT&AR opens between Abergavenny and Brynmawr. Since Abergavenny is already on the main line between Hereford and Newport, and because Brynmawr has for some time been networked by tramway to Beaufort, Ebbw Vale, and Tredegar, this improves communications between the easternmost South Wales industrial towns and the rest of Britain [continues at 1869 ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1862 [??th October] Robert Mushet [1857 (??th March)<=1867] now further develops his Forest Steelworks [<=1857 (??th March)] as the Titanic Steel and Iron Company [no convenient factsheet<=1871]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1862 [4th November] The American inventor Richard J. Gatling [Wikipedia biography] patents a hopper-fed cyclic multi-barrel machine gun capable of firing 200 or so rounds per minute [see this weapon in action]. [THREAD = WW1 MACHINE GUNS]

1862 [25th November] SS America [no convenient shipography] is launched at Caird and Company [1858 (30th January)<=1872 (20th August)], Greenock, for service with the Norddeutsche-Lloyd Line [1858 (30th January)<=1864 (2nd May)]. She will make her maiden voyage from Bremerhaven to New York City on 25th May 1863, and at 13 knots will prove one of the fastest vessels of her day. [THREAD = THE SHAPING OF THE MODERN WORLD]

1862 [12th December] The gunboat USS Cairo [Wikipedia shipography] is sunk by an electrically detonated underwater mine, entering the history of naval warfare as the first ship to be sunk (rather than merely damaged) by this new sort of weapon. [THREAD = THE WW1 SURFACE NAVIES]

    ASIDE: USS Cairo was raised from the riverbed in 1965 and is today a heritage museum at the Vicksburg National Military Park [see museum website].

1862 [24th December] Belief Systems [XXVIII - Superstition, Witchcraft, and Magic (Pepper)]: [Continued from 1858 (Dircks)] Having acquired performance rights to Dircks' [<=1858] Phantasmagoria the scientist-showman John H. Pepper [Wikipedia biography] incorporates just such an illusion as "Pepper's Ghost" into this year's Christmas entertainment at the Royal Polytechnic Institution [= modern University of Westminster], where he is a "professor". The effect is well received [sub-thread continues at 1865 (7th March) ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1862 [31st December] USS Monitor [<=1862] is lost in a storm off Cape Hatteras. [THREAD = THE WW1 SURFACE NAVIES]

    ASIDE: The wreck was located in 1973. Many parts have been brought up since then, and are on display at the Mariners' Museum, Newport News, VA [Museum website].
1863 A patent is granted to **John T. Newton** [no convenient biography], of the *Ystalyfera Ironworks*, for a clever solution to the weight-curvature problem of rolling sheet iron. The essence of Newton's new system is that the heaviest rollers do not bear down directly onto the metal being rolled, but act instead onto and via lower contact rollers. This both magnifies the applied downward force and stops the contact rollers from bowing upwards. In Sheffield, meanwhile, **Charles Cammell and Company** [1861<=>1877] have turned their Cyclops Works over to the production of crucible steel, competing all the while with **John Brown and Company** [1848<=>1877] at their Atlas Works for the market in rolled and hardened iron plate for use as warship armour. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

**ASIDE - JOHN BROWN AND COMPANY IN WW1**: John Brown and Company will soon be Clydebank's most successful shipbuilding firm [=1888 (12th March)], and will be responsible for many WW1 Royal Navy warships.

1863 A young German military engineer named **Ferdinand von Zeppelin** [Wikipedia biography] spends time with the Union Army of the Potomac, including an ascent in one of their observation balloons. [THREAD = WW1 AVIATION]

1863 The Prussian military engineer **Johann F. Schultze** [no convenient biography] patents a smokeless powder based on nitrated wood dust. [THREAD = WW1 ARTILLERY]

1863 The **Montigny Mitrailleuse** [=1851 and 1859] has now been brought up to full operational specification as a 25-barrel crank-operated 13mm [=.51"] machine gun by **Jean-Baptiste Verchère de Reffye** [Wikipedia biography], in which guise it is known as the "Reffye Mitrailleuse" in image; YouTube animation. [THREAD = WW1 MACHINE GUNS]

**ASIDE**: The Reffye Mitrailleuse will be produced in great secret and around 200 units will be available for field deployment in the Franco-Prussian War, *where, as something of an anti-climax, they have surprisingly little effect* [=1870 (19th July) for detailed discussion].

1863 The **Thomas Prentice Company** begins manufacturing guncotton at Stowmarket, Suffolk. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1863 **Alfred Nobel** [=1853<=>1865] patents a mercury fulminate "blasting cap", a means of detonating nitroglycerine [=1832] using an igniferous fuse ...

**ASIDE - ON DETONATION (AGAIN)**: Readers are reminded that there is a long history of using electrical wires to set off charges of gunpowder - see 1740 (William Watson), 1750 (Benjamin Franklin), 1812 (Pavel Schilling), and 1820 (Robert Hare). However neither electrical nor igniferous shot-firing is effective with high explosives because they require detonating - see 1832 (Henri Bricannot and the ASIDES). There is also a long history of using mercury fulminate as an impact explosive in percussion caps - see 1800 (Edward Howard) and the entire history of small arms since 1807 (Alexander Forsyth).

The essence of Nobel's patent is (a) to use mercury fulminate as a functional intermediate between an igniferous fuse and a to-be-ignited charge of nitroglycerine, and (b) to do so in a form in which it is (relatively) safe to transport and use. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1863 The French Navy commissions **Plongeur** [Wikipedia shipography], an experimental 420-ton submarine with a number of innovative features, including compressed air propulsion. [THREAD = THE WW1 SUBMARINE NAVIES]
1863 The German academic chemist Julius Wilbrand [Wikipedia biography] successfully synthesises **2,4,6-trinitrotoluene**, for evaluation as a yellow dye. [THREAD = WW1 ARTILLERY]


ASIDE - BAYER IN WW1: In WW1 Bayer turned over a proportion of its capacity to producing chemical weapons, not least *diphosgene* [=1898 (24th August) and follow the onward pointers]. Meister, Lucius, and Brünning, by 1914 trading as Hoechst A.G., seem to have produced chlorine gas for battlefield use. In general we adopt Joseph Borkin's conclusion that "the dyestuff companies became, in effect, the German chemical warfare service" (Borkin, 1979).

********** THE LONDON UNDERGROUND IS BORN **********

1863 [10th January] **The London Underground [I - Early Work]:** After three years in construction the Metropolitan Railway Company [Wikipedia factsheet=>1876 (18th November) formally opens an underground steam railway line linking Paddington to Farringdon via Edgware Road, Baker Street, Portland Road, Gower Street, and King's Cross. This is the first step in creating the modern Transport for London mass transit system [modern corporate website and system map] [continues at 1876 (18th November) ...], [THREAD = THE SHAPING OF THE MODERN WORLD]

1863 [22nd January-11th April] **The Polish-Lithuanian Rebellion:** Nationalists throughout the old Polish-Lithuanian Commonwealth [i.e., Poland, Lithuania, Belarus, and Latvia - see 1772 (5th August)] rise in insurrection against the Russian Empire. The rebels hope that the Russian response will be weakened by further risings there, but this fails to materialise leaving Alexander II of Russia [1855 (2nd March)<=>1881 (13th March)] free to respond militarily. The last battlefield engagement will be on 8th May at Gudiškis after which the Commonwealth forces are forced to resort to irregular tactics. There then follows a year or so of Russian pacification of the countryside, in which an estimated 70,000-80,000 Poles are sent to labour camps in the east and their lands repopulated by imported Russians. [THREAD = THE SHAPING OF THE MODERN WORLD]

1863 [20th February] The British naval engineer [Sir]1868 Edward J. Reed [Wikipedia biography] is appointed Chief Constructor of the Navy, a post he will hold until 1872. During his period of tenure he and his team will make a number of highly significant advances in warship design, not least with the *Devastation*-class [=1869], the first totally
sail-less steam warships [previous steamships had sails as well as engines in case the latter should break down]. [THREAD = THE WW1 SURFACE NAVIES]

1863 [24th February] The U.S. President, Abraham Lincoln [1862 (25th April)<= d. 1865 (15th April) by assassination] authorises the existing New Mexico Territory to slough off its western extent as the Arizona Territory [=1912 (14th February)], with a separate capital at (eventually) Phoenix. [THREAD = THE SHAPING OF THE MODERN WORLD]

1863 [11th March] [...] Continued from 1856 (19th May)] The new Royal Victoria Hospital, Netley accepts its first patients [continues at 1870 ...]. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

ASIDE - THE ROYAL VICTORIA HOSPITAL IN WW1: During WW1 Netley will be expanded to 2,500 beds and will treat some 50,000 patients (of whom 15,000 are psychiatric patients).

