

GUNS DICTIONARY

a guide to firearms, airguns,
inventors, patentees, manufacturers,
distributors, brand names, trademarks
and military-unit markings

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B

THE DIRECTORY: B–BZZ

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- B** Stamped into the heel of British ‘Bantam’ rifle butts, which were an inch (25mm) shorter than standard.
- B** *Art Nouveau or floriated letter*. Found on the grips of pistols made for Theodor →Bergmann of Gaggenau prior to 1905, customarily by V.C. →Schilling & Co.
- B** *cursive, with the letter-tail curving back beneath the stem*. Found on the grips of pistols made in the early 1920s by ‘Theodor →Bergmann Gaggenau, Waffnenfabrik Suhl’. It was subsequently replaced by the company name.
- B** *encircled or within an encircled six-point star*. A property mark found on Brazilian military weapons.
- B** *beneath a crown*. Found on Belgian weapons: the mark of King Baudoin (1950 to date). See also ‘Cyphers, imperial and royal’.
- B** *beneath a crown*. Found on Bulgarian weapons: Tsar Boris III (1918–43). See also ‘Cyphers, imperial and royal’.
- B** *beneath a crown*. Found on Dutch weapons: the mark of Queen Beatrix (1980 to date). See also ‘Cyphers, imperial and royal’.
- B** *beneath a crown, above a number*. A mark applied by an inspector working in the British →Royal Small Arms Factory in Sparkbrook, Birmingham. Care should be taken to distinguish the upright or Roman letter ‘B’ of Sparkbrook from the cursive ‘B’ used by »BSA. See also ‘SK’ and “British military inspectors’ marks”.
- B** *beneath a crown, above a number*. A mark applied by an inspector working in the →Birmingham Small Arms [& Metals] Co. Ltd or →BSA Guns Ltd factories in Birmingham, Warwickshire, England. Care is necessary to distinguish the cursive ‘B’ used by →BSA from the upright or Roman letter ‘B’ of the →Royal Small Arms Factory in Sparkbrook. See also “British military inspectors’ marks”.
- B** *usually in an oval cartouche*. Sometimes accompanied by a miner with a lamp, this is associated with the products of Theodor →Bergmann. It will be found moulded into the grips of most Bergmann-Schmeisser pistols.
- ba** Used by →Sundwiger Messingwerk vorm. Gebr. von der Becke KG of Sundwig Kreis Iserlohn, Germany, on small arms ammunition made during the Second World War.
- BA** Associated with →Lee-Enfield rifle and other small arms components made by the Australian government factory in →Bathurst.
- B.A.** Applied to U.S. military stores—including .45 M1911A1 →Government Model pistols—refurbished by Benicia Arsenal.
- B & A** A trademark associated with the products of →Bolte & Anschütz of Zella-Mehlis, Germany. Found on sporting rifles and sub-calibre barrel inserts for the →Parabellum pistol, it often took the form of a cross containing ‘B’, ‘B’, ‘A’

and 'A' in the arms and the ampersand ('&') in the central void.

- Babbitt** A.S. Babbitt & Company of Plattsburgh, New York State, made
→Robinson-patent breech-loading magazine rifles in 1870–2, until succeeded
by the →Adirondack Fire Arms Company.
- Babbitt** Benjamin T. Babbitt, giving his address as New York, was granted several
U.S. Patents—including 34472 of 25th February 1862 for 'the construction
of ordnance', and 209014 of 15th October 1878 to protect an air gun. He was
undoubtedly associated with A.S. Babbitt & Co. (above).
- Babcock** N.L. Babcock of New Haven, Connecticut, U.S.A., was granted U.S.
Patent 27509 on 20th March 1860 to protect a breech-loading firearm.
- Baby Browning** or '*FN-Baby*'. A compact 6.35mm →blowback semi-automatic
'vest-pocket' pistol, perfected by the design department of Fabrique Nationale
d'Armes de Guerre in 1932.
- Baby Dragon** This was the first of the .31 five shot Colt pocket revolvers.
Lacking rammers, they were reloaded by substituting cylinders. About fifteen
thousand Baby Dragons were made in 1848–50.
- Baby Frommer** This was applied to a semi-automatic pistol made in Budapest
(Hungary) by →Fegyvergyár Reszvenytársaság in 6.35mm, 7.65mm or 9mm
Short.
- Baby PA** This was a small .22 calibre automatic pistol made in Italy by Vincenzo
→Bernardelli of Gardone Val Trompia.
- Baby Russian** A term applied, apparently unofficially, to .38 break-open sheath
trigger 'Single Action' →Smith & Wesson revolvers of 1876–7, subsequently
known as the '.38 Single Action First Model'.
- Baby Sporting Carbine** See 'Remington rifles, rolling-block action'.
- Bachmann** Adolf Bachmann, Gustav Sohn; Albrechts bei Suhl in Thüringen,
Benshäuser Strasse 2 (1941). This business was listed in the *Deutsches Reichs-
Adressbuch* (1939–41) as a maker of gun parts.
- Bachmann** Friedrich H. Bachmann; Magdeburg, Germany. The joint grantee,
with Richard →Wagner of Suhl, of U.S. Patent no. 568289 of 22nd September
1896. This protected a 'cocking mechanism for guns'.
- Bachmann** Gustav Bachmann. A gunmaker listed in Suhl (Thuringen, Germany)
directories for the period between the wars. He traded in Albrechts bei Suhl.
- Bachmann & Goebel**, also listed as 'Göbel'; Albrechts bei Suhl in Thüringen.
Owned by Wilhelm Bachmann and Wilhelm Goebel when the Second World
War began, this gun-part manufacturing partnership specialised in air-gun
darts (*Luftgewehrholzen*).
- Back action** or '*Back lock*'. An alternative method of construction to →side lock,
this originated in Europe in the nineteenth century and remained popular for
the duration of the percussion cap era. The principal distinguishing feature
was the main spring, which lay behind the hammer. Even though it often
weakened the wrist of the stock, the back lock was particularly favoured on
the earliest breechloaders as it freed the space ahead of the standing breech
or 'action face' for the barrel locking mechanism. Locks of this type were

eventually superseded by the →box lock.

Back Up A small, but unusually powerful semi-automatic pocket pistol made in the U.S.A. by →OMC. It chambered the .380 cartridge.

Bacon A small →Suicide Special revolver made by the →Bacon Manufacturing Company of Norwich, Connecticut, in the late nineteenth century.

Bacon A.N. Bacon of Washington, DC, U.S.A., received U.S. Patent no. 56846 of 31st July 1868 to protect a breech-loading firearm. Bacon part-assigned the protection to George E.H. Day.

Bacon C.W. Bacon, a U.S. government arms inspector active in the 1870s, used the initials 'CWB'. See also "U.S. arms inspectors' marks".

Bacon George R. Bacon of Providence, Rhode Island., U.S.A., was granted U.S. Patent 39270 on 21st July 1863 to protect a breech-loading firearm. Reissued on 15th March 1864, the patent was subsequently assigned to the →Burnside Rifle Company.

Bacon Thomas K. Bacon: see 'Bacon Arms Company'.

Bacon William S. Bacon: see 'Frederick Smith'.

Bacon Arms Company ['The...'] or 'Bacon [Arms] Mfg Co.'; Norwich, Connecticut, U.S.A. Established in 1858 by Thomas K. Bacon, this gunmaking business was responsible for pepperboxes, single-shot pistols, and a selection of revolvers beginning with a modified .31 calibre open frame →Colt with detachable side plates. Bacon had apparently undertaken sub contract work for the →Manhattan Fire Arms Co., though his own guns had a ball catch on the rammer head instead of a Manhattan sliding wedge. Bacon revolvers will often be found with the marks of →Fitch & Waldo; B.J. →Hart & Brother; →Tomes, Melvain & Company; the →Union Arms Company; or the →Western Arms Company. →Hopkins & Allen purchased Bacon in 1867, continuing to make .31 side plate revolvers and the .36 calibre →Dictator. About two thousand sheath trigger solid frame .31 five chamber cap lock revolvers were also made, occasionally under the 'Union Arms Co.' banner. Bacon also made a multi barrel cartridge 'pepperbox derringer' in the 1860s, with a frame extending forward to the front of the elongated cylinder, and .22 and .32 rimfire infringements of the →Smith & Wesson Model No. 1. Bacon's six shot .32 and .38 rimfire 'navy' revolvers embodying a swinging cylinder patented on 27th May 1862 by Charles W. →Hopkins (no. 35419) and part assigned to Henry →Edgerton. The improved Briggs & Hopkins revolver was patented jointly by H.A. →Briggs and Samuel S. →Hopkins on 5th January 1864 (U.S. no. 41117) and assigned to themselves and Charles A. →Converse. Alongside these revolvers, the Bacon Arms Company made single shot .32 rimfire derringers loaded by swinging the barrel away from the breech. By 1888, a work force of twenty and was making about 2500 guns annually. Operations ceased shortly afterward, however, perhaps owing to the competition afforded by newer and more progressive manufacturers working in the New England states. See also 'Alonso →Sweet' and 'John H. →Vickers'.

Bacon Manufacturing Company; Norwich, Connecticut, U.S.A. Inventors

Charles A. →Converse and Samuel S. →Hopkins assigned their breech-loading firearm patent (U.S. no. 57622 of 28th August 1866) to the 'Bacon Mfg. Co.'—assumed to have been a trading style of what was otherwise known as the Bacon Arms Company.

- Bacon & Curtis**, or 'Curtiss'. This partnership, trading from Poole, Dorset, England, marked sporting guns and ammunition.
- Baden** James T. Baden, a lieutenant in the Federal Army, accepted small arms marked 'JTB' during the American Civil War. See also "U.S. arms inspectors' marks".
- Badenoch** [The]. A brand name associated with shotgun ammunition distributed by Robert →MacPherson of Kingussie, Scotland. The cartridges were made by →Eley-Kynoch.
- Bader** Bernhard Bader; Mehlis in Thüringen, Germany. Listed in 1900–14 editions of the *Deutsches Reichs-Adressbuch* as a gun- and weapon-maker, specialising in "officers', gendarmerie and police revolvers".
- Bader** Emil Bader; Zella Mehlis in Thüringen, Germany. Listed in 1939-vintage directories as a master gunsmith.
- Bader** Edmund Bader [& Söhne]; Albrechts bei Suhl, Germany. Listed in the *Deutsches Reichs-Adressbuch* as a maker of sporting arms and gun parts (*Waffenteilefabrik*), 1927–39, and trading from Zellaer Strasse 49 in 1941.
- Bader** Hans Bader; Zella Mehlis in Thüringen, Germany. Listed in 1930 as a maker of guns and weapons.
- Bader** Heinrich Bader; Mehlis and subsequently Zella-Mehlis in Thüringen, Germany. Listed in 1900 and again in 1920 as a gunmaker.
- Bader** Henry Bader; Saint Martinville, Louisiana. The patentee of a breech-loading firearm: U.S. no. 216012 of 3rd June 1879.
- Bader** Louis Bader, Valt. Sohn; Mehlis and then Zella Mehlis in Thüringen. Listed in Germany in 1919–20 as a gun and weapon maker, under the ownership of Franz Theodor, August and Kuno Bader. Listed in 1925 as a gunmaker, Bader was granted protection for trademark no. 370476 ('Aegir') in June 1927. See also →Waffenwerk Mehlis. Listed in 1930 as a gun and weapon maker, and in 1939 as a weapon maker (owner: Frau Ida Bader).
- Bader** Louis August Bader; Zella Mehlis in Thüringen, Germany. Listed in 1930–9 as a master gunsmith. Bader used an 'LB' mark, which sometimes took the form of a monogram.
- Bader** Robert Bader; Zella Mehlis in Thüringen, Germany. Listed in 1920 as a gun stock maker.
- Bader** W. Bader & Söhne; Mehlis and Zella Mehlis in Thüringen, Germany. Listed in 1900–14 as a gunmaker, making 'pocket pistols, pistols and revolvers for export, small calibre rifles, etc.' Owned in 1919 by Robert Bader. The specialties of this long established gunmaking business were listed in 1925 as "Terzerole, pistols, revolvers for export, hunting carbines and Teschings, etc'. Listed in 1930 as a weapon maker; in 1939 as a distributor of guns and ammunition; and in 1941 as a maker of sporting guns.

- Bader & Eck**, vorm. Rob. Bader. Zella Mehlis in Thüringen, Germany. A partnership of Richard Bader and Otto Eck, trading in 1930, specialising in the manufacture and wholesaling of gun stocks.
- Badger** American gunsmith George A. Badger of Quincy, Massachusetts, received U.S. Patent 209600 on 5th November 1878 to protect a 'registering attachment for firearms'.
- Badinand frères** of place Chavanelle 6, Saint Étienne, France. A gunmaker active in the late 1870s, but probably succeeded c. 1888 by 'Badinand fils', below.
- Badinand fils**; rue Villeboeuf 22, Saint Étienne, France. Listed in 1892 as a gunmaker, probably a successor to 'Badinand frères', above, c. 1888.
- Badminton**, usually as 'The Badminton': a brand name found on shotgun cartridges loaded for →Holland & Holland of London.
- Badminton School of Shooting** ['The...']. This club, with its headquarters in 98 New Bond Street, London, England, in 1900, is believed to have maintained repair facilities of its own. Hence it qualifies for inclusion in H.J. Blanch's list 'The Gun Trade', published in *Arms & Explosives* in 1909.
- Bad to Beat** Associated with a revolver sold in Belgium prior to c. 1910 by Charles →Clément, also known as the 'American Model 1887'.
- Baggett** William T. Baggett of San Francisco, California, U.S.A., was granted U.S. Patent 666372 (22nd January 1901) to protect a 'gun alarm' of novel design.
- Bagley** E.R. Bagley: see 'William B. Atkinson'.
- Bagnall & Kirkwood**, a distributor of guns, ammunition and sporting goods trading from 31 Westgate Road, Newcastle upon Tyne, England, handled ammunition with brand names such as The →Pointer and The →Setter. The cartridges were bought from →Eley Kynoch Ltd.
- Bahco** Aktiebolaget Bahco ('AB Bahco'); Enköping and Stockholm, Sweden. This long established metalworking business, specialising in bayonets and military equipment, made the gas powered →Excellent rifles in 1906–15 to the patents of Ewerlöf and →Blómen. The guns are clearly marked BAHCO, but the design of the 'H' has often been confused with 'M' and the company name, therefore, has often been mistakenly listed as 'Bamco'.
- Baikal** This trademark and brand name are associated with sporting rifles and airguns made by the →Izhevsk small arms factory. The solitary break-barrel air rifle, known as the IZh 22, was sold in Britain as the →Milbro G530, in the U.S.A. as the →Hy Score 870 Mark 3, and may also be encountered as the 'Vostok'.
- Baildham & Sons**, a gunsmithing and ironmongery business trading in Stratford upon Avon, Warwickshire, England, handled shotgun ammunition marked 'The →Duck Fowler'.
- Bailey** Charles E. Bailey, domiciled in North Scituate, Massachusetts (1866–79), and then Springfield, Massachusetts (1880–5), was granted U.S. Patent 72777 of 31st December 1867 to protect a 'method of altering the caliber of muskets and other gun barrels'. The patent was assigned to the →Allen Patent Fire Arms Mfg. Co. Bailey subsequently developed a 'method of straightening and

- annealing gun barrels', the subject of U.S. Patent no. 320613 of 23rd June 1885.
- Bailey** Charles S. Bailey invented a 'gas check for central fire cartridges' with a thin metal disc over the primer, protected by a British Patent granted in 1882. This was subsequently exploited by F. →Joyce & Company.
- Bailey** Edmund C. Bailey, a government arms inspector active during the American Civil War, was identified by the initials 'ECB'. See also "U.S. arms inspectors' marks".
- Bailey** Elmer E. Bailey of Sinnamakoning, Pennsylvania, U.S.A., is best remembered for several types of BB Gun produced in the late nineteenth century. Most of these designs were assigned to William →Heilprin. U.S. Patent 487169 of 29th November 1892 protected a lever-action design, heavy but mechanically very simple; U.S. Patent 507470 of 24th October 1893 was granted to protect an improvement on this particular design. A half share was granted to W.G. →Smith, who may have been either the manufacturer or a financier. U.S. Patent no. 603549 of 3rd May 1899, sought in collaboration with Thomas A. →Monk, protected an improved lever-action BB Gun with a toggle link in the cocking mechanism and an unusual vertically acting sear.
- Bailey** Fortune L. Bailey of Indianapolis, Indiana, and possibly later of Perham, Minnesota, U.S.A., was granted two U.S. Patents protecting a manually operated machine-gun: 182352 of 22nd February 1876 and 206852 of 13th August 1878.
- Bailey** Lebbeus Bailey, also known as 'Lebbus', 'Lebbons' or 'Libbons'; Portland, Maine, U.S.A. Joint patentee, with John B. →Ripley and William B. →Smith, of 'a percussion magazine rifle, waterproof'. The grant was made on 20th February 1839, but back-dated to 6th November 1838.
- Bailey** Robert H. Bailey. The 'RHB' marks of this government arms inspector will be found on U.S.-made rifle muskets, →Remington rifles and →Sharps carbines accepted in 1870–7. See also "U.S. arms inspectors' marks".
- Bailey** Thomas Bailey, listed in 1853 trading from 1602 Chartres Street, New Orleans, Louisiana, U.S.A., made cap-lock rifles and revolvers. He was granted U.S. Patent 24274 on 7th June 1859 to protect a 'revolving firearm' and U.S. Patent 24437 on 14th June 1859 for a 'means for actuating moveable parts of firearms'. The Federal occupation of Louisiana during the American Civil War apparently put an end to Bailey's activities.
- Bailey's Gas Tight** ["The..."]. A brand name found on shotgun cartridges made by F. →Joyce & Co. Ltd prior to 1907.
- Baird** John T. Baird; Olney, Illinois, U.S.A. Recipient of U.S. Patent 652583 of 26th June 1900, to protect a folding gun.
- Baird** Samuel P. Baird, working from c. 1860 until 1873, a lieutenant in the U.S. Navy, accepted small arms marked 'SPB'. They included →Starr and →Whitney revolvers, and, apparently, some →Remington Rolling Block rifles. See also "U.S. arms inspectors' marks".
- Baker** Clyde Baker, later 'Baker & Main'. Trading from 2100 East 59th Street, Kansas City, Missouri, U.S.A., in 1921–8, gunsmith Clyde Baker made sporting

firearms and accessories.