1863 [30th April] The Battle of Camarón: This battle is fought as part of the Franco-Mexican War [=1861 (8th January)] between a company of French Foreign Legion, specifically two lieutenants and 62 other ranks under Jean Danjou [Wikipedia biography], and a 3000 man Mexican brigade under Francisco de Paula Milan [no convenient biography]. The French are surrounded in Hacienda Camarón and its outbuildings, but resolve never to surrender, despite being outnumbered fifty-to-one. When Danjou is killed around midday Jean Vilain [Wikipedia biography] takes command, and leads a spirited defence for a further five hours. When he, too, is killed Clément Maudet [Wikipedia biography] takes over and gathers his 12 remaining legionnaires for a defiant last stand. An hour later only five are left and all their ammunition is spent, so they have no choice but to ... fix bayonets and charge! Two survive, and these are chivalrously permitted by General Milan to escort Captain Danjou's body back to their base. His prosthetic hand (legacy of an earlier battle) is preserved to this day in the Foreign Legion Museum at Aubagne, near Marseille [museum website], and the Legion remains to this day one of the world's elite line and special forces units. [THREAD = THE SHAPING OF THE MODERN WORLD]

1863 [1st-3rd July] The Battle of Gettysburg: This battle is fought as part of the Gettysburg Campaign of the American Civil War [=1861 (17th April)] between the 94,000-man Union Army of the Potomac under George G. Meade [Wikipedia biography] and a 71,000-man Confederate army under Robert E. Lee [1862 (16th September)<=1864 (8th May)]. The Confederates have lately been pushing northward through Maryland and have just crossed the state line into Pennsylvania. However the separate shadowing Union corps have managed to come together across Lee's line of advance at Gettysburg, PA. The outcome is a decisive Confederate defeat. The battle is noteworthy in the present context for the part played by Henry J. Hunt's concentrated artillery in blunting a major Confederate advance - Pickett's Charge - on 3rd July. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE - HUNT'S ARTILLERY DOCTRINE: On 27th September 1863 General Hunt submitted his report on the artillery operations at Gettysburg [full text online], to which interested readers are recommended. Hunt's fundamental organisational doctrine is that individual batteries may be attached either to a given infantry brigade, or else retained in the army in question's central reserve, but not exclusively one way or the other. The attached units are thereby sufficiently close at hand to be deployed whenever the brigade commander deems it necessary, whilst the reserve units are available to the army commander to be deployed according to his broader understanding of the situation. [THREAD = WW1 ARTILLERY]
1863 [4th July/20th August] The turret ships **HMS Scorpion** [[Wikipedia shipography]] and **HMS Wivern** [[Wikipedia shipography]] are launched at **Laird Brothers** [1862 (15th May)<=12th December], Tranmere. [THREAD = THE WW1 SURFACE NAVIES]

1863 [6th July] The French entrepreneur **Henri Germain** [[Wikipedia biography]] establishes the **Crédit Lyonnais Bank** [modern corporate website]. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1863 [1st August] This day’s issue of Satterlee Hospital’s **Weekly Register** [<=??th February] includes a piece entitled "The Delusions of Soldiering", in which an injured soldier allows his feelings free rein ...

"I am convinced that soldiering is, to the vast majority of mankind, a delusion and a snare; they enter into it self-deceived, and themselves deceiving others [...] so take advice of an old soldier, my fine young recruits, and prepare for the worst" (quoted in Clements, 2010 online). [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1863 [11th August] **The Co-operative Movement [I - The Initial Creation]:** Following the success of the **Rochdale Pioneers** [<=1844 (21st December)] the hitherto separate co-operatives of North England now get together into a superordinate administrative entity named the "**North of England Co-operative Society**" [continues at 1872 ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1863 [18th August] The American gunsmith **Christopher M. Spencer** [[Wikipedia biography]] demonstrates the **Spencer Rifle**, a .56" calibre rim-fire system with a seven-round tubular magazine concealed in the stock. He walks away with an order for 13,171 units and 58 million rounds of ammunition. Total production of the weapon will be around 100,000 by the end of the Civil War, but the company will go out of business once demand slumps thereafter. [THREAD = WW1 SMALL ARMS]

********** IMPORTANT WW1 WEAPON **********

===== THE TORPEDO BOAT =====

1863 [5th October] The steam torpedo-boat **CSS David** [[Wikipedia shipography]] slips out of Charleston harbour and attacks **USS New Ironsides** with a spar-torpedo. The charge explodes before the **David** can pull away, dousing her boiler fire. She takes small arms fire for a minute or two (she is too close for the **New Ironsides'** heavy guns to depress to bear) before drifting off into the darkness, relighting her boiler, and making good her escape. The **New Ironsides** is only slightly damaged. [THREAD = THE WW1 SURFACE NAVIES]

**ASIDE:** In fact CSS **David** was more like a modern stealth boat than a submarine because it never actually submerged; it was just ballasted to operate with a very low seaboard.

********** MEDICAL SCREENING FOR MALINGERERS **********

1863 [8th October] The Union Army Surgeon **Roberts Bartholow** [[Wikipedia biography]] publishes a report entitled "**A Manual of Instructions for Enlisting and Discharging Soldiers**" [Google Books full text], in which he sets out (amongst other things) how best to catch out medically malingering soldiers. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1863 [19th October] As one of [Sir] 1868 **Edward J. Reed's** inaugural design projects [<=20th February], construction work begins on **HMS Pallas** [[Wikipedia shipography]], an iron-over-wood "box battery" ship with a mixed armament of breech- and muzzle-loading 7" guns. [THREAD = THE WW1 SURFACE NAVIES]

1863 [26th-29th October] [...] Continued from 9th February] The **International Committee for Relief to the Wounded** [<=9th February] brings together delegates from the major European nations
to approve (1) the formation of national relief agencies, (2) the neutrality of the wounded, (3) the use of volunteer forces on the battlefield itself, and (4) standardisation on a white identifying armband bearing a bold red cross | continues at 1864 (22nd August) | [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE] 

1863 [29th November] The Battle of Fort Sanders: This battle is fought as part of the American Civil War [<=1861 (17th April)] between a 3000-man Confederate army under James Longstreet [Wikipedia biography] and the 440-man Union garrison at Fort Sanders, Knoxville, TN, under Ambrose E. Burnside [Wikipedia biography]. Longstreet has planned a frontal assault on this main bastion in the Knoxville defences, but he fails to achieve tactical surprise and is forced to abandon the attack with heavy losses after only 20 minutes. The battle is noteworthy for Burnside's early use of (unbarbed) wire entanglements to bolster his defences. [THREAD = WW1 ARMIES AND TACTICS]

1863 [12th December] HMS Minotaur [Wikipedia shiptography] is launched at the Thames Ironworks and Shipbuilding Company [1861 (29th December)<=1875 (16th November)] as the lead ship in a three-ship class of armoured frigates. Her two sister-ships will be HMS Agincourt (launched 27th March 1865, Laird Brothers [4th July]<=1865 (7th October)), Tranmere) and HMS Northumberland (launched 17th April 1866, Millwall Ironworks). At 400 foot in length this class is noteworthy as the longest single-screw warships ever built. [THREAD = THE WW1 SURFACE NAVIES]

1864 After the death on 24th March 1863 of Thomas Powell [Welsh National Library biography], coal owner of the Gaer, Newport, his mining interests around the region are acquired by a consortium of businessmen led by [Sir]1874 George Elliott [Wikipedia biography] (17th February). Around the same time Smith and Rodger's Middleton Shipyard [<=1856 (16th August)], Govan, reorganise themselves as the London and Glasgow Engineering Company [Wikipedia factsheet] and come to specialise in civilian steamers. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]


1864 The American Civil War military surgeons Silas Weir Mitchell [1857 (January)<=1875], George R. Morehouse [no convenient biography], and William W. Keen [Wikipedia biography] publish a monograph entitled "Gunshot Wounds and other Injuries of the Nerves" [full text online], in which they present case studies and clinical statistics from their respective wartime experiences. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1864 The British politician Hugh Childers [Wikipedia biography] is appointed a Civil Lord of the Admiralty. [THREAD = THE WW1 SURFACE NAVIES]

1864 After more than a decade in development, the Boxer Shrapnel Shell [<=1849] enters general service in the British Army. [THREAD = WW1 ARTILLERY]

1864 The St. Étienne Arms Works [<=1764] is rebuilt and modernised. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1864 Designed by the British architect Peter Ellis [Wikipedia biography] Oriel Chambers [Wikipedia factsheet], Liverpool, uses non load-bearing "curtain walls" within a steel girder frame to build height without weight-bearing bulk. [THREAD = THE SHAPING OF THE MODERN WORLD]
1864 [11th January] Having spent close on 15 years in Tsarist prisons or on the run, and having cultivated contacts with the Italian nationalist leader Giuseppe Garibaldi [1859 (29th April) => 1866 (20th June)] Mikhail Bakunin [1844 => 1867 (9th September)] finally arrives in Italy to foster anarchist revolution there. [THREAD = THE SHAPING OF THE MODERN WORLD]

1864 [14th January] Still the largest ship on the planet, the SS Great Eastern [1860 (17th June) => 1865 (15th July)] is sold at auction for conversion into a cable-laying vessel. Around this time and perhaps as part of this refit her steering gear is upgraded to include a power-assistance system devised by the engineer John Macfarlane Gray [Grace's Guide biography]

ASIDE - POWER-ASSISTED STEERING: With the coming of steam, came the opportunity for steering systems to be power assisted. This allowed greater speed of response to the helm, and thus greater safety. The first steam-powered steering system was patented by Gray in 1866, and installed in the SS Great Eastern. The essence of the invention was that when the helm was moved to a new position no direct attempt was made to move the rudder. Instead, the helm moved a steam valve which powered a gear-train which moved the rudder. A manual pressure on the helm of just a few kilograms applied a fully controlled and highly demand-sensitive pressure on the rudder bar of many tons. And the clever part came in shutting that power off automatically when the rudder reached the desired position (at which time the physical displacement of the rudder had "caught up" with the steersman's intent).

By 1878 the ship will have laid some 30,000 miles of submarine cable as the infrastructure for history's first Internet. [THREADS = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION and WW1 SIGNALLING AND TELECOMMUNICATIONS]

ASIDE: One of the Great Eastern's masts will be acquired in 1890 by the then newly formed Liverpool Football Club for use as a flagpole.

1864 [1st February] The Second Schleswig War: This war was dealt with when listing the First Schleswig War [<= 1848 (24th March)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** UNDERWATER COMBAT FINALLY WORKS **********


ASIDE: The H.L. Hunley went missing after the attack but was located by divers in 1970, and eventually raised 8th August 2000. The bodies of Lt. Dixon and the other eight members of his crew were forensically examined and then buried with Confederate Navy honours 17th April 2004. The precise reason for the sinking has never been finally established. The H.L. Hunley is now a museum exhibit [website] and one Bill Kendall has uploaded an excellent 10 minute telling of her story to YouTube [see this].