Baker E. Baker & Son traded from premises in Size Yard, Whitechapel Road, London, in 1850–2; from 49 Tenter Street in 1853–4; and from 7 Union Street, Whitechapel, from 1854 until the early 1860s. Breech-loading guns have been reported with Baker's marks.

Baker Frank J. Baker of St Cloud, Minnesota, U.S.A., received two U.S. Patents protecting magazine firearms: 783851 of 28th February and 789199 of 8th May 1905.

Baker Major Frank W. Baker, a U.S. Army arms inspector active in 1909–17, marked .45 Colt revolvers with 'FWB'. See also "U.S. arms inspectors' marks".

Baker Frederick Thomas Baker, son of Thomas Kerslake →Baker, continued to make sporting guns and rifles from premises at 88 Fleet Street, London, England, from 1858 until 1900 or later. London directories list additional premises at 21 Cockspur Street, S.W. (1882–98), and 29 Glasshouse Street (1899 and later). The name has also been reported on →Eley made shotgun ammunition marked "Baker's Best". Trading may also have been undertaken in Birmingham.

Baker J.A. Baker; London. The marks of this gunmaker have been reported on English self-cocking →pepperboxes dating from the middle of the nineteenth century.

Baker James Baker, a gunsmith trading in Hereford from Bye Street in 1841–61 and Elgin Street in 1862–8, marked sporting guns and self cocking →pepperboxes dating from the mid-nineteenth century.

Baker James Thomas Baker, trading from 103 Victoria Road, Darlington, County Durham, England, in the 1930s, marked sporting guns and ammunition.

Baker John G. Baker of Philadelphia, Pennsylvania, U.S.A., patented a 'spring gun' on 15th June 1896 (U.S. no. 343560).

Baker Joseph Baker & Son, an English gunmaking business with premises in the Norfolk town of Fakenham, marked shotgun cartridges (made by →Eley Kynoch Ltd) with "Baker's Special".

Baker Thomas Baker, a gunmaker of Aston, Birmingham, was co-designer with William M. →Scott of a drop barrel action and an improved vent—see British Patents 761/78 of 1878 and 617/82 of 1882, and a comparable U.S. Patent (no. 264773) of 19th September 1882.

Baker Thomas Kerslake Baker made a wide variety of firearms and accessories, including →pepperboxes and six-shot single action cap-lock revolvers with a distinctive slotted hammer doubling as a back sight. These are usually marked "Baker's Patent, Registered April 24, 1852". Postal directories reveal Thomas Kerslake (or 'Kirslake') Baker successively at 34 St James's Street, London S.W., and 1 Stonecutter Street, E.C., in 1850; at 88 Fleet Street, E.C., in 1851–7; and at Blackhouse Court in 1853–6 only. Baker was succeeded in 1858 by his son, Frederick Thomas →Baker.

Baker Walter Baker of Ilion, New York State, U.S.A., received protection for the manufacture of gun barrels (U.S. Patent 41669 of 23rd February 1864) and the

design of barrel-retaining bands (206762 of 6th August 1878).

Baker W.H. Baker & Sons Company; Syracuse, New York, U.S.A. This gunmaking business was founded in 1878 by William →Baker to make Baker-patent side lock shotguns, together with a few European-style combination guns with two smooth-bore barrels above a single rifled barrel. Work continued until 1880, when Lyman →Smith, one of its principals, bought the business. This was subsequently operated as 'L.C. →Smith & Company', allowing Baker and Lyman Smith's brother Leroy →Smith to form the →Ithaca Gun Company.

Baker William Baker. An associate of Arthur Herbert →Marsh in the →Midland Gun Company, William 'Billy' Baker (1859–1934) was the patentee or co-patentee of several shotgun designs in the 1882–1909 era. He also obtained four patents protecting airguns, mostly refinements of the →Gem. Baker is best known for a single trigger system and the coil-spring Baker Ejector which, unlike the competing →Southgate type, would work when broken. He also designed a distinctive single barrel semi-hammerless gun for →Vickers immediately after the end of the First World War, though the design was ultimately exploited by →Webley & Scott. His workshop originally stood in the Snow Hill area of Birmingham, but Baker then moved a short distance to Bath Street. Protection granted for William Baker's airguns included British Patents 5045/15 of 1915, accepted on 19th November 1915, and 101,562, accepted on 5th October 1916. British Patent 160057, sought with Arthur H. Marsh, was accepted in 1920 to protect an improved airgun, and 162923, also sought with Marsh, was granted on 12th May 1921 for yet another variation of the basic Gem-type airgun.

Baker William Baker was a commercial traveller living, so British Patent 13203/06 of 1906 reveals, at 'Richmond House, Richmond Road, Caversham, Berkshire'. He designed a padded catching box which was to be placed behind a target to catch airgun slugs so that they could be used over and over again.

Baker William Edward Baker: an English provincial gunmaker working from premises in Tavistock, Devon.

Baker William H. Baker; Lisle, New York State, U.S.A. Born in 1835 and active in Lisle from shortly after the end of the American Civil War in 1865 to 1875, Baker is best known as a shotgun designer, filing appropriate claims from the early 1860s onward. The earliest was granted on 8th December 1863 as U.S. Patent 40809, to protect a 'firearms lock'. This was followed on 31st August 1875 by U.S. Patent 167293, protecting a gun lock opened by pressing the front trigger forward. Shotguns of this type were made by W.H. →Baker & Sons Co. of Syracuse. Baker then received protection for 'locks for firearms'—U.S. Patents 199773 of 29th January 1878 and 228020 of 25th May 1880—as well as the three 'breech loading firearms' covered by 202397 of 16th April 1878, 228165 of 1st June 1880, and 248249 of 11th November 1881. Guns embodying an improved box lock action with a radial top-lever were made in accordance with the 1880 patents.

Baker Gun & Forging Company; Batavia, New York State, and 253 Church Street,

New York City. Successors of the →Syracuse Forging Company in 1903, the year it was incorporated, this business continued to make single and double barrel exposed hammer shotguns in accordance with the →Baker patents. The first hammerless side lock pattern had been introduced in 1899, followed by top lever box lock 'Trap Guns' in 1909 and an improved box lock in 1912. Many of the cheapest shotguns were sold under the →Batavia name, and a short lived Batavia .22 auto loading rifle appeared in 1911. However, the gunmaking division was sold in 1919 to H. & D. →Folsom Company of New York and assembly of Baker type guns did not cease until 1929; Folsom assembled Bakers could be identified by their distinctive 'F' serial number suffixes. The Baker Gun Company produced guns under a variety of brand names, including →Batavia, →Batavia Leader, →Black Diana and →Paragon. See also 'F.M. →Farwell', 'Frank A. →Hollenbeck', 'George F. →Schafer' and 'Edward →Watson'.

Baker & Marsh: see 'William Baker'.

Baker-Perkins; Birmingham, Warwickshire, England? A maker of British rifle-type 'Projectors, Grenade, No. 5 Mk 1/L', 1944.

Baker's Best: see 'Frederick T. Baker'.

Baker's Special: see 'Joseph Baker & Son'.

Balch G.T. Balch, a captain in the U.S. Army, accepted →Colt and →Savage revolvers during the American Civil War, marking them 'GTB'. See also "U.S. arms inspectors' marks".

Balcom F. Balcom: →"Thomas W. Bearcock' and 'John Brooks'.

Baldwin Cyrus W. Baldwin; Boston, Massachusetts, U.S.A. On 19th January 1869, Baldwin was granted U.S. Patent 85897 to protect the design of a breech loading firearm.

Baldwin Eden A. Baldwin, Jun., Shelburne Falls, Massachusetts, U.S.A. The executor of the estate of his father, Eden A. Baldwin, this 'mechanic' was granted U.S. Patent 11283 on 11th July 1854. He subsequently established 'E.A. Baldwin & Company' in Worcester, Massachusetts, to make firearms, but trading had ceased by the beginning of the American Civil War.

Baldwin William R. Baldwin [Major]: see 'Automatic Guns, Inc.'

Bales George W. Bales of Ipswich, Suffolk, was an English gun and bow maker. He was listed in Tavern Street in 1838 and at 15 Cornhill in 1845-70, when his marks reportedly appeared on a few self cocking →pepperboxes and cap lock revolvers.

Ball Albert Ball. One of the greatest of the mechanical geniuses to come out of the New England states, Ball's patents, more than a hundred of them, spanned a wide range of subjects. The first of the specifications relevant to firearms was U.S. Patent 38935 of 23rd June 1863, granted to protect a 'self loading fire arm' made by the →Windsor Mfg. Company. A later U.S. Patent, 43827 of 16th August 1864, allowed claims for a 'breech loading self feeding firearm', also made by the Windsor Mfg. Co. U.S. Patent 45307 (of 6th December 1864) protected a 'magazine fire arm' with a tubular magazine which slid into the

fore end and was protected against accidental discharge caused by barrel heat by insulation. U.S. Patent 47484 of 23rd May 1865 covered a 'machine for lubricating bullets', and 60664 of 1st January 1867 protected the a 'cartridge retractor for breech loading firearms'. A half interest in 60664 was assigned to the Windsor Mfg. Co. See also 'Ball & Lamson' and the 'E.G. →Lamson Company'.

Ball John Maxwell Ball, This 'engineer', living at 30 Coronation Street, Cheadle, Staffordshire, England, obtained two British Patents. However, as they were granted during the Second World War, there is no evidence that the guns were ever made. Patent 545731 was accepted on 10th June 1942 for an auto loading airgun design; Patent 563757 followed on 29th August 1944 to protect an improvement of the earlier magazine.

Ball & Lamson; Windsor, Vermont, U.S.A. This partnership of Albert →Ball and Edward G. Lamson made Ball's 1863 patent magazine carbine, but failed shortly after the end of the American Civil War and was succeeded by the E.G. →Lamson Company.

Ball & Williams; Worcester, Massachusetts, U.S.A. Active during the American Civil War, this partnership made sporting rifles, carbines and military long arms in accordance with the 1861 vintage breech-mechanism patent granted to Charles H. →Ballard. See also 'William A. →Richardson'.

Ballard Alvin S. Ballard; Waterville, New York, U.S.A. Recipient on 29th October 1878 of U.S. Patent no. 209444, protecting a firearm.

Ballard Charles Ballard; Worcester, Massachusetts, U.S.A. Ballard is best remembered for his distinctive breech loading rifles and carbines, made in accordance with a patent granted in the U.S.A. on 5th November 1861 (no. 33631). Ballard also patented a 'cartridge ejector for breech loading firearms', the subject of U.S. Patent 63605 of 9th April 1867, and was responsible for the design of a single barrel cartridge derringer patented on 22nd June 1869. See also 'Ball & Williams', 'Ballard & Co.', 'Ballard & Fairbanks', 'Merrimac Arms & Mfg. Co.', 'John M. →Marlin', 'Joseph →Merwin' and 'Shoverling & Daly'.

Ballard John K. Ballard; Grayling, Michigan, U.S.A. Recipient of U.S. Patent 337916, granted on 16th March 1886 to protect a method of making gun barrels.

Ballard Walter A. Ballard. This gunmaker was associated with the J. →Stevens Arms & Tool Company and the →Newton Arms Company. He designed the well known Ballard loading tool, one of the earliest successful 'press' patterns, and died in Columbus, Ohio, in November 1941.

Ballard & Company (active c. 1860–72 and later); Jackson Street, Worcester, Massachusetts, U.S.A. This small gunmaking business made breech loading firearms in accordance with a patent granted on 5th November 1861 to Charles H. →Ballard.

Ballard & Fairbanks; Worcester, Massachusetts, U.S.A. This gunmaking partnership made Charles →Ballard's 1869 patent .41 rimfire cartridge derringer, with a barrel which tipped down to expose the chamber after the

catch on the barrel block had been pressed forward and an ejector operated by a toothed rack in the frame.

Ballard rifle Patented by Charles Ballard in November 1861, this distinctive U.S. dropping block design was very successful. The breech-block contained the hammer and the trigger mechanism, which automatically dropped the hammer to half cock as the action opened. The first guns were made in 1862–3 by Dwight →Chapin & Company of Bridgeport, Connecticut, under contract to Merwin & Bray.

¶ Purchases in 1861–6 amounted to a mere 35 rifles and about 1509 carbines, owing to the poor quality of Chapin's work. However, six hundred rifles and a thousand carbines were sold to Kentucky, where they were so well received that more orders followed; according to an inventory taken in September 1864, the state cavalry and mounted infantry had 3494 carbines whilst the infantry had about 4600 rifles.

¶ Most of the Ballard rifles supplied to the Federal authorities incorporated an auxiliary cap lock ignition system patented in January 1864 by Joseph →Merwin & Edward Bray. Seemingly a backward step, this was useful in areas where ammunition was in short supply. Ballards were also made by →Ball & Williams of Worcester, Massachusetts (1863–4, in .44, .46 and .56 rimfire); by R. →Ball & Company of Worcester (1864–6); then by the →Merrimack Arms & Mfg Co. (1867–9) and the →Brown Mfg Co. (1869–73) of Newburyport, Massachusetts.

¶ Rights were acquired by →Schoverling & Daly of New York in 1873, and manufacture was licensed two years later to John →Marlin of New Haven, Connecticut. Marlin made rifles show many detail improvements on pre 1873 examples. Production eventually ceased at the beginning of the twentieth century. Model names associated with the Ballards include 'Creedmoor', 'Hunter's', 'Long Range', 'Mid Range', 'Montana', 'Off Hand', 'Pacific', 'Perfection', 'Rigby', 'Schuetzen', 'Schuetzen' Junior', 'Sporting' and 'Union Hill', all of these being listed separately. Additional details will be found in *Rifles of the World* by John Walter (third edition, Krause Publications, 2006).

Balliol [The]. A mark associated with shotgun cartridges loaded by William →Richardson of Barnard Castle from →Eley-Kynoch components. The name associates with John de Balliol, a thirteenth-century king of Scotland.

Ballistic Bolt This was an airgun projectile, developed by the →Sussex Armoury, which was introduced commercially in 1978 in .177 and .22. It consisted of a pointed metal nose set into a long pliable synthetic four fin shaft, intended to spin the dart in flight.

Ballou This mark, perhaps a manufacturer's, was found on a →Gallery Gun of uncertain date. The gun was probably made in the southern states of the U.S.A. in the middle of the nineteenth century.

Balp of 3 cours Victor Hugo, Saint Étienne, France (in 1951). Listed in 1933 and 1951 as a gunmaker.

Balsom Frank Balsom of Omaha, Nebraska, U.S.A., was granted protection for a

gun stock on 4th June 1907 (U.S. Patent no. 856016).

Baltimore Arms Company, Baltimore, Maryland, U.S.A. This gunmaking business was responsible for a variety of shotguns, including hammerless doubles, made to the patents of Ansley →Fox. Operations were confined to 1896–1902, when rights to the patents were acquired by the →Philadelphia Arms Co.

Bamco: See 'Bahco'.

Bandell & Neal These men were employed by →Marlin, and were responsible for the Model 62 lever-action rifle.

Bandle Jacob C. Bandle of Cincinnati, Ohio, U.S.A., son of gunsmith P.C. Bandle, began operations at 260 Main Street in 1865. Work on guns and cutlery continued until 1891 or later, but had ceased by 1902. Bandle is chiefly remembered for light target rifles, but also made cap or primer propelled gallery guns to the designs of John H. →Krider. See also 'Christopher →Raquet'.

Bandung The principal Indonesian arms factory, on the island of Java, this was formerly the workshop of the Royal Netherlands Indies Army (see 'KNIL'). →Garand-type rifles, their →Beretta-type adaptations, and FN-Browning GP-35 pistols have all been made there.

Banfield J.C. Banfield & Sons, an English gunmaking and ironmongery business, operating from premises in Tenbury Wells, Worcestershire, is known to have marked shotgun ammunition made by →Eley Kynoch Ltd.

Bang Danish inventor-engineer Søren Hansen Bang, of Copenhagen, is best-known for semi-automatic rifle designs originating early in the twentieth century. These relied on propellant gas trapped by a muzzle cup to pull the operating rod forward. The goal was a softer action than the recoil-operated guns of the day, which often worked very harshly; however, though tested for many years, including during the Second World War on the German Gew. 41 (→Mauser and →Walther patterns), the muzzle cup system ultimately proved unreliable and too susceptible to fouling.

Bango This was an 'explosive' airgun pellet, properly known as "Lane's Bango", made by →Lane Bros. from c. 1906 until the beginning of the First World War. A small charge of match compound was inserted in the slug head, to be ignited through the combined effects of friction and force when the projectile struck a hard object. Though ineffective, owing to the minuscule explosive charge, Bango apparently succumbed to pressure brought by society. However, it is said to have had a surprisingly bright flash when fired at night.

Bang Up A cheap →Suicide Special revolver made in the U.S.A. by →Ely & Wray or →Harrington & Richardson.

Banker's Special or "Banker's Special Model". Dating from 1926–40, this was a Colt →Police Positive with a full-size butt and a 2in barrel. Designed for ready concealment, it was advertised specifically for bank tellers and security officers; others were purchased to arm undercover policemen or railroad clerks. Total production of 35,000 included a few hundred guns with spurless

hammers. The →Detective Special was similar.

Banks Benjamin Rodwell Banks designed distinctive airgun projectiles, a rotating or 'detachable' magazine, and a special cartridge inserter. Most of the patent specifications record his home address as '22 Elgin Road, East Croydon, Surrey', England. British Patent 12742/92 of 1892 protects →Banks' Patent Flanged Slug; British Patent 18694/94 of 1894 protects →Banks' Patent Shot Cartridge; and British Patent 22930/94 protects the shotgun cartridge inserting device.

Banks & Company This business was operated by the inventor Benjamin R. Banks (above), from Point Pleasant Works, Wandsworth, South London, England. Banks' patent airgun ammunition was made there from the early 1890s until 1911 or later, though trading seems to have ceased when the First World War began.

Banks' Patent Flanged Slug Patented in 1892 by Benjamin R. →Banks, this airgun projectile had a rib or flange around its base to improve the air seal and enhance accuracy. It was somewhat similar to the modern →Sheridan slug, but had a markedly different nose.

Banks' Patent Shot Cartridge This consisted of a small reloadable open ended double wadded tube of shot which could be inserted in the breech of an airgun. A few cartridges of this type have survived, but the effectiveness of the low powered gun/shot combination was minimal.

Bannerman Francis Bannerman & Sons [subsequently 'Francis Bannerman Sons, Inc.']; Brooklyn and New York City. Founded soon after the end of the American Civil War by Francis Bannerman (1851–1918), a Scottish emigré, this gun dealing business grew rapidly. A move to Atlantic Avenue, Brooklyn, occurred in 1867, then to New York City and—successively—118 Broad Street, 27 Front Street and 597 Broadway. Bannerman bought such huge quantities of military surplus that he was able to equip entire regiments during the Spanish American War of 1898, and then bought so much more after hostilities had been concluded that an island in the Hudson river had to be purchased to store it! Frank Bannerman (1873–1945) and David Bannerman (1875–1957) had joined the business by the beginning of the twentieth century, forming 'Bannerman & Sons', and the purchase of 499 & 501 Broadway established the business as the doyen of military surplus businesses. Run in more recent times by Charles S. Bannerman, it moved to Blue Point, New York, in 1961. Though renowned largely as a dealer, Bannerman bought the assets of the →Spencer Rifle Company from →Pratt & Whitney and (despite a most acrimonious confrontation with Winchester) continued to make slide action Spencer shotguns for some years. Production began in Brooklyn, the 1890 model 'Bannerman Spencers' being essentially similar to the original design. An improved pattern was introduced in 1900, but competition from better designs forced production to cease in 1901–2.

Bannerman rifle A thousand .303 rifles were made from a collection of Springfield, Krag and Mauser components, and sent to Britain in 1915 in

acknowledgement of Bannerman's Scottish ancestry. Unfortunately, the guns failed inspection and were relegated to drill use.

Banshee [The]. Found on a shotgun cartridge sold by →W.C. Carswell of Liverpool, England.

Bantam A brand name applied to the 6.35mm 'M34 Bantam', a semi-automatic pocket pistol made by Pietro →Beretta of Gardone Val Trompia, Italy.

Bantam A name given to the 5mm calibre airguns slugs made by →Sheridan of Racine, Wisconsin, U.S.A., for the pump up pneumatic rifles introduced in 1949. The basic design had been anticipated more than fifty years previously by →Banks' Patent Flanged Slug.

Bantam or 'Bantam Butt'. Applied to the shortest butt-option fitted to British military rifles. It was one inch shorter than the standard pattern.

Bapty & Company is best known for providing a wide range of arms and equipment to film and television companies, Bapty originally sold sporting guns and accessories. These included ammunition marked with the Bapty name, though apparently originating in Britain, Italy or the U.S.A.

BAR: see 'Browning Automatic Rifle'.

Bär A two barrel four-shot repeating pistol designed by Burkard →Behr and made by J.P. →Sauer & Son of Suhl, Thüringen, Germany.

BAR-22 See 'Carabine Automatique Browning'.

Barakuda Based on an old idea, this interesting booster was introduced in the early 1950s by Barakuda Gesellschaft of Hamburg, Germany, in an attempt to boost the power of airguns. An auxiliary cylinder was used to inject a supposedly measured amount of ether into the air cylinder of a conventional rifle; the Weihrauch HW35 was preferred, owing to its strength. Additional power resulted when the heat generated by compression ignited the ether/air mixture in the air cylinder, but this 'controlled dieselling' proved to be very erratic and potentially dangerous. The fitting had been abandoned by 1958, but guns so fitted can be recognised by a slender auxiliary cylinder on the right side of the breech or by evidence that it was once fitted.

Barakuda or 'Barracuda'. A heavyweight →diabolo type airgun pellet made by →Haendler & Natermann.

Barber Joseph Barber; Bridesburgh, Pennsylvania, U.S.A. Barber was granted U.S. Patent 23224 of 15th March 1859, jointly with P.C. →Reinfried, to protect a breech-loading firearm.

Barber William H. Barber. This Federal government arms inspector, working in 1862, accepted cap lock revolvers marked 'WHB'. See also "U.S. arms inspectors' marks".

Barberblade Fabrik, Aalborg, Denmark. A razor blade manufacturer also noted for a range of airgun pellets (the Abbey Diabolo, 'Black Box' or →Pallet) developed in the late 1960s by Borge Naseby.

Barbier Pierre Barbier; place Polignais 10, Saint Étienne, France. A gunmaker listed in 1879.

Barbier Gonon et Gaitte; rue Saint Roch 7, Saint Étienne, France. Listed in 1879

as a gunmaker.

Bardella See 'Barella'.

Barella H. Barella, Berlin. Founded in 1844, this Königl. Hof-Büchsenmacher was trading in 1900 from 'Französischestrasse 25/26 in Berlin W8'. Catalogues of the pre-1914 era proudly proclaimed the patronage of the Tsar of Russia, the kings of Italy and Romania, and an array of counts and grand dukes. They also claimed the grant of prize medals at exhibitions ranging from Stettin in 1863 to Königsberg in 1897. It is assumed that trading was restricted after 1920, but that work did not finally cease until the Russians took Berlin in 1945.

Barella R. Barella; Berlin and Suhl. Listed as a gunmaker in 1920 and as a distributor of weapons and ammunition in 1930. Sometimes wrongly listed as 'Bardella', and possibly also the same as the preceding entry (i.e., misreading 'H' as 'R').

Barford Henry W. Barford & Company, trading from 14–16 Bishop Street, Coventry, Warwickshire, England, sold guns and sporting goods. Barford apparently commissioned →Eley Kynoch shotgun cartridges marked →Special Imperial.

Bargate [The]. A mark found on shotgun ammunition made by →Kynoch prior to 1918 for John →MacPherson of Inverness, Scotland.

Barham C.H. Barham, an English gunmaker trading from 95 Tilehouse Street, Hitchin, Hertfordshire, loaded shotgun ammunition marked 'The Challenge' and "The Hert's Cartridge" (sic). Components were supplied after the First World War by →Eley Kynoch Ltd.

Barkeep's Gun A generic term for any short barrel handgun, customarily a revolver, which could have been used behind a saloon bar—usually placed muzzle downward in a mug or glass.

Barker C.M. Barker; Albion, Michigan, U.S.A. Joint recipient with William →Dicer of U.S. Patent 404779, granted on 4th June 1889 to protect a breech-loading firearm.

Barker Milan S. Barker; Eugene, Oregon, U.S.A. Designer of a distinctive →trap gun, patented on 28th November 1893 (U.S. no. 509716).

Barker T. Barker. A name found on shotguns handled by the H. & D. →Folsom Arms Co., possibly imported from Europe.

Barker Gun Company A brand name associated with shotguns made in the U.S.A. by the →Crescent Gun Company.

Barlow John H. Barlow of New Haven, Connecticut, U.S.A., was granted U.S. Patent 659953 of 16th October 1900 to protect a 'device for extracting shells from gun barrels'.

Barnekov Kiel V. Barnekov (sometimes mistakenly listed as 'Barnskoy') of Cornwall, New York State, was granted U.S. Patent 104100 of 14th June 1870 to protect a breech loading firearm. This was a very simple design, relying on a radial thumb-lever to retract the breech-block, and an interlock between the block and the lever prevented the action flipping open as the gun fired.

Barnes A. Barnes. This provincial gunmaker, trading in Ulverston in Cumbria,

in north-west England, handled shotgun cartridges with the brand name 'Referendum'.

- Barnes** Charles Barnes. An employee of the →Remington Arms Company, involved in the adaptation of the .30-calibre M1917 →Enfield rifle into a sporting rifle.
- Barnes** Frederick Barnes. A gunsmith established in premises at 3 Union Row, Tower Hill, London, England, as early as 1850, Barnes' marks have been reported on a wide variety of sporting guns, pepperboxes and revolvers. Directories published at the time of the Great Exhibition in 1851 list the business as 'Frederick Barnes & Son', with premises in London at 3 Union Row, 109 Fenchurch Street and 67 Minories (until 1856). By 1857 work was being concentrated at 109 Fenchurch Street, where it continued until 1914 or later.
- Barnes** John Barnes. This gunsmithing, ironmongery and sporting goods business has been identified with →Challenger brand shotgun cartridges.
- Barnett International** A well-established sporting goods company, with branches in the U.S.A. and elsewhere, this is well known for its crossbows. In 1981, however, Barnett's directors decided to diversify and began to distribute airguns such as the 'Barnett Spitfire' (the Webley →Tracker under another name).
- Barnett** John Barnett; New Lexington, Ohio, U.S.A. This inventor was granted U.S. Patent 176276 of 18th April 1876 to protect his breech loading firearm.
- Barnett** John Barnett & Sons. Gunmaker John Edward Barnett first appears in the London, England, directories prior to 1850, trading in 1850–9 from 134 Minories in the heart of the city's gunmaking centre (1850–75). Additional premises were occupied in Brewhouse Lane, Wapping (1860–74) and Duncan Street, Leman Street, London E., from 1876 until c. 1912.
- Barney** Everett H. Barney of Springfield, Massachusetts, designed a saluting gun patented in the U.S.A. on 15th October 1901 (no. 684627).
- Barning** Henry F. Barning of Jersey City, New Jersey, U.S.A., was granted U.S. Patent 794770 (18th July 1905) to protect a 'breech loading gun'.
- Barnite** [The]. A mark found on shotgun cartridges loaded by William →Richardson of Barnard Castle from →Eley-Kynoch components.
- Barnitzke** Karl Barnitzke; Suhl in Thüringen, Wilhelm-Gustloff-Strasse 17 (1941). Listed in the Erfurt telephone directory as 'Ob.-Ing.' (*Oberingenieur*, 'senior engineer'), Barnitzke has been linked not only with →Gustloff-Werke but also with the design of the →Volksgewehr 1-5.
- Barnum** Willis S. Barnum worked as a sporting gun maker in Syracuse, New York State, trading first from 15 West Washington (1872–75) and then 18 East Genesee (1875–82). Breech-loading shotguns have been reported with Barnum's marks, but were simply bought in when required.
- Barnoid** [The]. This will be found on shotgun ammunition distributed in northern England by William →Richardson of Barnard Castle, loaded from →Eley-Kynoch components. It is assumed that the '-oid' suffix indicates a

waterproof case.

Bar O A brand name associated with a patented adjustable rifle sight developed by the →Benjamin Rifle Company. It was an aperture version of the otherwise similar but open-notch →Bar V.

Baron J. Baron: see 'Randolph P →Cory'.

Baron fils aîné; rue des Jardins 30, Saint Étienne, France. Listed in 1879 as a distributor of and agent for arms and ammunition.

Barracuda: see 'Barakuda'.

Barrage [The]. Associated with shotgun ammunition made by →Kynoch prior to 1918 for John →MacPherson of Inverness, Scotland.

Barrel The part of any gun containing the →bore, down which the bullet passes, and (usually) a →chamber in which the cartridge is inserted.

Barrel band *also known simply as 'band'*. This holds the barrel in the fore end. It may be made in one piece or two, and retained by springs let into the fore end (sprung band) or by screws or threaded bolts (screwed band).

Barrel extension A frame attached to the barrel to carry the bolt or breech block; or, alternatively, the part of the barrel behind the breech into which the bolt or breech block may lock.

Barrel rib A stiffener forged or otherwise attached to the upper surface of the barrel, into which the front sight blade is formed or fixed. This is sometimes encountered on sporting rifles, though much more common on shotguns. The object is to give the barrel rigidity without adding as much weight as would be required if it had been forged with a greater diameter. Half and quarter ribs will be encountered on sporting guns, usually to carry the sights rather than stiffen the barrel.

Barrett Peter Barrett. A Gunner in the U.S. Navy, Barrett accepted →Colt cap-lock revolvers in 1861–8, distinguished by 'PB' marks. See also "U.S. arms inspectors' marks".

Barrett Firearms Manufacturing, Inc.; Murfreesboro, Tennessee. This gunmaking business has made a variety of sporting and military rifles, including the auto loading .50 calibre →Light Fifty and Model 90 sniping rifles, introduced in 1983 and 1990 respectively.

Barry C.C.G. Barry. The designer of a safety catch for the Danish →Krag Jørgensen service rifle.

Barry R.P. Barry. This government arms inspector, a captain in the Federal Army working in 1861–4, accepted cap lock revolvers marked 'RPB'. →Remington, →Rogers & Spencer and →Starr patterns have been reported. See also "U.S. arms inspectors' marks".

Bartender's Model: see "Sheriff's Model".

Barthelmes Alex. Barthelmes; Zella Mehlis in Thüringen, Germany. Listed in the 1930 edition of the *Deutsches Reichs Adressbuch* as a gunmaker.

Barthelmes Cuno Barthelmes; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a master gunsmith.

Barthelmes Engelhardt Barthelmes; Zella St Blasii and Zelia Mehlis in

Thüringen, Germany. Listed in 1900–20 as a master gunsmith and gunmaker. Apparently owned in 1920 by Ernst & Fritz Barthelmes, this had changed by 1930 to Ernst Barthelmes alone. The business was listed in 1939 as a weapon maker.

Barthelmes Emil Barthelmes; Zella St Blasii and Zella Mehlis in Thüringen, Germany. Founded in 1854, this business was listed in 1900–30 as a gunmaker. The directories list Barthelmes's specialties as 'hunting rifles, →Drillinge, stalking and hunting guns'. The *Deutsches Reichs Adressbücher* for 1920–30 record the owner as M. Metzner. Use of the mark →Diabolo was granted in November 1927. The business was still trading in 1941, using a 'B' trademark.

Barthelmes Ernst Barthelmes; Zella St Blasii and Zella Mehlis in Thüringen, Germany. Listed in 1914–20 as a gun and weapon maker.

Barthelmes Franz Barthelmes; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a master gunsmith.

Barthelmes Franz Barthelmes, Theod. Sohn; Zella Mehlis in Thüringen, Germany. Listed in 1930 as a gunmaker.

Barthelmes Friedr. Theod. Barthelmes Sohn; Zella St Blasii in Thüringen, Germany. Listed in the 1900 edition of the *Deutsches Reichs Adressbuch* as a gunmaker.

Barthelmes Born in Zella St Blasii in 1899, Fritz Barthelmes deserves to be remembered as the designer of the →Walther P. 38, developed in the 1930s when he was chief engineer of Carl →Walther Waffenfabrik of Zella Mehlis. The relevant British patent for the locking system is, after all, granted jointly to Barthelmes and Fritz Walther, and it is clear from the testimony of surviving employees that the concept was due more to Barthelmes than Walther. Fritz Barthelmes escaped from what was to be the Soviet Zone of a partitioned Germany in the summer of 1945, settling in the village of Heidenheim—where, ironically, Fritz Walther's fortunes also began a post war recovery. There he formed 'Fritz Barthelmes KG' (below) to make metal goods and, later, starting and signal pistols. Barthelmes died in 1973.

Barthelmes Fritz Barthelmes KG: Heidenheim Kreis Oggenhausen an der Brenz, Germany. Founded in 1948 by Fritz Barthelmes, but now operated by his son Martin, this metalworking business began making starting and flare pistols in 1954. A patent for what became the first →FB Record air pistol (LP1) was sought unsuccessfully in 1967, but it is believed that objections made by →Mayer & Grammelspacher prevented acceptance. However, despite employing only twenty people, the Barthelmes company was making forty thousand guns annually by the mid 1980s.

Barthelmes Martin Barthelmes. Son of Fritz Barthelmes (above), and the owner since his father's death of Fritz Barthelmes KG. Martin Barthelmes designed the FB Record →Jumbo and magazine feed →Champion air pistols, in addition to improving the company's blank firers.