1864 [9th April] The steam torpedo-boat CSS Squib [no convenient shipography] infiltrates the USN anchorage at Newport News, VA, and explodes a spar-torpedo against the hull of USS Minnesota [Wikipedia shipography], but inflicting minimal damage. [THREAD = THE WW1 SURFACE NAVIES]

1864 [16th April] Josef Werndl [1855 (4th December) => 1867 (??th July)] founds Josef and Franz Werndl and Company [1855 (4th December) => 1867 (??th July)] at Steyr, Austria. [THREAD = WW1 SMALL ARMS]

1864 [30th April] Helmuth von Moltke [the Elder] [1857 => 1866 (14th June)] is appointed Chief of Staff to the German Confederation Army on the Danish front. He will spend the next
two months integrating his Prussian units with their non-Prussian comrades and then executes a determined and successful push northward. [THREAD = WW1 ARMIES AND TACTICS]


1864 [8th-21st May] The Battle of Spotsylvania Court House: This battle is fought as part of the American Civil War [<=1861 (17th April)] between a 100,000-man Union army under Ulysses S. Grant [Wikipedia biography] in 9th June] and the 52,000-man Confederate Army of Northern Virginia under Robert E. Lee [1863 (1st July)<>9th June]. The outcome is largely inconclusive, but with unsustainably high casualties on both sides. The battle is noteworthy in the present context for an incident in which (perhaps) Charles B. Grace [no convenient biography] of the 4th Georgia Infantry uses a Whitworth target rifle [<=1859] at some 800 yards range to snipe Major General John Sedgwick [Wikipedia biography], commanding general of the Army of the Potomac's VI Corps (this despite Sedgwick's confident assertion a moment beforehand that "they couldn't hit an elephant at this distance"). [THREAD = WW1 ARMIES AND TACTICS]

ASIDE - THE SELECTIVE TARGETTING OF OFFICERS: It has been reported of this incident that Sedgwick's death delayed certain Union unit manoeuvres and resulted in the day being lost to the Confederate forces. We have already remarked upon the selective targeting of enemy commanders with precisely this end in mind [e.g., <=1777 (Battle of Bemis Heights)].

1864 [10th May] The paddle ship Iona [Wikipedia shipography] is launched at the J. and G. Thomson Shipyard [1854 (27th June)<>1867 (20th March)], Govan. She is noteworthy in the present context for being retro-fitted in 1873 with an engine-room telegraph system designed by the Liverpool engineer Charles H. Chadburn [no convenient biography]. [THREAD = THE WW1 SURFACE NAVIES]

1864 [1st June] Impressed by the effectiveness of the CSN's torpedo boats [e.g.,<=17th February and 9th April] the USN orders one of its own, by the name USS Stromboli [Wikipedia shipography and full technical specification]. She will be renamed USS Spuyten Duyvil later in the year, and will see occasional action with the USN's James River Squadron during 1865. [THREAD = THE WW1 SURFACE NAVIES]

******* TRENCH WARFARE GOES LARGE SCALE *******

1864 [9th June - 1865 (3rd April)] The Siege of Richmond-Petersburg: This nine-month trench warfare stand-off is fought out as part of the American Civil War [<=1861 (17th April)] between a besieging Union army under Ulysses S. Grant [<=8th May] and the Confederate garrison on the Richmond-Petersburg front under Robert E. Lee [<=8th May]. The main events are ... The Meade Offensive, 1864; The Battle of the Crater, 1864; The Battle of Chaffin's Farm, 1864
The eventual outcome is that Lee is forced to surrender both cities on 3rd April 1865 and fight his way out toward Appomattox, VA, some 80 miles to the west. The siege is noteworthy in the present context (a) for the uncanny resemblance of its 30 mile front to WW1 trench warfare\(^1\), and (b) for a striking example of the potential of electronic espionage when Lee's personal telegraph operator, C.A. Gaston [no convenient biography], tapped General Grant's network for no less than six weeks (Greely, 2002 online; [For the fuller story, see W.R. Plumb's "History of the Military Telegraph in the Civil War" (1882/2000 available in facsimile)]). [THREAD = THE SHAPING OF THE MODERN WORLD]

\(^1\)ASIDE: The 20th century historian John Terraine was particularly impressed by the similarities between the Richmond-Petersburg front in 1864 and the Western Front in WW1, seeing it as a natural consequence of the Industrial and Scientific Revolution in weaponry. Here is how he explained the link ...

"So we see the lineaments of First Industrial Revolution warfare becoming clearly defined between 1861-65. The very landscape changed to match the new style; scenes hitherto associated with siege operations against particular localities now became normal on all the major battlefields. The new fire-power dictated new tactics; instinctively, as the lead-storms swept them with unprecedented accuracy, the soldiers of both sides sought cover [... building] up logs into parapets, covering them with earth from trenches, shelters, and bombproofs dug behind. Against riflemen thus entrenched, assault after assault withered away; the bayonet became useful chiefly as a cooking instrument or for opening tins or boxes, scarcely ever as a weapon of war. The arts of trench warfare were universally cultivated; 'the armies went into the ground completely at the end" (Terraine, 1982, pp16-17).

1864 [15th-18th June] The Meade Offensive: This battle is fought as part of the Richmond-Petersburg Campaign of the American Civil War \([\leq1861 (17th April)\)] between a Union army under George G. Meade \([\leq1863 (1st July)\)] and the Confederate defenders on the Petersburg sector of the front under Pierre Beauregard \([\leq 1861 (21st July)\]). The outcome is a costly and often confused four days for the Union attackers, followed by the attack being called off. [THREAD = THE SHAPING OF THE MODERN WORLD]

1864 [19th June] The Battle of Cherbourg: This naval battle is fought as part of the American Civil War \([\leq1861 (17th April)\)] between the CS Navy's commerce raider CSS Alabama \([1862 (15th May)\] \(\Rightarrow\) sunk this day) (with a string of 60-plus sinkings or captures to its credit) and USS Kearsarge [Wikipedia shipography] (which has been on her trail for some months). The outcome of the hour-long engagement is the Alabama's sinking. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE - HUNTING DOWN COMMERCE RAIDERs IN WW1: Check out the Battle of the Falkland Islands \([\Rightarrow 1914 (8th December)\)] and the Hunt for the Emden \([\Rightarrow 1914 (9th November)\]), and then follow the onward pointers.

********** AMBULANCE CHASING IS BORN **********

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1864 [23rd June] Nervous Shock [I - The Early Debate]: The British Parliament passes the Accidents Compensation Act (Amendment), extending existing public liability legislation to apply also to passengers involved in railway accidents. Over the coming years lawyers and expert medical witnesses create a veritable industry pursuing/defending compensation claims directed at railway companies\(^1\). [continues at 1866 ...]. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

\(^1\)ASIDE: Coincidentally this entry was written on the same day [5th June 2014] that the Cameron-Clegg Coalition Government proposed tighter restrictions on the modern industry in falsifying encouraging claims for auto injury compensation.
1864 [30th July] **The Battle of the Crater:** This battle is fought as part of the Richmond-Petersburg Campaign of the American Civil War between a Union army under Ambrose E. Burnside and James H. Ledlie and the Confederate defenders in the Elliott's Fort sector of the front under William Mahone. The crater is formed when eight tons of gunpowder are let off under the Confederate line, and it measures 170 feet long, 80 feet wide, and 30 feet deep. Some 300 Confederate soldiers are killed in the initial blast but Ledlie's 1st Union Division have only lately been chosen for the assault and their attack is launched *through* rather than *around* the crater and makes only slow progress. Mahone spots their error and brings every available rifle and cannon to the crater's rim, turning it into a killing ground. The event is therefore noteworthy in the present context for demonstrating that it is no use creating a momentary hole in the enemy's line unless you have reserve units immediately at hand to exploit it. [THREAD = WW1 ARMIES AND TACTICS]

**ASIDE - EXPLOSIVE UNDERMINES IN WW1:** Tunnelling was widely used in WW1 to assist operations on the surface [=1914 (21st December) and follow the onward pointers].

**WAR VIDEO:** This event was fictionalised in Anthony Minghella's (2003) movie "Cold Mountain" [see it now on YouTube].

1864 [5th August] **The Battle of Mobile Bay:** This battle is fought between a blockading US Navy fleet under David G. Farragut and the Confederate ships in, and coastal batteries defending, Mobile Bay. The outcome is an expensive Union victory. The encounter is noteworthy (a) as an example of an exchange between a coastal defence fort and ships at sea, (b) for the loss of USS Tecumseh to a "torpedo" [in 1864 this word still signifies an underwater mine], and (c) for the hard time given to Farragut's flagship USS Hartford by the guns of Fort Morgan. [THREAD = THE WW1 SURFACE NAVIES] [WAR ART = Xanthus Smith's "Battle of Mobile Bay"]

**TELLING IT LIKE IT IS - COPING WITH MEMORIES OF BATTLE:** Commager (1950/1973) offers the following extract from the papers of USS Hartford's Signals Officer, John Kinney, when called up on deck during the engagement ...

"Owing to the Hartford's position, only her few bow guns could be used, while a deadly rain of shot and shell was falling on her, and her men were being cut down by scores, unable to make reply. [...] One poor fellow lost both legs by a cannon-ball; as he fell he threw up both arms, just in time to have them also carried away by another shot" (John Kinney, quoted in Commager, 1950/1973, p230; emphasis added).

**RESEARCH ISSUE - "FLASHBULB MEMORY" FOR WARTIME HORROR:** Modern memory theory recognises the theoretical salience of vivid autobiographical memories such as that described above. The seedling work is that of Brown and Kulik (1977) and the current status of the research is neatly stated in Law (2011 online).