Bartlett The A.F. Bartlett Company; Saginaw, Wisconsin, U.S.A. Possibly the

- manufacturer of the →Crescent BB Gun, sharing the offices of the →Crescent Gun Company from 1904 until the latter disappeared in 1908 into its parent (the Crescent Salt Company).
- Bartlett** C.L. Bartlett. A government arms inspector active in 1904–10, using the initials 'CLB'. See also "U.S. arms inspectors' marks".
- Bartlett** W.W. Bartlett. This government arms inspector, working in 1899–1904, accepted small arms marked 'WWB'. See also "U.S. arms inspectors' marks".
- Barton** F. Barton & Company was a gunmaking business trading from 49 Lime Street, London E.C., England, from 1896 until the First World War.
- Bartram** The marks of this retailer of sporting guns and ammunition have been reported on shotgun ammunition with the brand name 'Hard Hitters'.
- Bartsch** Emil Bartsch of Suhl in Thüringen, Germany, was listed as a gunmaker in 1930 and as a gunsmith in 1939.
- Bar V** A rarely seen, but interesting rotary bar elevating back sight offered by the →Benjamin Rifle Company of St Louis during the 1970s. It is occasionally encountered on the Benjamin pneumatic rifles, being offered as an optional extra. The →Bar O was a similar design with an aperture instead of an open 'V' notch.
- Baryshev** Konstantin Aleksandrovich Baryshev was born in 1923 in Sosnovka, near Tambov, USSR. He graduated from the Dzherzhinsky Artillery Academy in 1946 and began working for the proving-ground authorities alongside many famous smallarms designers. During this period Baryshev developed a 9mm pistol and a 7.62mm →Avtomat, and was also responsible for a mount for the →PKP machine-gun. Lieutenant-Colonel Baryshev retired from the army in 1974.
- Bascaran** C. y T. Bascaran SRC; Eibar, Guipuzcoa, Spain. Bascaran has made shotguns and spring-type airguns under the →Cometa brand name. The airguns included the 'Cometa V' and 'Cometa VII', simple barrel-cockers briefly sold in Britain (in 1975–7) by →Parker Hale Ltd. The guns subsequently reappeared under the →Lincoln brand name owned by David →Nickerson (Tathwell) Ltd.
- Bascaran** Martin A. Bascaran of Eibar, Guipuzcoa, Spain, is recorded as the manufacturer of (among other firearms) the →Martian and →Thunder semi-automatic pistols.
- Basculant** A term associated with automatic pistols made by Nicholas →Pieper of Liège, Belgium, denoting tipping-barrel construction. See also 'Demontant'.
- Basculant** A small 6.35mm Browning type automatic pistol made by →Aguirre, Zamacolas y Compañía of Eibar, Spain; seven rounds, hammer fired.
- Basque** A semi-automatic pistol made by →Echave y Arizmendi of Eibar prior to the Spanish Civil War (1936–9).
- Basson**, 13 rue du Grand Gonnet, Saint Étienne, France. Listed in directories dating from 1950–1 as a gunmaker.
- Bästlein**. Alfred Bästlein of Suhl in Thüringen, Germany, was listed in the Deutsches Reichs Adressbuch (1939–42) as a gunsmith.

- Basler** The name of 'gunsmith' John Basler of New York City may simply disguise a sales office maintained by one of the partners in →Basler & Denk or, more probably, indicate that the partnership had been split. St Louis style →Gallery Guns are known with 'New York' markings.
- Basler & Denk** This maker of sporting guns and spring air →Gallery Guns traded in St Louis, Missouri, U.S.A., in the 1860s. Many of the guns have been reported with the additional marks of Scharf & Son, but the relationship between the businesses is unclear.
- Bassett** G.J. Bassett, a sporting goods and ironmongery business trading from 4 Swan Street, Petersfield, Hampshire, England, sold shotgun cartridges branded →Champion.
- Bastin** Henri Bastin of Liège, a maker of sporting guns and rifles, has been active in Belgium since the end of the Second World War.
- Batard Gevelot:** see 'Gevelot'.
- Batavia** A brand name associated with the products of the →Baker Gun & Forging Co. of Batavia, New York. It was used on a range of inexpensive side lock shotguns made from about 1905 onward, and on a .22 auto loading rifle confined to 1911–14.
- Bate** George Bate. Established in 1881 and still trading from 132 Steelhouse Lane, Birmingham, Warwickshire, England, in the 1930s, this gunmaker is recorded to have sold shotgun ammunition under the brand names →Game, →Imperial and →Leader. The cartridges (or perhaps simply components) were usually purchased from →Eley Kynoch Ltd.
- Bater** Charles Claude Bater, living in 1946 in 'Bungable', The Avenue, Finchley, London N3, was co-grantee with →Millard Brothers and George Arthur →Lee of British Patent 575543 protecting a pump-up pneumatic airgun.
- Bates** Arthur Bates & Company. This gunmaking business had a shop at 22 Sun Street, Canterbury, Kent, England. Branches were also operated locally, in Sturry and Whitstable.
- Bates** Edward R. Bates. An English provincial gunmaker with premises in Canterbury, Kent, at 3 George Gate and 71 Burgate Street.
- Bates** George Bates. This gunsmithing business, trading prior to 1914 in Eastbourne, Sussex, England, handled shotgun cartridges marked 'The →Eastbourne'.
- Bates** William L. Bates. This U.S. government arms inspector, working in 1870–9, accepted Remington revolvers for the U.S. Navy; the guns bore 'WLB'. See also "U.S. arms inspectors' marks".
- Batho.** A name associated with round shot made by the →Midland Gun Company in the 1930s.
- Bath Street Gun Works** *or, alternatively, 'Bath Gun Works':* see 'Midland Gun Company'.
- Bathurst**, *also known as* 'Rifle Factory No. 2'; Olympic Way and Stuart Street, Bathurst, New South Wales, Australia. This was established in 1941 to supply SMLE components to the →Lithgow factory, but subsequently became a

- feeder for the →Orange establishment. Bathurst products were marked 'BA'.
- Battue** A form of →snap-shooting at driven game. Usually undertaken with magazine rifles, or auto loaders such as the →BAR, the requirements are usually a short barrel, a single direct-acting trigger and a fixed back sight at the front of a quarter rib.
- Battue** Made in Liège by Société Anonyme Continentale pour la Fabrication des Armes à Feu →Lebeau Courally, intended for use against driven game, in 9.3×74R only, this short barrelled over/under rifle has double triggers, a pistol-grip butt, and a standing-block back sight let into the top of the quarter rib. Renaissance-style floral relief engraving, on the customary dark ground, is enhanced with gold-inlaid vine leaf and stem work. There are finely detailed hunting scenes on the side plates and beneath the frame.
- Bauer** Bernh. Bauer; Mehliis and Zella Mehliis in Thüringen, Germany. Listed in 1914–30 as a gun and weapon maker.
- Bauer** Carl Bauer & Co.: see 'Karl Bauer'.
- Bauer** Ernst Bauer; Suhl in Thüringen, Germany. Listed in 1914 directories as a gunmaker, Bauer specialised in repairs and re stocking work.
- Bauer** Fritz Bauer; Jena. A retailer of sporting guns, ammunition and accessories active in Germany in 1941.
- Bauer** G. Bauer; Zella Mehliis in Thüringen, Germany. Listed in 1930 as a master gunsmith.
- Bauer** J. Bauer, Nachfolger; Zella Mehliis in Thüringen, Germany. Listed in 1920–30 as a weapon maker.
- Bauer** Karl Bauer, Ka-Ba Waffenfabrik; Berlin, Breslau and Königsberg in Preussen, Germany, with 'factories' in Suhl. Perhaps best known by the 'Ka Ba' or 'Kaba' trademark, the guns distributed by this business included Spanish made 6.35mm automatic pistols. Bauer was established in Berlin in the early years of the twentieth century; directory entries customarily describe the business as a *Waffengrosshandlung* (wholesaler) and it is not known whether manufacturing facilities were ever maintained. The Suhl branch was listed in most 1920–30 editions of the *Deutsches Reichs Adressbücher* as a 'weapon maker' and in 1939 as 'master gunsmiths'.
- Bauer Firearms Corporation**; Fraser, Michigan, U.S.A. Maker of the Bauer 25 automatic pistol, based on the →Baby Browning.
- Baumbach** Gunmaker Ferd. Baumbach the Younger (*der Jungere*) traded in the period between the world wars in the village of Ebertshausen bei Suhl in the Thüringen district of Germany.
- Bavaria** A bolt-action hunting rifle, based on the 1898 Mauser, made in Belgium by Armes Ernest →Dumoulin SPRL. Offered in a variety of chamberings, the guns usually have double triggers and spatulate bolt handles.
- Bavaria** A brand name associated with airguns made in Erlangen (in Bavaria) by →Bayerische Sportwaffenfabrik. It was usually confined to English-speaking markets, 'Bayern' being substituted for European distribution. A similar mark will be found on paramilitary daggers made prior to 1945 by F. Barthelmes(s)

of Muggendorf, but there is no connection between the two applications.

Bavaria A term applied by H. →Krieghoff GmbH to engraving patterns applied to the K-80 over/under shotgun. The designs show an oval game-bird scenes and two small 'blind' oval panels within delicate floral scrolls. See also 'Bavaria-Suhl', 'Crown Grade', 'Danube', 'Gold Target' and 'Parcours'. Deluxe or 'custom' versions may have gold inlays on blued grounds.

Bavaria-Suhl Another of the engraving patterns applied to K-80 and other guns made by H. →Krieghoff GmbH. Similar to the standard Bavaria pattern (q.v.), it is much heavier; the blind panels are absent, and the panelling consists of acanthus leaves and tendrils. See also 'Crown Grade', 'Danube', 'Gold Target' and 'Parcours'.

Bayard *often accompanied by a mounted knight.* A mark used by Anciens Établissements →Pieper of Herstal lèz Liège, Belgium, on firearms ranging from →Bergmann Bayard pistols to a range of shotguns. See also →Bergmann 'Mars'.

Bayer Gunsmith John Bayer made spring air →Gallery Guns in his workshop at 117 Prince Street, New York City, in 1869/73.

Bayerische Sportwaffenfabrik Hans Schütt oHG ('BSF') of Erlangen, Bavaria, Germany, was said to have been founded in 1935 to make airguns, though there is little evidence that anything other than prototypes were made prior to 1939. Series production did not commence until 1950, when the first of an extensive range of barrel and underlever cocking designs appeared. These included the →Junior and →Media barrel cockers and the 'S54', which was little more than a variant of the →Jeffries Pattern BSA with an elegant half stock. Many will be found with the →Wischo brand name of Wilsker & Co., the major export agency. BSF's products were soundly made, but lost ground to the more progressive approach of →Feinwerkbau, →Mayer & Grammelspacher and others in the 1970s. The company was hit particularly badly by the failure of its British agent in 1981, and the workforce of 130 in the Fuchsen Garten factory in Erlangen was radically reduced. The company was sold in 1982 to Herbert →Gayer, but the advent of improved products came too late to stave off the liquidation concluded in July 1985. The stock of guns and components was apparently purchased by →Umarex and eventually marketed under a →Mauser trademark.

Bayern The German name for what is generally known in English as 'Bavaria', this has been specifically associated with airguns made by →Bayerische Sportwaffenfabrik prior to 1989.

Bayet frères of Liège, inspired by the →Dreyse, patented a bolt-action needle gun in Belgium in the 1850 and then offered it commercially for a few years. Unlike its Prussian prototype, the Bayet gun was a self-cocker and generally had a straight slot for the bolt-handle base running the length of the receiver. Revolvers were then made from the 1870s until the First World War.

Baylis Ebenezer Baylis & Son, sometimes listed as 'Bayliss'; St Mary's Square, Birmingham, Warwickshire. Advertised in 1871 as 'Manufacturers of every

description of Military and Sporting Implements for Breech & Muzzle-Loading Guns & Rifles. Contractors to the Honourable Board of Ordnance'. Baylis & Son also occupied premises at 42–44a Cannon Street, London, in 1874–6.

Bayonet This is a bladed weapon that can be attached to the muzzle of a rifle or musketoen, though not usually to a carbine. There are many differing types. A socket bayonet is an all metal pattern with a short cylindrical socket, passing over the muzzle, and some method of locking the socket to the gun: a spring, a rotating collar or a sliding catch. A knife bayonet has a short straight blade, customarily defined as less than 25cm (11.8in) long; a sword bayonet is essentially similar to a knife pattern, but has a blade exceeding 25cm. A sabre bayonet is usually a sword pattern with a curved or recurved ('yataghan') blade. A rod bayonet usually slides in a channel beneath the muzzle, being carried on the gun at all times. Many books have been written about this particular subject. The best of them, usually devoted to specific subjects (e.g., Japanese Bayonets, British & Commonwealth Bayonets), are excellent; however, few of the more general studies are particularly authoritative. Note: additional information is being supplied by Anthony Carter to insert here.

Bazar A tradename found on a knife-pistol made in Germany prior to the First World War, apparently on the basis of 'Springer' brand collar lock knife parts purchased from Wilhelm →Weltersbach of Solingen. The small pivoting barrel block usually held a single .22 Short rimfire cartridge, and the spring loaded striker was controlled by a small button trigger. They also often have auxiliary extractors for shotgun cartridges, marked 'CB12' or 'CB16' depending on gauge.

BB Gun A term applied to a what was originally a primitive form of →airgun, developed in the U.S.A. in the 1880s by companies such as →Markham and →Daisy. The primary goal was to provide a boy's gun inspired by the well-made (but expensive) →Gallery Guns and →Haviland & Gunn →Gems of the day, but firing .175in-diameter 'BB' shot. Some of the earliest BB Guns consisted simply of a short smooth-bore liner in a crude wooden frame/stock unit, though even the first →Daisy was made entirely of metal.

¶ From these humble beginnings, the BB Gun has been made in huge quantities—production of the Daisy No. 25, designed by Charles →Lefever, alone exceeding twenty million when work ceased in the 1970s. The market is currently dominated by →Crossman Arms Company and →Daisy Mfg Co., but the products have grown steadily in sophistication and are now often surprisingly good facsimiles of well-known firearms.

¶ Owing to its hardness, BB Shot is ideally suited to magazine feed; it has been used in a legion spring-and-piston rifles cocked by rocking bolts, beginning with the →Haenel-made Sportmodell of 1933. Designed by Hugo →Schmeisser, this was subsequently copied in Germany, Czechoslovakia and Spain. The best source of information about the U.S. versions is *The American BB Gun* by Arni Dunathan (1976); W.H.B. Smith's *Gas, Air & Spring Guns of the*

World (1958 and reprints) gives details of the bolt-cocking guns.

- BB Scout** A brand name associated with the Model 788 pneumatic BB Gun introduced by the →Crosman Arms Company in 1977. The BB Scout has synthetic furniture, a 22 ball tube magazine, and a swinging fore end pump system.
- BBF**: see 'Bockbüschflinte'.
- BBL**: see 'B.B. Lombard'.
- B.C.** A 6.35mm Browning type pocket pistol made by Victor →Bernedo y Compañía of Eibar, Spain; six rounds?
- bcd** This code was allotted in 1941 to →Gustloff Werke, and used on rifles and small arms components made in its Weimar (Germany) factory.
- BCP** *with crossed sceptres and a crown*. An abbreviated form of 'Birmingham Company Proof', applied by the Guardians of the Proof House in Birmingham, Warwickshire, England, from 1813 until replaced in 1904 by 'BP' black powder and 'NP' nitro proofs.
- bd** Used in 1940–5 by F.A. →Lange Metallwerke AG of Bodenbach an der Elbe, Germany, a maker of small arms ammunition and components.
- BDB**: see 'Bockdoppelbüchse'.
- BDL** Associated with rifles made by the →Remington Arms Company (Model B, De Luxe'), distinguishing stocks with high-gloss finish, chequering of various types, and, usually, →Monte Carlo-comb butts. See also 'ADL'.
- be** A mark used by →Berndorfer Metallwarenfabrik Arthur Krupp AG on small arms ammunition or components made during the Second World War.
- Beacon** [The]. Usually accompanied by a rabbit bounding over a foxglove, this mark was associated with shotgun cartridges made prior to the First World War by →Kynoch for →Shuffreys Lyd of Walsall.
- Beals** Fordyce Beals designed the →Walking Beam revolver for →Whitney, patented on 26th September 1856 ('revolving firearm', U.S. no. 11715), which relied on an oscillating bar to rotate the cylinder. A later design patented on 24th June 1856 (U.S. no. 15167) and 26 May 1857 (17359) was exploited by E. →Remington & Son. Beals also patented a rammer protected by U.S. Patent no. 21478 of 14th September 1858, which was used on the first .44 Remington army type revolvers.
- Beals** Robert P. Beals. Using the mark 'RB', this government arms inspector accepted →Colt revolvers in the early 1860s. He then changed to 'RPB', and continued to accept small arms until 1880. See also "U.S. arms inspectors' marks".
- Bear** A brand name used by →Beeman's Precision Guns to identify .20-calibre flat-head diablo airgun pellets made in Germany by →Haendler & Natermann.
- Bear** A Soviet/Russian brand name found on a semi-automatic sporting rifle. See 'Medved'.
- Bearcat** A .22 rimfire revolver introduced in 1966 by →Sturm, Ruger & Company and made for about ten years. A simplified form of the →Single Six, it was

made only in a single barrel length and fixed sights.

Bearcub Another of the many brand names used by →Beeman's Precision Guns, this was applied to round nose 4.5mm and 5.5mm diablo pellets made by →Haendler & Natermann.

Beardmore William Beardmore & Co. Ltd; Parkhead Forge and Dalmuir Works, Glasgow, Lanarkshire, Scotland. Dating from 1886, superseding the partnership W. & I. Beardmore, this engineering business was best known prior to 1918 for warships, armour plate and heavy guns. After the First World War, however, seeking to diversify, Beardmore briefly promoted the →Beardmore Farquhar machine gun (1919–27).

Beardmore Farquhar Made by the Beardmore Engineering Co. in accordance with the patents of Moubray Gore →Farquhar and Arthur Henry →Hill, this light machine gun was tested by the RAF in 1919, and then by the British Army in the early 1920s. An unusual combination of gas and spring action allowed the weapon to be very lightly built by the standards of its day, weighing merely 162lb with a 77 round pan magazine, but much of the operating mechanism was exposed to the elements. A handful of Improved 'Mark II' Beardmore Farquhar guns were offered from 1924 in .303, 7.65mm and 7×57, with pan or box magazines. A .5 calibre version weighing only 38lb was developed experimentally, but none of these innovative guns were successful.

Beardslee Lester A. Beardslee, a lieutenant commander in the U.S. Navy, accepted →Starr cap-lock revolvers marked 'LAB' prior to 1861. See also "U.S. arms inspectors' marks".

Beasley Benjamin Beasley was a gunmaker, registered at 4 St James's Street, London, England, in 1865.

Beatall This name was given to conventional ribbed skirt roundnose .177 and .22 diablo airgun pellets made for many years by →Lanes Brothers (subsequently 'Lanes Ltd'). They were exported to many countries worldwide and sold under a variety of other names, including →Precise Minuteman and →National Pellets.

Beattie The premises of London gunmaker James Beattie were listed at 205 Regent Street from at least 1850 to 1864, when the trading style changed to 'James Beattie & Son'. Work continued from the same address until about 1880, when the formation of 'James Beattie & Company' coincided with a move to 104 Queen Victoria Street, London E.C. Operations seem to have ceased in 1894.

Beaufort [The]. A brand name found on shotgun cartridges loaded for →Harrods of London, probably prior to 1939.

Beaumont Frans [de] Beaumont. A Dutch gunmaker, best known for the single shot bolt action rifle adopted by the Dutch army in 1871.

Beaumont Frederick Blackett Edward Beaumont; Upper Woodball, Barnsley, Yorkshire. This British army officer (c. 1828–99), 'Late Royal Engineners', received British Patent of 374/55 of 20th February 1855 to protect the trigger

mechanism of a modified →Adams revolver, allowing it to be cocked manually. A comparable U.S. Patent, no. 15032, was granted on 3rd June 1856.

Beaumont-Adams revolver: details to add.

Beaux Leon Beaux [& Co.] of Milan was one of Italy's leading ammunition makers prior to the emergence of →Fiocchi. Beaux made a variety of rifle, handgun and shotgun cartridges prior to c. 1920. They can be recognised by the inclusion in the headstamps of 'LB' or 'LBC'.

Beck Gun designer George Beck was employed by →Marlin.

Becker & Hollander, established late in the nineteenth century in Suhl, in the Thüringen district of Germany, is best known for the →Beholla pistol. Rifles and shotguns were also made, but operations seem to have ceased at the end of the Second World War.

Beckwith Henry Beckwith. A gunsmith listed at 33 Fieldgate Street in 1858–65, and 58 Skinner Street, London E., from 1864 until 1868.

Beckwith William A. Beckwith. The name of this English gunsmith has been linked with firearms, apparently including an occasional self cocking →pepperbox, made in the 1860s. Indeed, H.J. Blanch, writing in *Arms & Explosives* in 1909, lists Beckwith at a variety of London addresses in the mid nineteenth century, culminating at 58 Skinner Street, London E., as late as 1868. However, William Beckwith had died in 1841; the business was continued in his name by widow Elizabeth and son Henry.

Bedford Augustus Bedford; Boston, Massachusetts, U.S.A. Bedford seems to have been the maker of the →Eureka, a .21 calibre spring air pistol which was basically a →Quackenbush design with an additional loading bolt patented by George A. →Walker in 1876. The gun had previously been made by →Pope, Brothers & Company. Production switched to the Quackenbush factory in Herkimer, New York State, in the 1880s and continued there until 1893.

Bedford Brothers This gunmaking partnership was listed at 11 Little Moorfields, London E.C., England, in 1867.

Bedford & Walker This gunmaking partnership apparently made air pistols in accordance with patents granted to George A. →Walker. See 'Augustus Bedford', below.

Beecher's Bibles: see 'John Brown Sharps'.

Beeman Precision Guns, Inc., of San Anselmo and San Rafael, California, U.S.A., was established on a commercial footing in 1972, having previously traded for some years as a 'hobby enterprise'. It then rose rapidly to become North America's largest distributor of European style airguns and has laid a justifiable claim to advances in the production of guns and ammunition, even though the former have often been based on Weihrauch components and the latter on established →Haendler & Natermann designs. Beeman was responsible for the development of the R1 (made in Europe in a differing form as the Weihrauch HW80), together with the 'Kodiak', 'Laser', 'Ram Jet' and 'Silver Bear' pellets. The great success provided by the airguns encouraged the company to expand into the firearms market in the 1980s, helped by the grant

- of exclusive agencies for the →Feinwerkbau and →Krico cartridge rifles.
- Beesley** English gunmaker Frederick Beesley was first listed at 22 Queen Street, Edgware Road, London W., in 1879. He moved to 85 Edgware Road in 1892 and then to 3 St James's Street in 1893. By 1900, Beesley occupied 2 St James's Street and 2 Pickering Place, London S.W.
- Begueldre**; Liège, Belgium. The marks of this gunmaker have been found on pistols and revolvers, cap-lock and cartridge alike, dating from the second half of the nineteenth century.
- Behelfspistole** A German term ('auxiliary pistol') used to denote the many non-regulation handguns that eventually found their way into official service during the First World War. Few of the Behelfspistolen were particularly powerful, but they did free Parabellums for front-line service. Material published later in the war indicates acquisition of a broad range of commercial designs, including tiny blowbacks seized after the invasion of Belgium.
- Beholla** A small →blowback semi-automatic pistol made by →Becker & Hollander of Suhl, c. 1916–19. It seems to have had its origins, like the →FL-Selbstlader, in the 'Hindenburg Programm' of 1915. Designed specifically to meet German military requirements, the Beholla was chambered for the 7.65mm Auto cartridge and had a seven-round box magazine in the grip. Simple, reliable and easily made, guns of this type were also offered under the names →Leonhardt, →Menta and →Stenda.
- Behörden-Modell** A modernised version of the 7.65mm 1913- or 'Old Model' pistol made by J.P. →Sauer & Sohn of Suhl, this was intended for police and paramilitary use (*Behörde*, 'authorities'). The external changes were minimal, only a refinement in the shape of the handgrip distinguishing between the 1913 and 1930 patterns; however, the newer gun had a blade-like safety mechanism inserted into the trigger blade to ensure that the weapon would not fire accidentally. Too late to compete effectively with the Walther Polizeipistole, the Behörden-Modell was replaced shortly before the Second World War began by the Sauer Modell 38.
- Behr** Burkhard Behr. The name of this Suhl-based gunsmith, whose operations lasted into the 1920s, is usually associated with the →Bär repeating pistol, made in small numbers by J.P. →Sauer & Sohn of Suhl, Thüringen, Germany, prior to 1914. His operations may have been succeeded by Behrs Industrie Gesellschaft.
- Behrs Industrie Gesellschaft mbH** Formed in Suhl about 1930, this may have been a successor to the gunmaking business of Burkhard Behr (above). Some of its wares were apparently distinguished by the mark →Colonist.
- Beistegui Hermanos** of Eibar, Guipuzcoa, Spain, was a gunmaking business—formed in 1909 by Juan and Cosmé Beistegui—which achieved prominence during the First World War only as a sub-contractor for →Ruby-style pistols ordered from →Gabilondo y Urresti. These were marketed in the early 1920s under the name →Royal, alongside a variety of guns made for Fabrique d'Armes de →Grande Precision C including the →B.H., →Bulwark and →Libia.

In 1926, however, the first of the Beistegui adaptations of the Mauser C/96 appeared, to be followed by an improved 'MM31'. Production ceased in 1934; the factory was destroyed in 1937, during the Spanish Civil War; and the manufacture of bicycles and accessories began in Vittoria in 1939.

bek A mark found on telescope sights and associated optical-instrument components made in Germany in 1940–5 by Hensoldt Werk Dr H. →Hensoldt in Herborn/Dillkreis.

Bekeart Model A distinctive →Smith & Wesson revolver originally made in 1912 to the order of gunsmith Philip Bekeart of San Francisco, California, U.S.A. Essentially a .22 rimfire target revolver built on a .32 →Hand Ejector frame, it was made (with minor changes) until 1953.

Belgian Bull Dog or 'Belgian Bulldog'. A brand name found on a selection of compact double-action .320 and .380 revolvers, based on the Webley →Bulldog, made in Belgium prior to 1914. Most have six-round cylinders, and rounded or bird's-head butts; lanyard rings were optional. Not all give clues to their manufacturers, though some bear the 'A.F.' of →Francotte and others have the crowned 'R' of →Rongé fils.

Belgian Constable Associated with double-action six-shot .380 and .44 revolvers, similar to the 'Belgian Bulldogs' described previously, but larger. Originating in Belgium prior to 1914, they usually have squared butts and lanyard rings. Manufacturers' marks are often absent, though some guns display the 'A.F.' of →Francotte or the crowned 'R' of →Rongé fils.

Belknap Theodore A. Belknap, a Federal arms inspector working during the American Civil War, marked cap lock revolvers and possibly also breech loading carbines with 'TAB'. See also "U.S. arms inspectors' marks".

Bell George Bell: see "Clyde's Game & Gun Mart".

Bell John A. Bell. A lieutenant in the U.S. Navy, Bell accepted →Colt and →Smith & Wesson revolvers in 1902–3, marking them with the initials 'JAB'. See also "U.S. arms inspectors' marks".

Bell William L. Bell. This government arms inspector, a lieutenant in the U.S. Army, accepted Colt pistols marked 'WLB' in 1937. See also "U.S. arms inspectors' marks".

Bell Craig This was a break barrel air rifle offered in the 1920s by →Clyde's Game & Gun Mart of Glasgow, but probably made in Germany by either Fr. →Langenhan or →Mayer & Grammelspacher. See also 'Ailsa-Craig'.

Bellmore Gun Company A brand name associated with shotguns made by the →Crescent Gun Company.

Bellmore-Johnson Tool Company; Hamden, Connecticut. Maker of →Sharps-Borchardt actions for the →Sharps Arms Company.

Bellow & Son, an English gunsmithing and ironmongery business, had premises in Leominster, Hereford, Tenbury Wells and Bromyard prior to 1939.

Belmont A name was applied to a .250 calibre ('No. 3 Bore') airgun introduced by C.G. →Bonehill in 1908. Details of the design are not known, though it has been suggested as a prototype or variation of what subsequently became

known as the →Improved Britannia.

Belmont Gun Works, 'Belmont Gun & Gun Barrel Works' or, alternatively, 'Belmont Firearms Works': see 'C.G. Bonehill'.

Belt-buckle guns A few nineteenth-century weapons of this type will be encountered, generally made with a short barrel pointing outward from an iron mounting plate on a stout leather belt. They are fired by a conventional hammer and nipple system, the direction of the strike being lateral. A lanyard attached to the arm or leg is usually used to release the cocked hammer. See also 'Disguised guns' and 'Reuben →Goldberg'.

Belted case: see 'cartridge case'.

Bely et Durafour, rue de Chambin 17, Saint Étienne, France. Listed in 1879 as a distributor of and agent for arms and ammunition.

Bendix: see 'George A. →Hyde'.

Benemerita Made by, or more probably for D.F. →Ortega de Seija of Madrid, Spain, this 6.35mm Browning-type pocket pistol had a seven-round magazine and a hammer-pattern firing mechanism. The slide may sometimes be marked 'Model 1918'.

Benet, Benét Laurence V. Benét was the son of Stephen Benét, one-time Chief of Ordnance of the U.S. Army, this engineer settled in France. A long-term employee of Société Anonyme Établissements →Hotchkiss. Among his designs was the Hotchkiss light machine-gun, or 'Machine Rifle', developed in association with Henri Mercié.

Benét-Mercié Machine Rifle (*Fusil Mitrailleur Mle. 1909*). Designed in 1907–9 by Laurence Benét and Henri Mercié, this was made in France by →Hotchkiss of Saint-Denis. The guns were issued tested in small numbers in Belgium and France, but were much more popular on the export markets. Purchasers included the U.S. Army, in which the 'Benét-Mercié Machine Rifle, .30 Model 1909', after an allegedly poor showing in the border wars with Mexico, was unfairly castigated as the →Daylight Gun and rapidly withdrawn in favour of the →Lewis Gun.

Bengal An inexpensive U.S.-made →Suicide Special revolver; manufacturer unknown.

Benjamin Henry Benjamin. A London-based successor to →Benjamin & Burlez, trading initially from 20 St Mary Axe. By 1875, premises were being occupied at 36 St Mary Axe and 612 Fore Street, E.C.; a move to 1 Moorfields took place in 1881, where Benjamin remained until at least 1900.

Benjamin M.P. Benjamin, a U.S. government arms inspector working in 1899–1909, accepted the small-arms marked 'MPB'. See also "U.S. arms inspectors' marks".

Benjamin W.A. Benjamin. This U.S. government arms inspector, working in 1898, accepted small-arms marked 'WAB'. See also "U.S. arms inspectors' marks".

Benjamin W.E. Benjamin. Sometimes listed as working in the late 1890s, accepting small-arms marked 'WEB', this may be a mistaken attribution of the

mark of W.A. Benjamin (above). See also “U.S. arms inspectors’ marks”.

Benjamin The airgun inventor Walter Rogers Benjamin of Jackson and Granite City, Illinois, and then St Louis, Missouri, U.S.A., began work in the 1890s and received his first patent in 1899. W.H.B. Smith, writing in 1958 in *Gas, Air & Spring Guns of the World*, dated Benjamin’s earliest design to 1882. However, given the primitiveness of the 1899 patent, this seems much too optimistic. The earliest rifles were made by the →St Louis Rifle Company, which became the →Benjamin Rifle Company in 1927. Among the protection granted to Benjamin were British Patent 12824/99 of 1899, protecting a crude pneumatic rifle. The papers list Benjamin’s address as ‘Grand Tower Junction’ in Illinois. U.S. Patent 693823 of 25th February 1902 is essentially the British Patent of 1899; the U.S. Patent Office customarily took several years to grant patents in this period. U.S. Patent 695025 of 11th March 1902 allowed claims for a pump-up gun with the barrel beneath the air chamber. Its British equivalent, 22554/02 of 1902, lists the inventor’s address as 212 Main Street, St. Louis. U.S. Patent 749519 of 12th January 1904 protected an improved pump-up airgun while 822645 of 5th June 1906, sought from Granite City, protected an improved airgun and valve mechanism.

Benjamin Brothers A gunmaking partnership listed at 11 Little Moorfields, London E.C., England, in 1869–71. Possibly a short lived predecessor of Henry →Benjamin & Company.

Benjamin & Burlez This English gunmaking partnership was formed in 1861, trading from 20 St Mary Axe in London. Directory entries dating from 1867 onward list the business as ‘Henry Benjamin’ or, more rarely, ‘Henry Benjamin & Company’.

Benjamin Franklin A brand name associated with the products of the →Benjamin Rifle Company.

Benjamin Pistol Syndicate Listed in 1898 at 24 Jewin Crescent, London E.C., England, the affairs of this agency remain mysterious.

Benjamin Rifle Company St Louis, Missouri, and later Racine, Wisconsin. Walter →Benjamin, after trading briefly as the ‘St Louis Rifle Company’ in 1899–1903, had licensed his patents to the Wissler Instrument Company of St Louis, which had been making his prototypes alongside theodolites and surveying equipment. Benjamin and Wissler formed a partnership, which soon prospered and Aloys Spack was employed as administrator in 1908–16. ¶ Wissler died in 1925 and, in 1927, Spack returned to gain control of what he re-registered as the ‘Benjamin Air Rifle Company’. Much pioneering work was done to cure persistent valve problems, and the first Benjamin pistol was announced in 1933. Vast numbers of pneumatic and gas-powered guns have since been made.

¶ Though Benjamin gave the impression of a company struggling to regain direction in the 1970s, it acquired →Sheridan in 1982 and the fixtures and fittings necessary to make the British →Sterling air rifle followed in 1983. Production has been concentrated since 1986 in the former Sheridan factory

in Racine, Wisconsin.

Bennet, Bennett W.A. Bennet or 'Bennett'. This U.S. government arms inspector, working in the 1890s, accepted small arms marked 'WAB'. See also "U.S. arms inspectors' marks".

Bennett A.G. Bennett. The marks of this U.S. government arms inspector, 'AGB', will be found on →Remington revolvers and →Ward Burton rifles accepted in 1868–79. See also "U.S. arms inspectors' marks".

Bennett Charles H. Bennett was the first salesman to be employed by the Plymouth Iron Windmill Company of Plymouth, Michigan. This company subsequently became →Daisy and Bennett rose to the rank of general manager. He then became President of Daisy, in 1920, and retained the honour until he died in 1956.

Bennett Frederick F. Bennett. Son of Charles H. Bennett (above), Frederick Bennett invented a method of soldering the cast iron frames of BB Guns to sheet metal air cylinders: U.S. Patent 670760 of 26th March 1901.

Bennett Joseph Bennett, a gunmaker/engineer trading in Hartford, Connecticut, specialised in the manufacture of prototype weapons. Among them were guns made for Sir Charles →Ross, to whom a U.S. Patent granted to Bennett in February 1900 (no. 643935) was ultimately assigned.