********** THE REVOLVING TURRET GOES TO SEA **********

1864 [20th August] Having been 15 years in the construction due to constant specification changes, HMS Royal Sovereign now enters special service as an experimental turret ship. She is now fitted with five 10.5” muzzle-loading cannon in one twin and three single turrets. [THREAD = THE WW1 SURFACE NAVIES]

1864 [22nd August] **The First Geneva Convention:** [... Continued from 1863 (26th October)] The International Committee for Relief to the Wounded now obtains formal signatures to the First Geneva Convention from Baden, Belgium,
Denmark, France, Hesse, Italy, the Netherlands, Portugal, Prussia, Switzerland, Spain, and Württemberg [continues at 1876 ...]. [THREAD = THE RULES OF WAR]

1864 [3rd September] Emil Nobel [Wikipedia biography] is killed in a nitroglycerine explosion at his father's workshops at Heleneborg, Sweden. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1864 [around this time] John T. Metcalf [no convenient biography], U.S. Army Corps of Engineers, a surveyor in peacetime, reportedly uses a Spencer Rifle [<=1863 (18th August)] equipped with a 24x magnification telescopic sight to snipe a Confederate officer at a range of some 1800 yards. [THREAD = WW1 SMALL ARMS]

1864 [28th September] The International Workingmen's Association [I - Initial Formation]: A meeting of British, French, Polish, Italian, German, and Irish left-wing activists takes place at St. Martin's Hall, London. Karl Marx [1848 (1st March)<=1867] is elected to the General Council [continues at 1865 (25th September) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1864 [29th-30th September] The Battle of Chaffin's Farm: This battle is fought as part of the Richmond-Petersburg Campaign [<=9th June] of the American Civil War [<=1861 (17th April)] between an attacking Union army under Benjamin F. Butler [Wikipedia biography] and the Chaplin's Bluff sector of the defending Confederate lines around Richmond-St. Petersburg under Richard S. Ewell [Wikipedia biography]. The outcome is a Union victory. [THREAD = THE SHAPING OF THE MODERN WORLD]

1864 [3rd December] The Union Army establishes its XXV Corps as an African American unit with white officers. [THREAD = WW1 ARMIES AND TACTICS]

1865 Writing as Lewis Carroll, the British clergyman-novelist Charles L. Dodgson [Wikipedia biography] publishes "Alice's Adventures in Wonderland", a fantasy. [THREAD = THE SHAPING OF THE MODERN WORLD]

1865 The British government's Ordnance Select Committee reports negatively on its trials with breech-loading artillery, and development is frozen for more than a decade. [THREAD = WW1 ARTILLERY]

1865 The French engineer Pierre-Émile Martin [Wikipedia biography] licenses the Siemens regenerative furnace and specialises in producing "Siemens-Martin open-hearth" steel [=>1871]. Because there is no need for a tippable crucible as in the Bessemer-Mushet Process [<=1856 (24th August)] the tappable fixed hearths can be built to load requirements up to 500 tons at a time. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1865 The French physician Claude Bernard [Wikipedia biography] publishes "Introduction à l'Étude de la Médecine Expérimentale" [in English as "An Introduction to the Study of Experimental Medicine", but not until 1927: Project Gutenberg full text online], in which he anticipates many of the
principles of the modern philosophy of science [see Companion Resource]. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]


********** "A MASTER OF KEEPING SECRETS"**********

1865 [7th March] Belief Systems [XXIX - Superstition, Witchcraft, and Magic (Maskelyne)]: [Continued from 1862 (24th December)] The British magician John Nevil Maskelyne [Wikipedia biography] attends a theatrical séance at Cheltenham Town Hall given by the Davenport Brothers [Wikipedia biography], and exposes a number of the mystical happenings as pure earthly illusion. In the months which follows he teams up with assistant George Cooke [no convenient biography] to tour with a magic show of their own [sub-thread continues at 1873 (1st April) ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]


1865 [6th April] The German industrialist Friedrich Engelhorn [Wikipedia biography] founds the Badische Anilin- und Soda- Fabrik [then and now = BASF; modern corporate website] in Ludwigshafen, Germany, to process the tar residues from his gasworks. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

ASIDE - BASF IN WWI: Comments as for Hoechst A.G. [<=1863 (2nd January)].

1865 [5th June] The Dowlais Ironworks [1843<=1871] installs the first of six Bessemer Converters [<=1855], thereby upgrading itself from an ironworks to a steelworks. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

********** NOBEL STARTS TO BUILD AN EMPIRE **********

1865 [20th June] Following the destruction of his family’s factory at Heleneborg, Sweden, Alfred Nobel [1863<=1866] sets up Nitroglycerin A.B. at Vinterviken, Sweden, and Alfred Nobel and Company at Krümmel, near Hamburg. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1865 [6th July] The Newport Docks [V - Alexandra Dock Authorisation]: [... Continued from 1858 (2nd March)] Parliament passes an Act authorising the construction of a new and larger dock a mile downstream from the existing Town Docks [continues at 1868 (??th May) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1865 [15th July-9th August 1866] Now fitted out as a cable-ship, the SS Great Eastern [1864 (14th January)<=>scraped 1889-1890] Sets off from Valentia Island, Ireland, on what will turn out to be an unsuccessful attempt to lay a submarine telegraph cable across the Atlantic Ocean to Newfoundland. She is carrying [Sir] William Thomson [1st Baron Kelvin] [1856 (6th November)<=>1872] as technical advisor. Unfortunately the cable snaps on 31st July after laying 1062 miles, and it will not be possible to try again until further funding has been arranged. A second voyage will begin on 13th July the following year and successfully lands the cable at Heart's Content, Newfoundland, on 27th July. The Great Eastern then retraces her steps, locates and dredges up the missing tail of the 1865 cable, repairs it, and completes it to Newfoundland on 7th September. The capacity of the combined cables is about 16 words a minute. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]

1865 [20th August] The Gastein Convention: This treaty is dealt with in the entry for the Treaty of Prague [=>1866 (23rd August)]. [THREAD = THE SHAPING OF THE MODERN WORLD]
1865 [25th-29th September] The International Workingmen's Association [II - The London Planning Conference]: [... Continued from 1864 (28th September)] Europe's left-wing activists come together in London to discuss strategy. They resolve to hold annual congresses, starting the following year [continues at 1866 (3rd September) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1865 [7th October] The turret-ship Huáscar [Wikipedia shipography] is launched at Laird Brothers [1863 (12th December)<=1867 (30th January)], Tranmere, for service with the Peruvian (later Chilean) Navy. [THREAD = THE WW1 SURFACE NAVIES]

ASIDE: Huáscar has been preserved as a museum ship at Talcahuano, Chile [see museum website] and appears to be the oldest iron vessel still afloat.

1865 [6th December] The screw-propelled SS City of Paris [ClydeMaritime shipography available by registration=>1861 (21st March)] is launched at the Tod and Maegregor Shipyard [1850 (28th February)<=1874], Partick, for service with the Inman Line [1850 (28th February)<=1866 (21st March)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1866 Seeing is Believing [VI - Early Moving Images (Beale)]: [Continued from 1860 (De Neuville)] The British inventor Joshua Beale [no convenient biography] creates a repeating-image slide projector system named the "choreutoscope" [YouTube demonstration] which is capable of rapidly exposing six images set out along a linear mounting one at a time at a single display position. Providing the cranking rate is high enough and the images are progressively drawn this creates an illusion of continuous movement [sub-thread continues at 1867 (23rd April) ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1866 Nervous Shock [II - The Erichsen (1866) Paper]: [... Continued from 1864 (23rd June)] The Danish-born British surgeon John E. Erichsen [Wikipedia biography=>1875] publishes "On Railway and Other Injuries of the Nervous System" [full text online], a collection of six lectures on "certain forms of injury of the nervous system that commonly result from accidents on railways, to which I have reason to believe the mind of the profession has not been directed with that amount of attention which their frequency and [importance] demand" (v) [continues at 1867 (18th December) ...]. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE] Erichsen, J.E. (1866). On Railway and Other Injuries of the Nervous System. London: Walton and Mabberley.

1866 [Sir]1891 Thomas Sutherland [1865 (3rd March)<=1872] becomes a Director of the Peninsula and Oriental Steam Navigation Company [Wikipedia factsheet=>1872]. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1866 Alfred Nobel's [1865<=1867] new Krümmel works is destroyed by an explosion. He continues his experiments towards making nitroglycerine more stable, and finds that soaking it into a powdered stone known as Kieselguhr [Wikipedia chemistry] gives promising results. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

ASIDE: The process is much the same as that by which 21st century cats' urine is absorbed into cat litter - the fluid disappears into microscopic pores in the grains of the absorbent medium.

1866 The German military engineer Maximilian Schumann [Wikipedia biography=>1873], an acknowledged authority on the use of iron and steel armour, is put in charge of the Prussian Army's Ingenieurkomitee. Around the same time the Woolwich Royal Arsenal releases the Hale spin-stabilised [therefore no cumbersome trailing stick needed] rocket for operational service. [THREAD = WW1 ARTILLERY]

1866 Edward M. Boxer [=1849 (27th April)] patents the "Boxer Centre-Fire Cartridge". Around the same time Antoine Chassepot [=1857] presents the French Army with the Fusil Modèle 1866, or "Chassepot", a .433" calibre bolt-action rifle, and it goes into production at the St. Étienne Arms Works [=1864]. The weapon is noteworthy in the present context (a) for the size of the production run (ca. 1,500,000 units), and (b) for the fact that the Chassepot paper cartridge included an integral priming cap. Around the same time the Union Metallic Cartridge Company of Bridgeport, CT develop a successful centre-fire metal cartridge. Around the same time Oliver Winchester [=1855] renames the New Haven Arms Company [=1857] as the Winchester Repeating Arms Company, and rebrands the Henry Repeating Rifle [=1860 (16th October)] as the Winchester Model 1866 ...