Bennett Thomas Gray Bennett (1845–1930), trained as a mechanic, joined the →Winchester Repeating Arms Company in 1870, becoming company secretary in 1871 and president in 1890. He was a prolific patentee, though it is possible that his name was often simply used by Winchester on designs emanating in the Model Room. U.S. Patents granted for 'Breech-loading firearms' or simply 'Firearms' included 352292 of 9th November 1906; 564421 of 21st July 1896; 781179 of 31st January 1905; and 836554 of 20th November 1906. Three U.S. Patents were granted to protect the design of 'bolt guns'—632090 of 29th August 1899; 782716 of 14th February 1905; and 798866 of 5th September 1905, with Frank F. →Burton, to permit 'Krag or other rifles' to be converted to fire small-calibre ammunition. Among the many U.S. patents granted to protect 'magazine firearms' were 188844 of 27th March 1877; 190264 of 1st May 1877, with William W. →Wetmore; 209748 of 12th November 1878; 224366 of 10th February 1880 (also with Wetmore); 343423 of 8th June 1886; 386290 of 17th July 1888; 545766 of 3rd September 1895; 551572 of 17th December 1895 (for a box-magazine gun); and 599587 of 22nd February 1898, with William →Mason. U.S. Patents 695784 of 18th March 1902 and 710660 of 7th October 1902, granted jointly with William →Mason and Thomas C. →Johnson respectively, protected designs for semi-automatic or automatic firearms. Among the lesser patents were three obtained in 1897 to protect locking catches for lever-action guns: 588315 of 17th August, 598201 of 31st August and 598687 of 7th September. U.S. Patents 487465 and 487466 of 6th December 1892 were 'take-down' systems; 537598 of 26th April 1895 and 549343 of 5th November 1895 protected 'recoil locking bars for bolt guns'. U.S. Patent 223797 was granted on 27th January 1880 for an improved 'Lock for Firearms'. U.S.

Patent 747645 (22nd December 1903) protected an extractor mechanism, whereas 564420 of 21st July 1896 was obtained for a safety system. U.S. Patent 557947 of 7th April 1896 described a fore-end attachment system; 211691 of 28th January 1879 was a magazine charger; 814511 of 6th March 1906 protected a spreader for shot charges; and 355121 of 28th December 1886 was granted for a proprietary sight design.

Bennett V.L. Bennett. Active in the mid 1870s, this U.S. arms inspector accepted small arms marked 'VLB'. See also "U.S. arms inspectors' marks".

Bennett William Bennett; New Haven, Connecticut, U.S.A. The son of T.G. Bennett (above), this Winchester employee was granted U.S. Patent 851643 of 30th April 1907 to protect a cartridge deflector for top ejecting guns.

Bennett Model A name applied to a thousand-shot BB Gun made by →Daisy in 1903–12. It was named after the company's general manager, Charles H. Bennett.

Benoit Nathan L. Benoit, known to have been active in the early 1900s, accepted U.S. military small arms marked 'NLB'. See also "U.S. arms inspectors' marks".

Benson Carl Benson, an engineer working for →Mossberg, was responsible, among other things, for the development of the company's bolt-action rifles.

Benthin, Liège, Belgium. This gunmaker was involved in the 1870s with le →Grand Syndicat.

Bentley Joseph Bentley; Liversedge, Yorkshire., England A gunsmith and ammunition maker trading from 309 Halifax Road, Bentley loaded shotgun cartridges from components supplied by →Greenwood & Batley.

Bentley Joseph Bentley; Birmingham, Warwickshire, and Liverpool, Lancashire. This English gunmaker began trading from 11 Steelhouse Lane, Birmingham, in 1829. A move to 14 St Mary's Row took place about 1838, where operations continued until 1864. Premises were also maintained in Liverpool, at 143 Dale Street (1840); 12 South Castle Street (1842–51); 40 Lime Street and 6 South Castle Street (1852–7); and 6 South Castle Street and 37 Russell Street (1857–62). Bentley is best known for his 'Enclosed Central fire Safety Gun, the Improved, Self Cocking, Revolving, Six barrell'd Pistol' (pepperbox), protected by English Patent 8024 granted jointly with George Stocker on 9th April 1839. Bentley's other patents included English 10280 of 30th July 1844 for nipples placed parallel to the bore; 960/52 of 4th December 1852 for a cap lock revolver; British 768/54, granted on 4th April 1854 to protect improvements to revolvers; 780/56 of 1st April 1856 for a cap lock breech loader; and 2657/57 of 17th October 1857, for improvements in revolver and rammer design.

Bentley & Playfair This gunmaking business was based in Birmingham, Warwickshire, England, but maintained sales representation in London for many years. Postal directories list the premises at 20 High Holborn in 1885–9, 9 New Broad Street in 1891–2, and 60 Queen Victoria Street from 1893 until 1900 and later.

Benton James G. Benton, an officer in the U.S. Army, commanded the →National Armory, Springfield, from 1866 until relinquishing his post in 1881 with rank

of colonel. His personal marking is said to have been 'JGB'. See also 'John G. →Butler' and "U.S. arms inspectors' marks".

Berdan Hiram Berdan. A designer of a range of firearms, including bolt action guns adopted in Russia and elsewhere. A prolific designer, he resigned his commission in the Federal Army in 1864, though the Civil War was still raging, and embarked on a new career. Among Berdan's U.S. Patents were three granted on 10th January 1865: no. 45898 protecting a method of rifling muzzle-loading smoothbores, 45899 for a breech-loading firearm, and 45901 for a bayonet-attachment system. Other 'breech-loading firearms' patents included 51991 of 9th January 1866 and 52925 of 27th February 1866, both being assigned to the Berdan Fire-arms Mfg Co. The first protected extractors for a →rolling-block type breech, and the other was a two-piece lifting-block design.

¶ Next came 85162 of 22nd December 1868, assigned to the company to protect a primitive form bolt action. Additional patents included 88486 of 30th March 1869, protecting the lifting-block 'Berdan I' made by →Colt's Patent Fire Arms Mfg Co., under a subcontract agreement, for the Russian government; 101418 of 5th April 1870 for a modified two-part lifting block; 108869 of 1st November 1870 for the bolt-action 'Berdan II'; and 157783 of 15th December 1874 for an improved form of bolt action. Berdan's last effort, 478215 to protect a 'Method of operating submarine guns', was granted on 5th July 1892. U.S. Patents 46292 of 7th February 1865 and 52818 of 27th February 1866 protected 'metallic cartridges for rifled breech-loading firearms', whereas 53388 of 20th March 1866 was granted for a method of priming metallic cartridges. U.S. Patent 82587 of 29th September 1868, for a metallic cartridge, was also assigned to the Berdan Fire-arms Mfg Co. Hiram Berdan, successful and prosperous, died in March 1893.

Berdan primer Still used on many millions of the cartridges made each year, this, together with the essentially similar →Boxer pattern, was the earliest centre-fire primer to be successful. A detachable cup, filled with priming compound, is inserted in a hole in the base of the →cartridge case. The impact of a firing pin or hammer-tip then drives the thin cup material against an anvil placed in (or formed as part of) the case, compressing the priming compound until it ignites. The flash then passes up through a central flash-hole to fire the main charge. The principal difference between the Berdan and the Boxer primers concerns the anvil, the former being made as part of the cartridge case and the latter supplied as part of the primer. Though Berdan is customarily given the credit for 'his' primer, there is some evidence that he exploited an idea he had seen in embryo on a visit to Frankford Arsenal. Certainly, there was a feeling in the U.S. Army in the 1870s that the credit for the separately-primed cartridge case should really have been given to Stephen Benet.

Berdan rifle, block-action. The block-action rifles were made in two basic patterns C conversions of rifle muskets, distinguished by an external hammer, and a simplified newly made version with a linear striker system. The conversions

were most popular in Spain, where trials had been undertaken successfully in 1865. Spanish guns chambered 15mm-calibre rimmed cartridges, and had breech blocks that could be lifted up and forward by a small integral lever. Hammers remained external. The *Fusil para Infanteria Mo. 1867*, the standard infantry rifle, was converted from 1859-type rifle muskets by →Ybarzabal of Eibar, →Orbea Hermanos y Cia of Eibar, and →Euscalduna of Planencia. Marks on the lock plates included a crown over an 'AR' monogram, and 'O' for 'Oviedo'. The *Fusil para Cazadores Mo. 1867*, the short rifle, was similar to (but shorter than) the infantry pattern. Guns converted from Mo. 1857 short rifles had generous trigger guard bows; Mo. 1857/59 examples had a notably cramped trigger guard. The artillery and engineers carbine, or *Carabina para Artilleria e Ingenieros Mo. 1867*, was a short-barrel weapon adapted from the rifled engineer carbine of 1858. Artillerymen carried a heavy-blade sword bayonet. A Mo. 1861 engineer carbine was also made in small numbers, and a few marine-infantry carbines (*Carabina para Infanteria de Marina, Mo. 1867*) were converted from Mo. 1858 cap lock naval short rifles, made in 1860B1 by Juan →Aldasoro of Eibar. The 1868-patent linear striker design was supplied in quantity only to Russia, where about thirty thousand rifles and a few carbines made by →Colt's Patent Fire Arms Mfg Co. served for a few years. The breech-block could be lifted at the rear, exposing the chamber, once the striker had been withdrawn. A new cartridge was inserted, the block was closed, and the trigger was pressed to allow the striker to fly forward to lock the breech.

Berdan rifle, *bolt-action*. Very successful in Russia, this was a conventional turning-bolt pattern relying on the sturdy bolt-handle rib to double as a locking lug. The earliest 'four-line' guns (the calibre was actually .42) were made by the →Birmingham Small Arms Company, though work was soon started in Tula. Huge quantities of the 'M1870' infantry rifles had been made when production stopped in c. 1892; even in 1914, 362,000 10.6mm original and 7.62mm converted Berdans remained on the inventory. Carbines were made in small numbers, alongside a distinctive ball-trigger →cossack rifle.

Beretta Pietro Beretta SpA of Gardone Val Trompia, Brescia, and Rome.

Claiming origins as early as the sixteenth century, Beretta made sporting guns prior to the confederation of Italy in 1860. By the 1870s, however, the business was powerful enough to tender successfully to make →Vetterli rifles, short rifles and carbines, many thousands being made for the Italian army prior to 1885.

¶ During the 1930s, under the supervision of Tullio Marengoni, auto loading rifles were made. By 1939, however, the Beretta had been rejected in favour of the Revelli →Armaguerra design. Production of automatic pistols began in earnest during the First World War, continuing most successfully through the 1930s until the present day; guns based on the M951 →Brigadier and the many derivatives of the '92' series are now in service throughout the world—including the U.S.A., where the 9mm Pistol M9 (Beretta 92F) is being made by

Beretta U.S.A. in Accokeek, Maryland.

¶ Among the small calibre pistols have been the 6.35mm Model 1919 pocket pistol and, in later days, the M34 Bantam, M418 Panther, M951 Jetfire (all in 6.35mm) and Minx (.22). Automatic weapons of all types have been developed since the 1920s, including the pre war Model 38 submachine gun and a selection of automatic rifles developed by Tullio →Marengoni and others. Large numbers of →Garand and improved Garand type (BM59) rifles were made from 1953 onwards, and work is now concentrating on 5.56mm '70/90' series of assault rifles, carbines and light machine guns.

¶ The history of Beretta is traced in greater detail in Beretta, *la dinastia industriale piu antica del monde* by Held & Morin, published by Aquafresca Editrice in 1980, and in R.L. Wilson, *The World of Beretta. An International Legend*, published by Greenhill Books in 2000.

Berezin Mikhail Evgenyevich Berezin was born in Goncharka, Russia, in 1905. He graduated from the Leningrad Military Mechanical Institute in 1934 and worked thereafter for the →Tula ordnance factory. Transferred to the Tula design bureau in 1935, he developed the first of his machine-guns (q.v.). Twice honoured with the USSR State Prize, Berezin died in 1950.

Berezin machine-gun The first of these aircraft weapons was a 12.7mm prototype successfully test-fired in 1935. This provided the basis for the UB series—UBK, UBS and UBT.

Bergen Alfred Bergen: see 'National Carbine'.

Berger, 60 rue Mulatière, Saint Étienne, France. Listed in 1951 as a gunmaker.

Berger François Berger; place Chavanelle 15, Saint Étienne, France. Listed in a directory dating from 1879 as a gunmaker.

Berger M. Berger et Cie, Manufacture d'Armes; rue Villeboeuf 10, Saint Étienne, France. Listed in 1892 as a maker of 'guns of all systems'. These included the hammerless shotguns branded →Phénix, auto cocking guns offered as →Nemrod, and 8mm 'Le Français' revolvers.

Berger Pierre Berger; grande rue Saint Roch 9, Saint Étienne, France. Listed in 1879 as a gunmaker; possibly succeeded in the 1880s by 'M. Berger et Cie', above.

Berger Granger; rue Valbenoite 13, Saint Étienne, France. Listed in 1879 as a gunmaker.

Bergeron; trading from 5 rue Desflaches, Saint Étienne, France, in 1951. Listed in 1933 and 1951 as a gunmaker.

Bergmann Theodor Bergmann is best known as an inventor of firearms, though most of the creative work was apparently undertaken by his long time employee Louis →Schmeisser. Together with a partner named Flürscheim, Bergmann founded →Eisenwerke Gaggenau in 1877 to make metalware, railings, railway lines and lamp posts. A series of patents was granted in the 1880s, usually to protect variations of the Haviland & Gunn →Gem airgun. Individual specifications included German Patent 39962 of 8th October 1886, its British equivalent 4413/86 of 1886, and German Patent 42091 of 5th June

1887. Eisenwerke Gaggenau made substantial quantities of airguns, often distinguishable simply by the mark of 'E', 'G' and crossed pistols. Some were copies of the →Quackenbush patterns, which had been licensed to Bergmann c. 1884. A few guns have been found with a mark of 'Th.B.' and crossed pistols. It is assumed that these were made after Bergmann left Eisenwerke Gaggenau in the early 1890s to exploit Schmeisser's automatic pistol patents. They may have simply been assembled from parts handed over to the new organisation, as there is no evidence that Bergmann was ever involved in large scale airgun production after the split from Eisenwerk Gaggenau. See also 'Bergmanns Industrierwerke', below.

Bergmann Theodor Bergmanns Erben GmbH; Berlin and Suhl in Thüringen.

Bergmann was responsible for a selection of 6.35mm pocket automatics, including the Models 2 and 3 and their →Einhand versions, the Models 2A and 3A. The business was still listed as a maker of weapons in 1939, and traded until the end of the Second World War.

Bergmann-Bayard Derived from the Bergmann-→Mars, chambered for the 9mm 'Bergmann-Bayard' (9mm Bergmann No. 6) cartridge, this →recoil-operated semi-automatic pistol—also known as the 'Mle 1908'—was supplied in quantity to Spain (as the 'Mo. 1903'), Denmark ('M/1910') and Greece prior to 1914. Though the Bayard retained the exposed hammer of its Mars prototype and a detachable box magazine in the frame, its trigger aperture was approximately circular and the contours of the grip were refined. Production ceased in Belgium when the First World War began, though the Danes began work in the →Haerens Tojhus, Copenhagen, in the early 1920s. These guns, which served as 'M/1910/21', customarily had enlarged wooden grips and a circular knurled-head grip on the magazine base which entered a semi-circular void in the frame.

Bergmann machine-gun This →recoil-operated weapon was patented in the name of Theodor Bergmann in 1901 though the design was actually due to Louis →Schmeisser. The *Bergmann-MG. 02* was locked by a rising block, in the barrel extension, which engaged in the recess in the top surface of the bolt. The Bergmann deserved a better fate, but its failure was due entirely to a loss of production facilities (see →Bergmanns Industrierwerk'). Work began again in 1908, probably under the supervision of Hugo →Schmeisser (son of Louis) who had remained with Bergmann after his father's departure to work for →Rheinische Metallwaaren- u. Maschinenfabrik. The *Bergmann-MG. 10* was similar to its predecessors, firing from a closed bolt, but the feed mechanism was driven by the recoil of the barrel and barrel extension. 'Push-through' belts were replaced by the standard 'withdrawal' Maxim pattern, which allowed Austrian →Keller-Ruszitska disintegrating-link metallic belts to be used when appropriate. The Bergmann had a fire-rate of 480–600 rpm, owing to the short travel of the locking mechanism. A few guns were used in the First World War, adapted to standard Schlitten 08 (Maxim) mounts. The *Bergmann-LMG. 15* was developed during the First World War, but was little

more than a lightened air-cooled MG. 10. A pistol grip was added beneath the receiver, and a small shoulder plate was attached to the back of the receiver. The action was efficient enough in theory, but flaws in its design gave problems in aerial combat and the Bergmann-LMG. 15 was relegated to ground roles. The original guns fired from an open bolt, but accuracy was poor and a much-modified pattern, the *LMG. 15 neuer Art* (n.A.), was substituted in 1916.

Bergmann-Mars Based on breech-locking system patented in 1901 by Louis →Schmeisser, this semi-automatic pistol was customarily chambered for the 7.8mm No. 5 or 9mm Bergmann No. 6 cartridges. Distinguished by a detachable box magazine in the frame, ahead of the trigger guard, it also had an exposed spur-hammer. The first guns were made for Theodor →Bergmann by V.C. →Schilling u. Co., in Suhl, but the purchase of Schilling by →Krieghoff (1904) interrupted production just as the Spanish army was showing great interest. Work continued until the end of 1906, when a few 11.35mm guns were made for U.S. Army trials, but the Mars was licensed to Anciens Établissements →Pieper in 1907 and re-emerged as the →Bergmann-Bayard.

Bergmann pistols: details of the earliest Bergmann-Schmeissers are given below. They were followed by the Bergmann No. 5, a fragile military-style semi-automatic, fed from a detachable box magazine ahead of the trigger guard and locked by displacing the tail of the breech-block laterally into the receiver wall. This method was patented in Germany in the Spring of 1898. Then came the Bergmann-Mars (q.v.), but rights to the handguns were then sold to Anciens Établissements Pieper and became the 'Bergmann-Bayard'. Production of blowback semi-automatics resumed after the First World War had ended, beginning in the early 1920s with the 6.35mm Models 2 and 3, with six- and nine-round magazines respectively, and the essentially similar Models 2A and 3A, which had one-hand (→*Einhand*) cocking systems based on the →Chylewski patents. The earliest guns had wooden grips set with 'enriched B' medallions, but later guns had injection-moulded BERGMANN plastic grips. Bergmann's gunmaking business was eventually acquired by AG →Lignose of Berlin, though the pistols retained their designations and were customarily marketed as 'Theodor Bergmann Erben' (Erben, 'successors') to capitalise on the established Bergmann name. They included a version of the Menz →PB Special.

Bergmann-Simplex This name is given to a small 8mm-calibre semi-automatic pistol made for Theodor →Bergmann in the early 1900s. The first guns may have been made in Germany by V.C. →Schilling & Co., but later ones were apparently made in Liège (or perhaps even in Saint-Étienne by →Manufacture Française des Armes et Cycles) shortly before a liaison between Bergmann and Anciens Établissements Pieper was concluded c. 1907. The guns have exposed ring hammers and detachable box magazines ahead of the trigger; they are customarily marked only PAT. over BREVETE over D.R.G.M. on the left side of the frame.

Bergmann-Schmeisser pistols The first pistol to be developed by Bergmann,

based on a patent granted to a Hungarian watchmaker, Otto Brauswetter, was unsuccessful. It was followed by a series of pistols designed by Louis →Schmeisser, characterised by clip-loaded magazines, pivoting magazine-cover plates, and bolts reciprocating independently within an enveloping receiver. The first few guns embodied a form of hesitation lock, but the perfected 1896 patterns were simple blowbacks lacking (at least initially) extractors; spent cases were expelled simply by residual gas pressure. The series included a tiny 5mm 'No. 1' with a folding trigger, a larger 5mm 'No. 2' with a small circular trigger guard, and a 6.5mm 'No. 3' holster pistol. They were successful enough to sell in the thousands, but were rapidly eclipsed by →Browning and other designs at the beginning of the twentieth century.

Bergmanns Industriewerke Based in Gaggenau in Baden, Germany, the Bergmann operation is best known for the pistols produced to the designs of Louis →Schmeisser. The guns were sub contracted to V.C. →Schilling of Suhl, but work in Germany ceased when the Schilling factory was purchased by →Sempert & Krieghoff in 1904. Later Bergmann type pistols were made in Belgium by Anciens Établissements →Pieper. Machine-guns, rifles, airguns and possibly also shotguns will be found bearing the Bergmann name and a miner and lamp trademark. The Deutsches Reichs Adressbücher for 1914 and 1920 still listed 'Bergmanns Abteilung Suhl in Thüringen' as a gunmaker.

Bergstutzen Applied in central Europe to guns with two rifled barrels of differing chamberings, superposed. See 'Combination weapons'.

Beriola P. Beriola of 13 rue Louis Blanc, Saint Étienne, France, was listed in 1951 as a gunmaker.

Beristain Armeria Beristain y Cia of Barcelona, Spain, distributed →Gabilondo-made 'Bufalo' pistols in the 1920s, distinguished by their patented grip safety and loaded-chamber indicator. Operations seem to have ceased c. 1932, possibly owing to restrictions placed on the export of firearms by the Republican government.

Berjat Paul Berjat of place Villeboeuf 1, Saint Étienne, France, was listed as a gunmaker in 1879.

Berlin-Lübecker Maschinenfabrik. A maker of components for the Gew. 41 and Gew. 43 →Walther rifles.

Berlin-Suhler Waffen u. Fahrzeugwerke GmbH ('BSW'); Berlin, and Suhl in Thüringen, Germany. Listed as a maker of →BSW brand guns, weapons, sporting rifles, bicycles, motor cycles, 'Astora' brand freewheel hubs, prams and baby carriages and fans (Kuhlschranke), 1939. W.H.B. Smith, writing in *Gas, Spring & Air Guns of the World*, links BSW with production of air-powered training rifles. However, the gun he pictures is actually a →Mars. BSW was renamed 'Gustloff Werke' in 1940, but ceased trading at the end of the Second World War.

Bernard Belgian gunmaker L. Bernard was active in Liège in the 1860s and 1870s. His marks have been reported on double-barrel sporting guns, chambered for pin-fire or (later) centrefire cartridges.

- Bernard** Walter Bernard, an 'electro plate worker' was co patentee, with John Fredrick →Bird, of an electrically operated bell target. See British Patent 7340/08 of 1908.
- Bernardelli** Vincenzo Bernardelli & Co. SNC of Gardone Val Trompia, Brescia, Italy, have made a variety of automatic pistols, including the .22 rimfire PA 'Baby'. Bernardelli entered the 'SR' or 'SR-556' assault rifle (a variant of the Israeli →Galil) in the Italian army trials of the 1980s, but the →Beretta AR. 70 was preferred.
- Bernardon-Martin** Établissements Bernardon-Martin et Cie of Saint-Étienne, France, made the 6.35mm and 7.65mm →Hermetic semi-automatic pistols, c. 1907–12. See also 'Société Française des Armes Automatiques de Saint-Étienne'.
- Bernardon Martin pistols** These 6.35- or 7.65mm pocket/personal defence guns were made by →Bernardon, Martin et Cie in 1906–12. Some slides are reportedly marked 'Société Française des Armes Automatiques de St. Etienne'.
- Berne frères;** Saint Étienne, France. Listed in 1879 as a gunmaker, trading from rue Villeboeuf 4, and in 1892 at rue Villeboeuf 15.
- Bernedo** Spanish gunmaker Vincenzo Bernedo (sometimes wrongly listed as 'Victor Bernedo'), trading in Eibar, made →Ruby-pattern semi-automatic pistols for the French army during the First World War. He has also been identified with the →B.C. and →Bernedo pistols, the latter being a 7.65mm Browning type semi-automatic.
- Bernerprobe:** see 'BP, monogram'.
- Berngard** F. Berngard & Co., formerly I. Shendrunev, was a Russian distributor with a specialist 'weapons department' (*Oruzheinyi magazin*). Moscow, kuanenkii most i San-Galli'.
- Berridge** I.L. Berridge & Company of Leicester, England, made 'Pistols, Signal, No. 1' (Mks III*, IV and V) from 1941 until the end of the Second World War. The code 'M 601' was often used instead of the company name. See also "British military manufacturers' marks".
- Berry** Joseph Berry; 22 Bridge Street, Worksop, Nottinghamshire, England. The marks of this gunmaker (active in 1863–8) have been reported on sporting guns and cap lock revolvers.
- Berry** Gunmaker Sharman West Berry of Market Place, Woodbridge, Suffolk, worked from 1845 until the early 1870s. His marks have been reported on sporting guns, self cocking →pepperboxes, cap lock revolvers, bows and airguns, and he entered a breechloading 12-bore →Lefauchaux-type shotgun in the trials undertaken by *The Field* in 1866.
- Bersa** Fabrica de Armas 'Bersa' SA; Ramos Meija, Buenos Aires. One of the principal Argentinian manufacturers of semi-automatic pistols, Bersa has made a range of blowbacks customarily identified by numerical designations. The guns have included the single-action 7.65mm Model 85 and the 9mm Short Model 97, introduced in c. 1979–80, and a series of .22 rimfires including the Models 622, 644 and 844. A small pocket pistol called the 'Picolla' was also

once made. The mid-1980s brought the double-action Models 223, 224, and 226 (.22 rimfire) and 383 (9mm Short); the first two digits refer to calibre, and the last to barrel length in inches.

Bersaluce Arietio Aurtena y Compañía of Eibar in the province of Guipuzcoa, Spain, made the →Allies semi-automatic pistol.

Berthier Born in Neuilly-sur-Seine on 11th January 1858, André-Virgile-Paul-Marie Berthier was the son of war-ministry official Antoine-Cressent Berthier and Clara-Adèle Lapostol. Henri-Gustave →Delvigne (1800–76), inventor of the chamber breech and the first rifled cap-lock carbine to be issued to the French army, was his great-uncle.

¶ After a short period of military service with the 2nd Zouaves, Berthier, who thereafter served as an officer in the reserves, trained as a civil engineer. He worked for the Compagnie de chemin de fer de Bône à Guelma, and then as deputy director of →Gevelot & Gaupillat, renamed La Société Française des Munitions in 1884. Berthier was involved in the promotion of marksmanship training and is said to have developed a variety of sub-calibre trainers for rifles and handguns in the 1880s.

¶ In the summer of 1891, with the success of his carbines in French service assured, André Berthier accepted an invitation from the Sultan of Turkey to create a small-arms commission within the Turkish army and reorganise the country's ordnance factories. This he did most successfully, becoming known as 'Berthier Pasha' and receiving the honorary rank of *général de brigade*. He returned from Turkey to promote his rifles and machine-guns in Europe, but *La Revue Diplomatique* reported on 6th November 1904 that Berthier had once again left Paris to return to Constantinople (now Istanbul).

¶ André Berthier obtained more than sixty patents, though many were granted simply to confer additional protection on the same basic designs. Berthier also experimented with automatic weapons, producing an effective light machine-gun prior to the First World War, but the failure of his efforts owed more to the antics of promoters than to inherent design flaws. The →Vickers-Berthier light machine-gun may have been adopted by the British Army had not the Czechoslovakian predecessor of the →Bren Gun intervened. Though the Vickers-Berthier was adopted by the Indian Army, and though its airborne cousin, the Vickers 'K', also achieved limited success, Berthier is customarily relegated to the second rank of firearms inventors.

¶ Few sources give details of his private life, but funeral records reveal that he had married Louise-Augustine-Adolphine Baer, apparently in the late 1880s, and had at least two daughters and two granddaughters by 1923.

Berthier rifles An answer to the problems encountered by the French cavalry with the →Lebel rifle was to be found in the Berthier, which amalgamated a bolt not unlike that of the Gras and Lebel with a clip-loaded magazine which had clearly been inspired by →Mannlicher. The design was patented in France and elsewhere. German Patent 61511 of 17th September 1890 and British Patent 2690/91—sought in the name of patent agent John H.

Johnson on 14th February 1891—were comparable. The first Berthiers to be tested looked much like Lebel's, with the same two-piece stock and slab-sided action body, but the magazine lay beneath the bolt-way and panels were machined out of the body to reduce weight. The Comité d'Artillerie judged the Berthier favourably when the first exhibition had taken place on 10th June 1887 and then again, in May 1888, when permission was given for an improved prototype to be made in the Puteaux arsenal workshops. Several guns, including carbines for the cavalry and short rifles for the artillery, were tested extensively in December 1888. The trials were promising, as a Berthier, despite minimal magazine capacity, had fired 26 shots in 1 minute 10 seconds compared with 21 shots from the Lebel in 1 minute 34 seconds. The lower locking lug on the Berthier bolt-head tended to catch the rim of the uppermost cartridge as the bolt was drawn back, but this was corrected simply by allowing the lugs to lock vertically instead of horizontally.

¶ The French authorities were understandably reluctant to abandon the Lebel, as series production had only just begun. They also perceived a disadvantage in the Berthier clip, which held only 3–5 cartridges. This did not handicap cavalymen, who were expected to use their swords and sabres in combat, nor artillerymen whose short rifles were intended for little more than local defence, but could seriously limit infantry firepower. The cavalry begged to differ, pitting ten Berthier carbines against ten shortened Mle 86 Lebel's championed by the École Normale de Tir, the prototype of which had been submitted to the Comité d'Artillerie on 1st March 1889. According to the periodical *Le Gil Blas*, no. 3703 of 26th July 1890, the tests were undertaken in Tours from 28 February by the 17th Hussars and the 35th Dragoons, who had reported rates of fire averaging 17–18 rounds per minute for the Lebel's and 24 for the Berthiers.

¶ The ENT Lebel carbine had been judged at the outset to be much too heavy, even though it could fire six shots to the Berthier's four before reloading. Consequently, Berthier Carabine No. 2 bis became the *Carabine de Cavalerie Mle 1890*, though the finalised gun was smaller than its prototype and magazine capacity was reduced to three rounds. It was followed almost immediately by carbines for the gendarmerie and the cuirassiers, the latter with a special dropped-comb butt suited to the steel cuirass. The carbines all had one-piece wood stocks, with bolt handles turned downward, and small ramp-and-leaf sights. Only the gendarmerie carbine accepted a bayonet: an épée, with a slender quadrangular blade, derived from the standard Mle 86.

¶ The carbines were followed in 1892 by the Mousqueton d'Artillerie, which was little more than a carbine-length gun which could mount a sword bayonet. Success had finally been assured.

¶ The Berthier rifles of 1902 and 1907 were issued to French colonial troops as the *Fusil des Tirailleurs Indo-Chinois* and *Fusil des Tirailleurs Sénégalais* respectively, and the 'Modèle 1915' was adopted in desperation during the First World War. It was followed by the essentially similar Mle 1916, recognisable

by a protruding magazine case for a five-round clip instead of the the flush-fitting original three-round type. The Mle 92/16 musketoons also accepted the five-cartridge clips. Many surviving Berthier rifles were shortened in postwar days, and the musketoons were updated. However, experiments with new cartridges led to the standardisation of the →MAS 36 in the late 1930s. Additional details of the Berthier patterns will be found in John Walter, *Rifles of the World* (Krause Publications, third edition, 2006).

Berthier Machine Rifle Based on patents granted prior to 1914 and locked by a tilting bolt, this gas-operated weapon was offered as a light machine gun or a heavy-barrelled automatic rifle. The Belgians took small numbers of 7.65×53 rifles prior to the First World War, the British rejected them in 1916, and the light machine-gun was adopted by the U.S. Army as the ‘.30 Model of 1917’. However, the rickety structure of its promoter, the →United States Machine Gun Company, prevented delivery of any of the seven thousand guns ordered on behalf of the armed forces. The →Browning Automatic Rifle was preferred and contracts for the Berthier were cancelled in 1918 after only prototypes had been made. Tests undertaken in 1919–20 with guns made by the U.S. Machine Gun Company suggested that adoption had been too hasty, and the Berthier was abandoned. A modified form, the →Vickers Berthier, subsequently enjoyed limited success in Britain and India—particularly as an aircraft gun.

Berthon; Saint Étienne, France. Listed as a gunmaker in directories dating from 1933.

Bertois Frères; 40 rue des Armuriers, Saint Étienne, France. Listed in 1951 as a gunmaker.

Bertoldo: see ‘Vetterli Bertoldo’.

Bertrand A. Bertrand; Liège, Belgium. This gunmaker is known to have been responsible prior to 1914 for sporting guns and a range of inexpensive revolvers that included the ‘Bushman’, ‘Companion’, ‘Courage’, ‘Destroyer’, ‘Graceful’, ‘Hunter’, ‘Murderer’, ‘Shatterer’, ‘Terrific’, ‘Western Boy’.

Bertrand Jules Bertrand; Liège, Belgium. A maker of pistols and revolvers.

Bertschinger Jacques Bertschinger was co-proprietor with Thommen and Wackernagel of →Hämmerli AG from 1946 until his death in 1979, and co-patentee of an airgun trainer. This well-known barrelled insert was made for guns such as the Kar. 98k and the Swiss Schmidt Rubin Kar 31.

Beryl Usually found as ‘The Beryl’ on shotgun ammunition distributed by W.R. →Pape of Newcastle-upon-Tyne, being named after the gunsmith’s wife. The components were apparently supplied by →Kynoch.

Beryl An assault-rifle variant of the Radom-made Polish →Kalashnikov.

Besa Almost exclusively confined to British armoured vehicles of the Second World War, this was originally a Czechoslovakian design. Offered to Britain in the mid 1930s and known commercially as the ZB 53 (militarily, as vz 37), it was a belt-feed air-cooled medium gun capable of sustaining fire over long periods.

¶ Credited to the Holek brothers, the gas-operated action was adapted from

that of the vz. 26 but the concept of softening recoil was inspired by the Bren. The Besa barrel was allowed to recoil. When the main spring returned the breech-block to battery, stripping a new round into the chamber, the barrel unit was released to move forward. As it did so, the gun fired and the recoil initially had to overcome the residual forward motion before reversing the action. The goal, achieved very successfully, was to reduce the stress transmitted to the gun mounting. The Besa soon attained an enviable reputation for smoothness and accuracy.

¶ Development did not proceed as easily. The first guns were delivered from the new BSA factory in Redditch in June 1939, but test-firing revealed so many problems that the gun had to be virtually re-engineered to work properly. Production was suspended until the Spring of 1940. According to company records, BSA Guns Ltd made 59,332 7.92mm Besas in 1939–46.

¶ There was also a large-calibre Besa, chambered for a 15mm cartridge, but this was derived from the ZB 60 instead of the ZB 53. Made only in comparatively small numbers, it was not as successful as the perfected rifle-calibre versions and was declared obsolescent before the Second World War had ended. It was replaced by the 30mm Aden cannon. Production amounted to merely 3218 guns.