ASIDE: According to Trenk (1997 online), Winchester gifted a small number of these weapons to influential Turkish politicians and generals and was able to make a number of follow-up sales. They will be put to good use at the Battle of Plevna [=1877 (20th July)].

Around the same time the British Army starts recalling its muzzle-loading Pattern 1853 Enfield rifles, replacing them with the .577" calibre Snider-Enfield breech-loading rifle, and thereby raising the rate of fire from three aimed rounds per minute to ten! [THREAD = WW1 SMALL ARMS]

1866 The British publisher Edwin J. Brett [no convenient biography] brings out a new boys' magazine under the title "Boys of England" [Wikipedia factsheet], aimed at a working class audience. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1866 The British businessman William V. Wright [no convenient biography] starts selling his newly concocted "coal-tar soap" on the health merits of carbolic acid [=1867 (27th July)] [continues at 1899 (?7th June) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE - WRIGHT'S COAL-TAR SOAP IN WW1: This product was one of many personal luxuries and comforts recommended for "parcels from home" [check out a typical newspaper advertisement at http://paperspast.natlib.govt.nz/cgi-bin/paperspast?a=d&d=CHP19151013.2.32.1]. [Readers wishing to experience the delights of coal-tar soap for themselves can still buy this product, but the carbolic smell nowadays is artificial - Ed.]

1866 [23rd February] The Romanian Coup of 1866: [... Continued from 1848 (23rd June)] Having been occupied on and off by both Russians and Turks since the ill-fated Wallachian Revolution [=1848 (23rd June)], Romanian nationalists now force Prince Alexandru Ioan I of Romania [=1862 (5th February)] to abdicate, appointing Prince Charles of Hohenzollern-Sigmaringen [Wikipedia biography=>1877 (21st May)] in his place. This new arrangement will endure until replaced in its turn by the Kingdom of Romania [=1881 (15th March)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1866 [23rd February] HMS Prince Albert [=1862 (29th April)] enters "particular service", that is to say, for trials and evaluation rather than front line operations. [THREAD = THE WW1 SURFACE NAVIES]

1866 [21st March] The Inman Line's [1865 (6th December)<=1871 (16th March)] SS City of Paris [=1865 (6th December)] sets off on her maiden voyage from Liverpool to New York City. She will
prove herself one of the fastest ships on the route for a number of years. [THREAD = THE SHAPING OF THE MODERN WORLD]

1866 [1st June] With the turret arrangement for her main armament finally approved, construction work begins on **HMS Monarch** [Wikipedia shipography](#), the first turret ship intended for line service rather than for evaluation. [THREAD = THE WW1 SURFACE NAVIES]

1866 [14th June-23rd August] **The Austro-Prussian War, 1866:** This war is fought between the Austrian Empire and Prussia, both sides supported by a selection of the smaller German states, and in Prussia's case by Italy as well. The Austrian Supreme Commander is **Archduke Albert, Duke of Teschen** [Wikipedia biography](#) and the Prussian is **Helmuth von Moltke [the Elder]** [1864 (30th April)<=27th June]. The main events are ...

The Battle of Langensalza, 1866; The Battle of Königgrätz, 1866

The overall outcome is an historical Prussian victory followed by the **Treaty of Prague** [=>23rd August]. The war is noteworthy in the present context (a) for helping to establish Germany as a unified nation (if only by the annexation at gunpoint of Hanover, Hesse-Kassel, Nassau, and Frankfurt), (b) for the annexation of Schleswig and Holstein, (c) as a testing ground for the latest weaponry developments, and (d) as a testing ground for mobilisation by railway. [THREAD = THE SHAPING OF THE MODERN WORLD]

1866 [20th June-12th August] **The Third Italian War of Independence, 1866:** Carefully timed by the Italians to coincide with the Austro-Prussian War just started in the north [<=14th June], this war is fought between Italy under **Vикtor Еmanuеl II** [1859 (29th April)<=1870 (20th September)] and **Giuseppe Garibaldi** [1864 (11th January)<=21st July] and the Austrian Empire under **Franz Josef I of Austria** [1861 (8th December)<=1867 (1st March)]. At issue is the province of Veneto, Italian-speaking but ruled from Vienna. The main events are ...

The Battle of Lissa, 1866; The Battle of Bezzecca, 1866

The war will be brought to an end by the **Treaty of Vienna** [=>3rd October] and the overall outcome is an Italian victory. The capture of the province of Lazio, with the city of Rome itself, will follow four years later [=>1870 (20th September)]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1866 [27th June] **The Battle of Langensalza:** This battle is fought as part of the Austro-Prussian War [<=14th June] between a Prussian/Saxe-Coburg-Gotha army under **Helmuth von Moltke [the Elder]** [14th June<=3rd July] and a Hanoverian/Bavarian army under **George V of Hanover** [Wikipedia biography]. The outcome is a Prussian victory. The battle is noteworthy in the present context for the first ever deployment of one of the new Red Cross nursing detachments [<=1864 (22nd August)]. [THREADS = THE SHAPING OF WW1 EUROPE and WW1 MILITARY MEDICINE]

1866 [3rd July] **The Battle of Königgrätz:** This battle is fought as part of the Austro-Prussian War [14th June] between a Prussian army under **Helmuth von Moltke [the Elder]** [27th June<=1870 (5th July)] and an Austrian army under **Ludwig von Benedek** [Wikipedia biography]. The outcome is a decisive Prussian victory with heavily disproportionate Austrian casualties. The battle is noteworthy in the present context for demonstrating the superiority of its **Dreyse Rifle** [see below] over the Austrian **Lorenz Rifle** [see below]. [THREADS = THE SHAPING OF WW1 EUROPE and THE WW1 ARMIES]
ASIDE - THE RIFLES OF 1866: It typically takes many years (often decades) for newly approved weapons actually to get into the hands of those for whom they are intended. Firstly the things have to be manufactured (and paid for) and the complex systems of training, procurement, and logistics adjusted as necessary. Then the weapons being replaced have to be safely decommissioned, scrapped, or sold on. Von Menges (1913) states that in 1866 all but a few Prussian units were armed with the ancestral Model 1841/1847 Dreyse Needle-Gun [<=1841] rather than with the upgraded Model 1862 Dreyse Needle-Gun [<=1862]. The Austrian troops were generally armed with the M1854 Lorenz Rifle-Musket [<=1854], one of the several Minié Rifle clones to emerge in the 1850s. The comparative rates of fire are Dreyse M1841/1847 seven rounds a minute, Dreyse M1862 ten rounds per minute, and Lorenz M1854 a mere two rounds a minute. More importantly, the Dreyse's bolt-action can be worked lying down or on the move, whilst the Lorenz's ramrod action requires the rifleman to be standing up. Only after the war will the Austrian War Office agree to fund (a) a breech-loadable replacement for the Lorenz [=>1867 (?7th July)], and (b) a stop-gap conversion kit for those weapons already in service [=>1867 (5th January)].

WAR MUSIC - THE KÖNIGGRÄTZE MARCH: A march to celebrate this victory was composed by the bandmaster Johann Piefke immediately after the event [YouTube it now].

********** THE FIRST IRONCLAD FLEET BATTLE **********

1866 [20th July] The Battle of Lissa: This naval battle is fought as part of the Third Italian War of Independence [<=20th June] between an Italian fleet under Carlo di Persano [Wikipedia biography] and a significantly smaller Austrian fleet under Wilhelm von Teggethoff [Wikipedia biography]. The outcome is an against-the-odds Austrian victory. The battle is noteworthy in the present context as history's first fleet-scale action of the ironclad era (and the last officially to encourage ramming). [THREAD = THE WW1 SURFACE NAVIES]

1866 [21st July] The Battle of Bezzecca: This battle is fought as part of the Third Italian War of Independence [<=20th June] between an Italian army under Giuseppe Garibaldi [Wikipedia biography] and an Austrian army under Franz Kuhn [no convenient biography]. The outcome is a convincing Italian victory. [THREAD = THE SHAPING OF THE MODERN WORLD]

1866 [10th August] Cardiff Docks [VI - Roath Basin Authorisation]: […] Continued from 1859 (?7th September)] After much discussion and lobbying, Parliament passes the Bute Docks Act, 1866, authorising further expansion of the Cardiff Bay waterside [continues at 1874 …]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1866 [10th August] The Naval Discipline Act, 1866: […] Continued from 1860 (16th February)] The British Parliament passes an Act setting out the "Articles of War" insofar as they should apply to Royal Naval personnel. The Act will remain in force until 1957. Here are a couple of specimen articles …

"2. Every [Captain] who upon Signal of Battle, or on Sight of a Ship of an Enemy which it may be his Duty to Engage, shall not use his utmost Exertion to bring his Ship into Action […] shall, if he acted traitorously, suffer Death …"

"27. Every person subject to this Act who shall be guilty of any profane Oath, Cursing, Excoration, Drunkenness, Uncleanness, or other Scandalous Action […] shall be dismissed from Her Majesty's Service, with Disgrace …" [THREADS = THE WW1 SURFACE NAVIES and THE WW1 SUBMARINE NAVIES]

1866 [23rd August] The Treaty of Prague: This treaty between Austria and the North German Federation brings the Austro-Prussian War [<=14th June] to an end. The terms of the treaty are remarkably lenient, being designed by the Prussians simply to take the Austrians down a peg [which is why Germany and Austria were on the same side in WW1 - Ed.]. [THREAD = THE SHAPING OF THE MODERN WORLD]
1866  [3rd-8th September] The International Workingmen’s Association [III - The First Annual Congress, Geneva]: [...] Continued from 1865 (25th September) [...] 46 delegates from across Europe meet to develop a coherent workingmen's manifesto. This year's assembly is noteworthy in the present context for calling for the abolition of state armies [continues at 1867 (25th June) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1866  [3rd October] The Treaty of Vienna: This treaty between Austria and Italy brings the Third Italian War of Independence [<=20th June] to an end. The main provision is that Austria cedes the province of Veneto to Italy. [THREAD = THE SHAPEING OF THE MODERN WORLD]


1867 The Development of Photography [XIII - Muybridge]: [Continued from 1851 (Archer)] A young British photographer named Edward Muybridge [Wikipedia biography] emigrates to San Francisco and spends the next five years building a reputation as a landscape photographer. He will be particularly well-remembered for a portfolio of stereoscopic collodion images taken in the Yosemite area [readily browsable, if interested] [sub-thread continues at 1872 (Muybridge) ...]. [THREAD = THE SHAPEING OF THE MODERN WORLD]

1867  [... Continued from 1860] [Sir] William Armstrong [1860<=1874] now replaces his A-Pattern Time Fuse [<=1860] with the F-Pattern Time and Percussion Fuse. [THREAD = WW1 ARTILLERY]

1867 Karl Marx [1864 (28th September)<=1868 (6th September)] publishes the first volume of "Das Kapital" [in English in 1887 as "Capital"], a theory of the exploitation of labour by capital itself[^2], rather than by fellow humans. [THREAD = THE SHAPEING OF THE MODERN WORLD]

[^1]: Marx will die in 1883 with Volumes II and III of this work still in manuscript form.
[^2]: Das Kapital presents one man's analysis of the dynamics of human economic activity over historical time, arguing that the social unrest which has been plaguing Europe ever since the beginnings of the Industrial Revolution is, in effect, a mathematical certainty. Marx's core thesis is that any economy which allows its "means of production" to become the capital assets of a privileged class naturally invites the exploitation of those who actually do the work; indeed it is the unpaid work - the "surplus value" - of said class which provides the ultimate source of profit. The fact that money obscures the true value of goods makes this exploitation process run more smoothly than otherwise it would. However whilst its core propositions are generally clear enough they remain unproven in any scientific sense to the present day.

1867 Now retired from the Union Army, William Hammond [<=1862 (25th April)] is appointed Professor of Nervous and Mental Diseases at Bellevue Hospital, New York City, and spends the rest of his life as a civilian academic. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

1867 Naylor, Vickers and Company [<=1828] go public as Vickers, Sons and Company, and expand over the coming years into marine engineering. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]
ASIDE - VICKERS IN WW1: This picture really is worth a thousand words.

********** BULLY BEEF IS BORN **********
1867 The Chicago businessman Philip D. Armour [Wikipedia biography] founds Armour and Company [modern corporate website] in order to tap into the flow of beef through the Union Stock Yards, turning it into canned goods. [THREAD = WW1 LOGISTICS]

********** "QUICK ETHEL, YOUR RIFLE!!!" § **********
1867 Drawing upon his experiences as a war correspondent, George A. Henty [Wikipedia biography] tries his hand as an adventure fiction writer with a romance entitled "A Search for a Secret". Over the remaining 35 years of his life he will turn out well over a hundred similar titles, increasingly for young adults, each a tale of pluck and derring-do in the face of dastardly (usually foreign) "blackguards"§ and "ruffians". [THREADS = WW1 ROMANTIC NATIONALISM and THE WW1 MIDDLE CLASS OFFICER]

1 § ASIDE - GEORGE A. HENTY IN WW1: The headline phrase appears in Henty's (1871) novel "Out on the Pampas". The word "blackguard" [pronounce as "blaggard"] is now-obsolete 19th Century English for rogues of all sorts. Henty was writing for teenage boys, and the teenage boys of Henty's time were, needless to say, the politicians and generals of WW1. Here, as a quick exercise, are the 17th years of some well-known WW1 personalities [together with an indication of their own deeds of pluck and derring-do] ...

1867 Lord Kitchener [Secretary of State for War]
1869 Sir John French [Commander, British Expeditionary Force, 1914-1915]
1875 Horace Smith-Dorrien [Battles of Mons and Le Cateau]
1878 Sir Douglas Haig [Commander, British Expeditionary Force]
1891 Winston Churchill [First Lord of Admiralty; Battle of Gallipoli]

1 § ASIDE: Tales of this nature came to be known as "ripping yarns" and were the stock in trade of the boys' magazines industry [e.g. <=1855 (Boys' Own Magazine); <=1866 (Boys of England); =>1879 (Boys' Own Paper)]. The ripping yarns genre was itself satirised by the 1970s television series "Ripping Yarns", written by Michael Palin and Terry Jones and directed by Terry Hughes. The episode title "Across the Andes by Frog" gives some idea of the general thrust of the humour. Comedy aside, the part played by ripping yarns in creating a mind-set for war is now increasingly being recognised by academics - see the entries for Maria Tatar [=>2009 (??th April)], Peter Hugill [=>1999 (??th July)], Marah Gubar [=>2009], and Dieter Petzold [=>1992], and follow the onward pointers.


1867 Having learned the gunsmith's art at the Hartford Arsenal, CT, during the Civil War, the American inventor Benjamin B. Hotchkiss [Wikipedia biography] relocates to France and sets up his own munitions factory. His first marketplace successes are the "Hotchkiss Gun", a mule-portable mountain gun for use in rough terrain and the "Hotchkiss Revolving Cannon", akin to the Gatling system [<=1862 (4th November)] but firing a larger 37mm [=1.5"] exploding projectile. [THREAD = WW1 MACHINE GUNS]

********** DYNAMITE IS BORN **********
1867 Alfred Nobel [1866<=1871] patents his newly stabilised nitroglycerine as "dynamite" and embarks on a campaign of business expansion. His investment strategy (and very successful it will be) is to seek business partners to produce and market dynamite under licence, but to take part of the licence fee in the form of stocks and shares. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

********** CANTERBURY DREAMS **********
1867 [5th January] The Austrian gunsmith Franz Wanzl [no convenient biography] devises the M1867 Wanzl Rifle [Wikipedia fact sheet], a breech-loading/metal cartridge conversion for the Lorenz M1854 Rifle-Musket [<=1854]. Some 70,000 emergency stop-gap conversions will be carried out before the even better M1867 Werndl-Holub Rifle [=>??th July] starts to come off the production line in numbers. [THREAD = WW1 SMALL ARMS]

1867 [30th January] Designed by Cowper Coles [<=1862 (29th April)] and drawing on experience with earlier turreted ships such as HMS Prince Albert [<=1866 (23rd February)], and HMS Royal Sovereign [<=1864 (20th August)], construction work begins at Laird Brothers [<=1865 (7th October) <=1903], Tranmere, on HMS Captain [Wikipedia shipography], an experimental 7000-ton steam-and-sail "turret ship, to be armed with a twin 12" rifle muzzle-loading gun turret. [<=1870 (30th April)] [THREAD = THE WW1 SURFACE NAVIES]

1867 [31st January] So impressed are they with the successful use of railways to mobilise their armies for the Austro-Prussian War [<=1866 (14th June)] that the Prussian General Staff extends its administrative structure to include a Railways Department. [THREAD = WW1 ARMIES AND TACTICS]

1867 [5th February] The Reform Act, 1867: [See firstly 1832 (7th June)] This Act of Parliament roughly doubles the size of the British electorate by giving the vote to adult males aged 21 years and over, who were either property owners outright, or else paid £10 or more per annum in rent. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1867 [12th February] The Royal Commission on Trades Unions: After four years of deliberation it will finally be decided that Trades Unions are - on balance - of benefit to both employers and employees alike [continues at 1871 (Trade Union Act) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1867 [12th February/16th April] The Final Unification of Germany [I - The North German Confederation]: Otto von Bismarck [1862 (23rd September) <=1870 (13th July)] becomes Minister-President at the head of the newly elected government of the North German Confederation. One of his first tasks is to get approval for a formal Constitution under which there is to be an hereditary House of Hohenzollern king - presently Wilhelm I [1861 (2nd January) <=1871 (18th January)] - and a two-house parliament, specifically an upper Bundesrat elected by the federated states, and a lower Reichstag elected by universal male suffrage. This new structure is duly approved on 16th April [continues at 1871 (18th January) ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1867 [1st March] The Hungarian Compromise: In an attempt to strengthen Austria's international standing in the wake of its drubbing in the Austro-Prussian War [<=1866 (14th June)] their Emperor, Franz Josef I of Austria [1866 (20th June) <=1873 (22nd October)], creates a semi-autonomous Kingdom of Hungary within an overarching Austro-Hungarian Empire. [THREAD = THE SHAPING OF THE MODERN WORLD]

ASIDE - THE AUSTRO-HUNGARIAN EMPIRE IN WW1: It will be an Austro-Hungarian Crown Prince who is assassinated in Sarajevo, and an Austro-Hungarian Emperor who from hatred of the Serbians starts the escalation into war which follows - see 1914 (28th June) and follow the onward pointers.

1867 [20th March] SS Russia [no convenient shipography] is launched at the J. and G. Thomson Shipyard [1864 (10th May) <=1871], Govan, for service with the Cunard Line [1854 (27th June) <=1870 (10th September)]. [THREAD = THE SHAPING OF THE MODERN WORLD]
1867 [1st April-31st October] **The Paris Exhibition, 1867**: Themed on "the history of labour", this international festival of artistry, skills, and inventiveness opens on the Champs de Mars, Paris. Horne (1965) will later note wryly that while the French are exhibiting "the beautiful and the frivolous" the Prussians are showcasing the latest armaments from the **Krupp Company** [1860<=>1873]. Indeed according to Zieren (2004) those very same weapons will be bombarding Paris in the Franco-Prussian War only three years later [=>1870 (19th July)]. [THREAD = THE SHAPING OF THE MODERN WORLD]


1867 [23rd April] **Seeing is Believing [VII - Early Moving Images (Lincoln)]:** [Continued from 1866 (Beale)] Following the success of the "magic disk" systems of the 1830s [<=1832 (December)] the American inventor William F. Lincoln [no convenient biography] devises a variant system of his own under the patented name "**zoetrope**" [literally "the wheel of life"; Wikipedia factsheet: YouTube demonstration] [sub-thread continues at 1873 (1st April) ...]. [THREAD = THE BATTLE FOR HEARTS AND MINDS]

1867 [25th June] The British feminist/suffragist/atheist and "free-thinking" activist Harriet Law [Wikipedia biography] is admitted to the General Council of the **International Workingmen's Association** [1866 (3rd September)<=>2nd September] as their first female representative, and starts to introduce a woman's perspective into the class struggle. [THREAD = THE SHAPING OF THE MODERN WORLD]

1867 [1st July] **The British North America Act, 1867:** [... Continued from 1866 (4th December)] By this Act the British Parliament establishes the Dominion of Canada out of the hitherto separate provinces of Canada, New Brunswick, and Nova Scotia. [THREAD = THE SHAPING OF THE MODERN WORLD]

********** ANOTHER MOVE IN THE GREAT GAME **********

1867 [11th July] **Russian Turkestan:** After a two-year campaign of colonisation from the north the Imperial Russians finally formally annex the area of Central Asia now known as Turkestan, including the city of Tashkent. The following year they will further include the Emirates of Samarkand and Bukhara. [THREAD = THE SHAPING OF THE MODERN WORLD]

1867 [11th July] Josef and Franz Werndl and Company [1864 (16th April)<=>1869 (1st August)] licenses patents taken out by Karl Holub [Wikipedia biography] and uses them in the **Model 1867 Werndl-Holub Rifle** [Wikipedia factsheet]. The patents in question are for Holub's **Tabernakelverschluss** [= "tabernacle breechblock"], a rotating drum breechblock [clearly to be seen on the factsheet above]. [THREAD = WW1 SMALL ARMS]

********** LISTER INSISTS UPON CLEANLINESS **********

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1867 [27th July] The British physician Joseph Lister [1st Baronet]1883 [1st Baron Lister]1897 [Wikipedia biography] publishes a paper entitled "**The Antiseptic Principles of the Practice of Surgery**" [full text online, courtesy of Fordham University] in The Lancet, in which he reports clinical experience with **carbolic acid** [Wikipedia chemistry] (the tar-derivative already known as phenol [=1834 (Friedlieb Runge)], and presently growing in popularity as "**coal-tar soap**" [<=1866]). Given the number of amputations just carried out in the American Civil War [=1861 (17th April)], Lister's claims are little short of epoch-making, thus ...
"The first class of cases to which I applied it was that of compound fractures, in which the effects of decomposition in the injured part were especially striking and pernicious. The results have been such as to establish conclusively the great principle that all local inflammatory mischief and general febrile disturbances which follow severe injuries are due to the irritating and poisonous influence of decomposing blood or sloughs. For these evils are entirely avoided by the antiseptic treatment, so that limbs which would otherwise be unhesitatingly condemned to amputation may be retained, with confidence of the best results."

Lister also uses the term "septic germs" to refer to the bacteria responsible for septicaemia and gangrene. [THREADS = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION and WW1 MILITARY MEDICINE]


1867 [2nd-7th September] The International Workingmen's Association [IV - The Second Annual Congress, Lausanne]: [...] Continued from 25th June] 71 delegates from across Europe meet to further develop a coherent workingmen's manifesto. This year's assembly is noteworthy in the present context for calling for greater political freedom and the collective ownership of the banks [continues at 1868 (6th September) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]


1867 [21st October] The Royal Bank of Liverpool suddenly declares itself unable to service its debts following a "duffing bill" fraud [full story at http://trove.nla.gov.au/ndp/del/article/13156332]. With the Liverpool-based shipping industry temporarily paralysed the upshot is that the White Star Line [1854 (9th May)<=1868 (18th January)] is itself forced into bankruptcy. [THREAD = THE WW1 FINANCIAL AND ARMSMAMENTS INDUSTRIES]

1867 [3rd November] The Battle of Mentana: This battle is fought as part of the Final Unification of Italy between an Italian Nationalist army under Guiseppe Garibaldi [2nd September<=1870 (19th September)] and a French/Papal States army under Balthazar de Polhès [no convenient biography]. The outcome is a convincing French/Papal States victory with heavily disproportionate Italian casualties. The battle is noteworthy in the present context (a) for helping to shape modern Italy, and (b) for demonstrating the effectiveness of the recently introduced French Chassepot Rifle [<=1866]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1867 [31st December or hereabouts] Johann Halske [<=1847 (12th October)] retires from the Siemens and Halske Company [<=1858 (1st October)], who will soon diversify into the emerging heavy electrical engineering marketplace as the Siemens Company [=1886 (20th March)]. [THREAD = WW1 SIGNALLING AND TELECOMMUNICATIONS]
1868 The Dutch psychologist **Franciscus C. Donders** [Wikipedia biography] publishes "**Over de snelheid van psychologische processen**" [In Dutch, French, and German in 1868; in English as "On the speed of mental processes" (full 1969 translation online)], in which he sets out his vision of a science of cognition which is both observable and quantifiable. **His secret, in essence, is to presume that the longer something takes to happen the more complicated it must have been.** When applied to human or animal cognition this means that the "reaction time" between a task being presented and the eventual response obtained is a measure of the amount of mental processing involved in preparing that response. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

**ASIDE:** Reaction time ("RT") studies have been a mainstay of cognitive scientific research ever since. For a longer introduction to the theory see our Companion Resource; for a (one from many) sample state-of-the-art application see Roach et al (2014).

1868 After his success with the **Bessemer-Mushet Process** [<=1856 (24th August)], **Robert Mushet** [1862 (?7th October) <=> 1871], and this time with tungsten as the secret ingredient, now takes to market a "special steel" hard enough to be used for drilling, turning, and planing softer irons and steels, thus enabling a whole new machine tool industry to emerge. [THREAD = THE INDUSTRIAL AND SCIENTIFIC REVOLUTION]

1867 [18th December] **Nervous Shock [III - The "Angola Horror"]:** [... Continued from 1866] Approaching Angola, NY, the last carriage of the New York City to Buffalo Express jumps the rails, becomes detached from the train ahead, and plummets headfirst down an embankment. There follows an object lesson in how, in an increasingly technological world, a good day can suddenly go very, very, bad. The problem on this occasion is that in the depths of the Great Lakes winter each carriage is heated by solid fuel stoves front and rear. The headlong impact therefore throws the 50 passengers down onto the first stove and then empties the second stove down on top of them. Two lucky passengers manage to clamber free, but the remainder are more or less slowly burned to death [continues at 1875 ...]. [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE]

**[WW1 JOURNALISTIC HORROR]**

1**ASIDE - WHEN LUCKY IS UNLUCKY:** We use the adjective "lucky" with some reservation because the two survivors in question will, of course, have been prime candidates for the sort of "Survivor Syndrome" previously discussed [<=1798].

2**ASIDE - NEW THREAD NEEDED:** We take this opportunity to introduce a new thread entitled **WW1 JOURNALISTIC HORROR** to track instances such as this where the bare facts of death bring with them an added frisson of visceral awfulness., not just killing you but giving you time to scream your way through the ordeal. **The point we wish to make is that such tales seem to fascinate the rest of us, so awful are they.** And they therefore sell newspapers. With the "Angola Horror", for example, the local newspaper - **Frank Leslie's Illustrated Newspaper** [Wikipedia factsheet] soon provided the following gory details [click here]. Recent academic reflection on the psychology of railway disasters has been led by the British historian **Ralph Harrington** (e.g. Harrington, 1998).

1868 Upon the retirement of the Huddersfield businessman **Read Holliday** [Grace's Guide biography] control of his chemical works passes to his sons Thomas, Charles, and Edgar under the name **Read Holliday and Sons** [Grace's Guide factsheet => 1899]. Around the same time **Randolph, Elder, and Company** [1860 <=> 1881] opens the **Fairfield Shipyard** [= 1869 (17th November)], Govan. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1868 The Scottish-born American businessman **John West** [Wikipedia biography] founds a cannery at Westport, OR, to market canned salmon. [THREAD = WW1 LOGISTICS]
1868 The British physicist **James Clerk Maxwell** [1851<=>1876] publishes a paper entitled "On Governors", in which he lays the theoretical groundwork for the science of cybernetics. Around the same time the French engineer **Jean-Joseph Farcot** [1854<=>1873] obtains further patents in control mechanisms. [THREAD = WW1 CYBERNETICS, COMPUTATION, AND FIRE CONTROL]

********** ELECTRIC DETONATION COMES OF AGE **********

1868 [...] Continued from 1863 (Alfred Nobel [ASIDE]) The New Jersey inventor **H. Julius Smith** [no convenient biography] successfully uses both a spark gap and mercury fulminate as a detonator for dynamite. The spark gap is difficult to set off by accident as is the fulminate, safely tucked away inside the unit. [THREAD = WW1 MILITARY ENGINEERING]

1868 The American artillery officer and engineer **Henry L. Abbott** [Wikipedia biography] begins a ten-year programme of experimentation and evaluation on the most suitable methods of coastal defence and mine warfare. [THREAD = THE WW1 SURFACE NAVIES]


1868 [18th January] The bankrupt **White Star Line** [1867 (21st October)<=>1870 (27th August)] is bought by **Thomas H. Ismay** [Wikipedia biography=d. 1899 (23rd November)], who plans to revive the company's fortunes with a new class of large, fast, luxury liners. The necessary financing is made available by the German financier **Gustav C. Schwabe** [=1858 (1st November)], and includes the condition that White Star should henceforth obtain its ships from **Harland and Wolff** [1861 (11th April)<=>1870 (27th August)]. White Star duly places its first order - for **RMS Oceanic** [Wikipedia shipography=>1870 (27th August)] - on 30th July 1869. [THREAD = THE SHAPING OF THE MODERN WORLD]

1868 [24th March] **Abraham Darby IV** [1842<=>1871], **Thomas Brown** [no convenient biography], and others reorganise their various interests in South Wales [=<=1857 (??th March)] as the **Ebbw Vale Steel, Iron, and Coal Company Limited** [=1911]. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

1868 [6th May] A son is born to **Alexander [III of Russia]** [1881] and his wife **Princess Dagmar of Denmark** [Wikipedia biography] and named **Nicholas [II of Russia]** [1894]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1868 [...] Continued from 1865 (6th July) Work begins on the new Alexander Docks. [continues at 1875 (16th April) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

********** SURVIVOR SYNDROME IS DESCRIBED **********

1868 [20th August] **The Abergele Railway Disaster**: The Holyhead-bound Irish Mail collides with runaway freight wagons at Abergele, North Wales, derailing its locomotive and bringing its front passenger coaches to a halt amidst the debris. Unfortunately the wagons had been carrying kerosene, and in the resulting fire all 31 passengers in those front coaches are burned to death. The event is noteworthy in the present context as one of a number of cases in the early scientific literature on what will, a century later, be termed "survivor syndrome". [THREAD = THE SHAPING OF THE MODERN WORLD]
**ASIDE:** We have already introduced the notion of "survivor syndrome" and stated its relevance to WW1. We recommend Harrington (1999 online) for extracts from contemporary newspaper reports dwelling on the effects of witnessing the tragedy on rescue workers and surviving passengers.

1868 [6th-13th September] **The International Workingmen's Association [V - The Third Annual Congress, Brussels]:** [...] Continued from 1867 (2nd September)] 99 delegates from across Europe meet to further develop a coherent workingmen's manifesto. This year's assembly is noteworthy in the present context (a) for calling for the collectivisation of land and mineral resources, and (b) for a resolution condemning war. Mikhail Bakunin [1867 (9th September) <= 1869 (6th September)] starts to promote "collective anarchism" [continues at 1869 (6th September) ...]. Karl Marx’s [1867 <= 1869 (6th September)] ideas of "state socialism" are beginning to put him at odds with the theories of Pierre-Joseph Proudhon [<= 1849]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

1868 [10th October-28th May 1878] **The Cuban War of Independence [I - The Ten Years War]:** [New sub-thread] A war of independence breaks out on Cuba between the ruling Spanish Empire and the population at large. The government forces are commanded by Arsenio Martínez Campos [Wikipedia biography]. The rebels are organised into regional guerrilla battle groups, and the most successful commanders (after a number of well-earned promotions) will be Generalissimo Máximo Gómez [Wikipedia biography], General Antonio Maceo Grajales [Wikipedia biography], (Polish-born) General Carlos Roloff [Wikipedia biography], and General Calixto García [check him out]. The fighting drags on for ten years, complete with all the usual insurgency/counter-insurgency atrocities. García will be captured, seriously wounded, 6th September 1874, and spend the rest of the war as prisoner-of-war in Spain. He will then settle in exile in New York City after the war [sub-thread continues at 26th August 1879 ...]. [THREAD = THE SHAPING OF THE MODERN WORLD]

1868 [27th November] **The Washita River Massacre:** This event takes place as part of Sheridan's Indian War, 1866-1869, between a column of US Cavalry under George A. Custer [Wikipedia biography] and a Cheyenne encampment on the Washita River under Chief Black Kettle [Wikipedia biography]. The outcome is a victory for the US Government. The incident is noteworthy in the present context for its inclusion of women and children as legitimate targets. [THREAD = WW1 ARMIES AND TACTICS]

**WHAT WAS IT LIKE:** Arthur Penn's (1970) movie "Little Big Man" includes a re-enactment of this battle [check it out] which - though criticised as unpatriotic when first released - looks about right to the present author. For example on a quick viewing we counted 11 braves, 8 women, and one child go down in the re-enactment, and perhaps 30 indistinguishable bodies on the ground at the end of it; which more or less matches the official Indian report and is a lot less than Custer himself admitted to [Wikipedia casualty statistics].

1868 [3rd December] **Hugh Childers** [1864 <= 1880] is appointed First Lord of the Admiralty (despite having little practical experience of life or war at sea) and **Edward Cardwell** [Wikipedia biography] >= 1870 is appointed Secretary of State for War. [THREAD = THE WW1 SURFACE NAVIES]

**ASIDE - THE PROBLEM OF "CIVIL" LORDS OF THE ADMIRALTY:** History will not judge Childers as a particularly competent naval lord; nor indeed his successor to the post, William H. Smith, who became a politician on the back of the fortune he had built up in his W. H. Smith and Company stationery business. Childers and Smith were - intentionally or otherwise - mercilessly parodied in the Gilbert and Sullivan comic opera HMS Pinafore, when the libretto arranges for its own fictional naval lord to confess to thinking little and going to sea even less [this song on YouTube]!
1869 The Merthyr, Tredegar, and Abergavenny Railway [III - Brynmawr to Merthyr Tydfil]: [...] Continued from 1862 (29th September) The second leg of the new MT&AR opens between Brynmawr and Merthyr Tydfil. [THREAD = THE SHAPING OF THE MODERN WORLD]

1869 The British logician William Stanley Jevons [Wikipedia biography] has "a young clockmaker in Salford" build him a "logical piano", a primitive mechanical "inference engine". He will present this instrument the following year at a meeting of the Royal Society of London. [THREAD = WW1 CYBERNETICS, COMPUTATIONAL SCIENCE, AND FIRE CONTROL]

********** ANAEMIA OF THE MIND IS PROPOSED **********

1869 Neurasthenia [I - Beard (1869)]: The American physician George M. Beard [Wikipedia biography] publishes a paper entitled "Neurasthenia, or Nervous Exhaustion" in which he proposes this particular "morbid condition" as a nervous weakness, a sort of anaemia of the mind. This notion, and the term itself, are noteworthy in the present context because they will be at the heart of the WW1 shell shock debate half a century later (continues at 1875 ...). [THREAD = WW1 MILITARY MEDICINE AND COGNITIVE SCIENCE] Beard, G.M. (1869). Neurasthenia, or nervous exhaustion. The Boston Medical and Surgical Journal, 3(13):217-221.

1869 [2nd June] Following the conviction of eight local miners for labour law offences a protest rally takes place at Mold, North Wales. The crowd is immediately confronted by a company of soldiers and armed constables and in the ensuing melée four of their number are either killed or mortally wounded. and "a considerable number" wounded (Hansard). Questions will be raised in Parliament five days later and the killings excused as justifiable self-defence on the part of the authorities. [THREAD = THE WW1 WORKING CLASS SOLDIER]

********** A QUANTUM LEAP IN WARSHIP DESIGN **********

1869 [12th June] HMS Monarch [...] enters service as the first turreted sea-going warship in history. She is powered by both steam and sail, and armed with four 12" [= 305mm] muzzle-loading rifled guns in two twin turrets situated amidships on the midline fore and aft of the funnel (from where, of course, they can not fire directly forwards or backwards). She will use her guns in anger during the bombardment of Alexandria in 1882 [...] (=>q.v.). [THREAD = THE WW1 SURFACE NAVIES]

********** AN ARMAMENTS GIANT IS BORN **********


ASIDE - THE ÖSTERREICHISCHE WAFFENFABRIK IN WW1: The ÖWG will, in the 1880s, come to lead the world in automatic weapons technology, and by 1914 will have grown into one of Europe's premier armaments corporations.

1869 [6th-12th September] The International Workingmen's Association [VI - The Fourth Annual Congress, Basel]: [...] Continued from 1868 (6th September) 75 delegates from across Europe meet to further develop a coherent workingmen's manifesto. This year's assembly is noteworthy in the present context for further calls for the collectivisation of land (continues at 1871 (17th September) ...). The membership is beginning to polarise around the respective positions of (the centralist) Karl Marx [1867<=1872 (2nd September)] and (the collectivist-anarchist) Mikhail Bakunin [1868 (6th September)<=1870 (5th June)]. Rumours circulate that Bakunin is not a fugitive from Russian justice at all, but is rather one of
their *agents provocateurs* [continues at 1871 (17th September) ...]. [THREAD = THE WW1 WORKING CLASS SOLDIER]

*********** A QUANTUM LEAP IN WARSHIP DESIGN ***********

1869 [12th November] Construction work begins at Portsmouth Dockyard on HMS *Devastation* [Wikipedia shipography=>1873 (19th April)], the first of a two-ship class of turreted battleships designed by Sir Edward Read [<=1863] (the other, already under construction at Pembroke Dock, being HMS *Thunderer* [=1873 (25th March)]). Her most significant design features are (a) that her four 12" [= 305mm] muzzle-loading rifled guns are set in twin turrets fore and aft, and have an excellent 280-degree field of fire, (b) that she is powered by steam alone, and (c) that she is not an "ironclad" in the original strict sense of the word as iron-over-wood, but an iron ship throughout. [THREAD = THE WW1 SURFACE NAVIES]

1869 [17th November] **The Suez Canal [II - The Opening]**: [... Continued from 1858 (15th December)] After 11 years in the construction the Suez Canal now opens for business. [THREAD = THE SHAPING OF THE MODERN WORLD]

1869 [17th November] **John Elder** [<=1853] dies aged 45 years, leaving his *Fairfield Shipyard* [1868<=>1886] employing some 4000 people. [THREAD = THE WW1 FINANCIAL AND ARMAMENTS INDUSTRIES]

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