¶ Besa variants included *Mark I* (June 1940), with a selector lever (known as the ‘accelerator’) on the left side of the receiver giving 450 rds/min for general purposes and 750 rds/min for repelling close-range attacks; the *Mark II* (June 1940), approved concurrently with the Mk I, with a simplified receiver, a short barrel sleeve, a modified accelerator and a plain flash guard; the *Mark II** of 1941, which was basically Mk II guns made after the introduction of the Mk III. They have the dual-rate fire system, but many of the components are simplified even though they usually interchange with earlier versions; the *Mark III* (August 1941), which lacked the selective fire-rate system, the fire-rate being fixed at 750 rds/min; and the *Mark III** (August 1941), a version of the Mk III restricted to 450 rds/min.

Besa Associated with .177 or .22 round headed ribbed body diabolo pellets made for BSA by ➔Lanes Ltd from the 1960s until the mid 1980s.

Besal When the Luftwaffe began to bomb southern England in the autumn of 1940, it was clear that one severe raid on Enfield could paralyse or perhaps even destroy the only Bren Gun assembly-line operating in Britain. As much of the inventory of light machine-guns had been lost at Dunkirk, the situation was potentially very serious. Though one solution had already been offered in the Monotype Scheme, efforts began as early as the autumn of 1940 to develop a simple machine-gun which could be made by virtually any small engineering workshop. Very little information survives concerning the Garage Gun, alias DD/E/2285, and the Hefah V (a simplified Lewis touted by the Ductile Steel Co. of Wednesfield) never entered production, even though it was adopted by the navy early in 1942.

¶ The most Bren-like of the emergency designs was the Besal, formally

approved in 1943 but never made in quantity. The prototype was demonstrated to the Small Arms Committee in March 1942, and subsequently underwent an encouraging trial. It seems to have had a skeletal butt and a fixed pistol grip beneath the rear of the receiver, and cocked by retracting a handle on the front right side of the breech.

¶ A revised Besal, submitted in August 1942, was cocked by unlatching the pistol grip sub-assembly and pushing it forward to engage the bolt/piston extension unit, then retracting the components until the striker was held on the sear. This system was clearly inspired by the Besa, which had also drawn inspiration from Czechoslovakia. The improved Besal also had a two-position 'L' type back sight, a simple bipod, and a carrying handle on the barrel.

¶ Few problems were encountered during protracted testing in the winter of 1942 on the ranges at Pendine, so the Besal was adopted as the 'Gun, Light, Machine, Faulkner, .303-inch Mark 1'. By the summer of 1943, however, the likelihood of a German invasion of Britain had passed. As deliveries of Bren Guns from Enfield, Inglis and the Monotype Scheme were more than adequate to meet existing demands, so the introduction of the Faulkner machine-gun was rescinded on 10th June 1943.

¶ Though the Besal operated much like a Bren and locked similarly, by displacing lugs on the bolt into the receiver wall, the return spring had been moved from the butt to a new location inside the piston extension. The perfected gun was 46.5in overall, had a 22-inch barrel, and weighed 21lb without its Bren-type box magazine.

Bessette Aldige J. Bessette, a government arms inspector active in 1940, accepted .45 →Colt M1911A1 pistols marked 'AJB'. See also "U.S. arms inspectors' marks".

Best of All [The]. A brand name associated with shotgun ammunition made by the →Midland Gun Company of Birmingham.

Best Quality Magazine Rifle This name was used by →Holland & Holland of London on sporting rifles made on the basis of →FN Mauser actions in chamberings ranging from .240 Apex to .375 H&H Magnum. Straight combs were considered to be standard, with simpl99e oval cheek pieces and round tip fore ends.

Betteridge John Betteridge, a 'toolmaker', according to the papers of British Patent 15769/06 of 1906, designed an adjustable front sight. Research in the Birmingham archives revealed that Betteridge subsequently followed a career in taxidermy—trading first from 140 Great Colmore Street and then (as 'John Betteridge & Son') from 55a Lee Crescent, Edgbaston.

Beuret; Liège, Belgium. A gunmaker involved in the 1870s with le →Grand Syndicat.

Beutegewehr (*plural 'Beutegewehre'*). Used during the First World War, this term denoted captured rifles which had been pressed into military service. An official German publication, *Kurze Beschreibung der an Ersatztruppen und Rekrutendepots verausgabten fremländischen Gewehre* ('A short description

of the foreign rifles given to supplementary units and recruiting depots'), published in 1915, listed these rifles and carbines as the British Mk I and III SMLE (→Lee-Enfield); the Canadian →Ross 'M1910'; the U.S. single-shot →Remington and →Peabody; the Belgian →Albini-Braendlin, →Comblain and 1889-type →Mauser; the French Mle 66 →Chassepot, Mle 74 →Gras, Mle 78 navy →Kropatschek, Mle 86/93 →Lebel, Mle 90 and Mle 92 →Berthier; the Italian →Vetterli-Vitali and →Mannlicher-Carcano; the Russian →Berdan and →Mosin-Nagant; the Austro-Hungarian M. 95 →Mannlicher rifle and Stutzen; the Dutch →Beaumont, →Remington and 1895-type →Mannlicher.

¶ German wholesalers had colossal stocks of military-surplus weaponry; in 1911, for example, A.L. →Frank alone had 250,000 Austro-Hungarian →Werndl rifles and 42,000 Italian →Vetterli rifles and musketoons—sufficient to equip infantry regiments many times over. Shortages of →Mauser rifles during the First World War forced an ever-increasing use of Beutegewehre. A 1915-vintage Baltic Naval Station (Kiel) inventory, for example, included 8726 Mosin-Nagants.

¶ Captured rifles were often altered for German service, many of the Russian examples having their magazines (but not their barrels) altered to accept the 7.9×57 service cartridge. Many Mosin-Nagants and a few ex-French Mle 86/93 Lebel had their fore-ends cut back to accept a sleeve-like bayonet adaptor designed in 1915 by Moritz →Magnus der Jungere of Hamburg. Beutegewehre are usually easy to identify, as they will often bear German military proof or inspectors' marks and an eagle within a DEUTSCHES REICH cartouche may be struck into the butt.

Bevan & Evans traded in Abergavenny, Monmouthshire, Wales, until succeeded by 'Bevan & Pritchard' (apparently in the 1930s). Shotgun cartridges have been seen with both of these trading styles and the brand name →Abergavenny Ace.

Bevington A. Bevington was listed as a member of the English gun trade at 298 Regent Street, London, in 1887; and then at 12 Lime Street, London E.C., until 1900 or later.

BFJ, BFL, BFQ Marks used on U.S. military firearms and accessories by B.F. →James, Benjamin F. →Loughran and Benjamin F. →Quimby respectively.

BG *superimposed-type monogram, with neither letter prominent.* Correctly interpreted as 'GB' (q.v.), it was used by Gregorio →Bolumburu of Eibar.

bh Found on small arms components made in 1940–5 by →Brünnner Waffenwerke AG of Brno, in German-occupied Czechoslovakia.

BH *superimposition-type monogram, with neither letter prominent.* Found on the grips of →Beholla pistols made during the First World War by →Becker & Hollander of Suhl.

B.H. A 6.35mm pistol, based on the tiny FN Browning of 1905, made in Eibar, Spain, by →Beistegui Hermanos: six rounds, hammer fired. The guns were often marked by Fabrique d'Armes de →Grande Précision.

BH Found on U.S. military weapons. See 'Benjamin Hannis' and 'Benjamin

Huger’.

Bicentennial A brand name applied to the →Daisy M1776 lever action BB Gun with a 500-shot gravity feed magazine, introduced in 1966 but made in a special version in 1976–7 to celebrate the two hundredth anniversary of the Declaration of Independence.

Bicentennial Found on rifles made by →Remington to celebrate the 200th anniversary of the Declaration of Independence. The ‘Model 760 Bicentennial’ was a variant of the Model 760 →Gamemaster slide-action rifle with an appropriately engraved receiver, whereas the ‘Nylon 66 Bicentennial’ (a variant of the .22 rimfire Nylon 66 auto-loader) had a logo etched into the left side of the receiver.

Bicycle-handlebar guns Fears of danger posed to cyclists by wild dogs, wolves and petty criminals created a range of defensive weapons, ranging from the →Puppy and →Velo Dog revolvers to the →Scheintod series. Among the most intriguing were the guns which were concealed within the bicycles themselves, almost always in the handlebars. Originating in France and Belgium, they were generally tiny pinfire pepperboxes with folding triggers and bar hammers. They were held in the end of the tubular handlebars by spring latches or a twist lock. See also ‘Disguised guns’.

Bicycle Revolver or ‘Bicycle Model’. This was a double action auto-ejecting revolver made in the U.S.A. by →Harrington & Richardson in the 1880s, as a seven-shot .22 or five-shot .32, it had a two-inch barrel.

Big Bag, usually encountered as ‘The Big Bag’. This mark identified shotgun ammunition loaded by W. →Darlow from components supplied by →Kynoch or →Eley Kynoch.

Big Colt A brand name applied unofficially in the early 1870, by →Kittredge & Co. of Cincinnati, to the .41 →New Line Colt revolver.

Big Five Chambered for the .458 Winchester Magnum, this →Lebeau Courally gun is a classic side-by-side barrelled side-lock with a straight-wrist butt, often accompanied by exchangeable .375 H&H Magnum barrels with telescope sight-mount blocks on the quarter rib. The decoration consists largely of acanthus leaf work and gold line inlays, accompanying African game scenes.

Big Five or ‘Big 5’. A brand name found on the firearms (including lever-action →Marlins) distributed by →United Merchandising, Inc.

Big Game Rifle: see ‘Bolt Action Big Game Rifle’.

Bigelow Benjamin Bigelow; Rochester, New York State (to 1850), and Marysville, California (from 1850). This U.S. gunmaker, one of many migrants enticed westward by the California Gold Rush, made sporting rifles that included a few →Miller-type pinfire revolver rifles.

Bigelow & Haywood (or ‘Hayward’); Concord, Massachusetts, U.S.A. These metalsmithing partners were listed in the late 1870s as ‘gun, rifle and pistol manufacturers’.

Biggs Frederick J. Biggs was listed by H.J. Blanch, writing in 1909, as a gunmaker trading from Ironmonger Lane, London E.C., in 1876. He subsequently moved

to 19 Gracechurch Street in 1877 and then to Leadenhall Buildings in 1883; trading ceased in 1887.

Bighorn Rifle Company; Orem and American Fork, Utah, U.S.A. This gunmaking business was responsible for sporting rifles made in 1983B7 on the basis of →FN Herstal or Spanish →Santa Barbara →Mauser actions, in chamberings ranging from .22B250 to medium length magnums.

Bijou A break open BB Gun made by →Decker Mfg Co. from 1893 until c. 1900. Guns made prior to 1895 had skeletal cast iron stocks, but later example were wood.

Bijou An American BB Gun, also known as the Bijou M1905 or simply 'B M1905', made by the →Hexagon Rifle Company (successors to Decker) in 1905–11. It differs from the Bijou (i) primarily in its markings.

Bildstein, Mommer & Co. KG, also known as 'Bimoco' (q.v.); Gressenich über Stolberg, Rheinland, Germany. This lead- and tin-foundry was founded in 1924 by Kaspar Lück, Mathias Bildstein and Peter Mommer, entering the local commercial register in 1925. Production was interrupted in 1945 and recovered only slowly in the postwar era. The first airgun pellets were made in 1952 and this business proved such a great success that more than two hundred people were being employed by 1974, when Bimoco products were being exported to more than forty countries. However, competition from powerful manufacturers such as →Dynamit Nobel and →Haendler & Natermann proved too great; Bimoco was liquidated in the mid 1980s.

Billingshurst, often misleadingly listed as 'Billingshurst'. William Billingshurst (1807–80) of Rochester, New York State, was established as a gunsmith and agricultural implement maker in Stilson Street, Rochester, by 1843. U.S. census returns indicate that he employed four men, working in 41 Main Street, Rochester, from the 1850s until work ceased about 1874. In addition to the battery gun described below, Billingshurst made target pistols, sporting guns, and a seven-shot pinfire revolver rifle with an additional shotgun barrel, two hammersd and two triggers.

Billingshurst & Requa Gun Patented in the U.S.A. in September 1861 by William Billingshurst and Joseph Requa of Rochester, New York (no. 36488), this →Battery Gun was the first to use self-contained metallic cartridges, 25 being loaded into a flexible metallic strip. A train of priming powder was then laid in a trough behind the breech, flash from the →cap-lock firing mechanism reaching the propellant through holes in the cartridge case heads. Unfortunately, Billingshurst & Requa guns were so susceptible to damp that they were customarily relegated to covered strongpoints and became known as 'Bridge Guns'.

Billings & Spencer: see 'Ross'.

Bimoco This brand name, associated with the products of →Bildstein, Mommer & Co. KG, was applied in many forms. 'Bimoco Ball' (or Präzisions Rundkugel) identified standard lead shot, offered in many sizes and often copper or nickel coated. 'Bimoco Diabolo' was a conventional airgun pellet, made with

a round head and a ribbed body as the 4.5mm or 5.6mm Engländer Modell; as a 4.5mm or 5.5mm flathead with a ribbed skirt (Gerriffelt); and as a 4.5mm or 5.5mm flathead with a smooth body (Glatt). The 4.5mm Bimoco Elite was a flatheaded plain body diabolo pellet made specifically for target shooting. Bimoco Meisterklasse pellets were specially selected versions of the →Elite. Bimoco Sheridan Torpedo was a 5mm (.20) airgun slug with a sharply conical nose and a small flange around the base of the body. Bimoco Silver Streak was a 4.5mm diabolo pellet with a multi flange head, produced to compete with the →Silver Jet. The distinctive Bimoco Spitz, or 'Bimoco Neue Spitz', was made in 4.5mm, 5.6mm or 6.35mm. A much-altered →diabolo, it had a plain skirt, a short parallel side sub calibre body and a semi point head. It was developed specifically for short barrelled guns.

Bing Gebrüder Bing of Nürnberg, Germany, was one of the best known European toymakers. Founded in 1863 by Ignaz and Adolf Bing, 'Gebrüder Bing' initially sold household goods—but had begun small-scale manufacture of kitchen utensils almost immediately. Bing specialised in sheet-metal work, relying on folding and small tabs to create three-dimensional shapes. The introduction of a lithographic tin-printing process, originating in Britain, allowed the production of tin-plate toys to begin in earnest in the early 1880s; by 1908, Nürnberger Metall- u. Lackierwarenfabrik vorm. Gebr. Bing AG (as the trading style had become in 1895) was the largest toy-making business in the world. Kitchenware, tableware and many other products were also being made by an operation which employed four thousand people when the First World War began in the summer of 1914. Wartime products included helmets, water-bottles, canteens, harness fittings and knapsacks. The experience of sheet metal work was used to good advantage in large numbers of drum magazines (TM. 08) made for the →Parabellum pistol during the First World War. These can be identified by the trademark of 'B' above 'N', separated by a short horizontal bar.

¶ A change in structure occurred at the beginning of 1919, creating 'Bing-Werke vorm. Gebr. Bing AG', but a combination of obsolescent practise and protective tariffs introduced in the U.S.A. removed much of the pre-war market at a time when the workforce in 1923 numbered no fewer than 16,000. By 1927, Bing was still making household and kitchen equipment, toys and games, enamel ware, ovens, refrigerators and typewriters. But profitability declined until the last toys were made in 1932; many members of the Bing family, who were Jewish, took the opportunity to leave Germany and the holding company was liquidated in 1933. The Nürnberg factory continued to operate as Fritz Hintermayr GmbH ('Bing-Vergasen-Fabrik Fritz Hintermayr GmbH' from 1937), making bicycle- and motor-cycle saddles, tool-kits, and finally carburetors for the automotive industry.

Bira Gun The Nepalese had often asked the British and Indian governments, by way of the Resident in Kathmandu, for access to Gatling, Gardner and Nordenfelt machine-guns; and the British and Indian governments had always

refused, fearful that the Nepalese would simply copy them. Consequently, when the British supplied thousands of Martini-Henry rifles in response to a request for assistance, many of the other military stores were refused. Deprived of the Gardner and Nordenfelt Guns they sought, the Nepalese decided to make guns of their own.

¶ Design work was undertaken by Gehendra Shamsher Jang Bahadur Rana (1871–1905), the foremost Nepalese military engineer of his day. Gehendra clearly based his work on the Gardner Gun, developed by William Gardner of Toledo, Ohio, and protected by U.S. Patents no. 174130 of February 1876 and no. 216266 of June 1879. Though strenuously championed by Pratt & Whitney, the Gardner Gun was never able to displace the Gatling in the U.S. Army. However, it was much more popular in Britain: by the end of March 1884, according to the 1883/4 budget, the Royal Navy was to have had 565 Nordenfelts, 350 Gardners and 142 Gatlings. The Gardner proved to be successful in service. Single-, two-, five- and six- barrel versions were made.

¶ Named in honour of King Prithvi Bir Bikram Shah (reigned 1881–1911), the Bira Gun shares the operating system of the Gardner, except for the magazine and the feed arrangements. The most important details of its history were placed on a red-filled cast-brass plate on the right side of the body between the feed and the crank handle, including a long dedication to the king (customary with Nepalese artillery) and a date of acceptance into service in the mid-1890s. Only about fifty guns were made immediately prior to the war with Tibet that began in 1897.

¶ The Bira Gun takes the form of a small artillery piece, mounted on a carriage with a trail made of inverted 'L'-shape wrought-iron girders. The wheels, with a diameter of about 36 inches, each have twelve spokes and an iron tyre which has been shrunk onto the rims. The barrels, 41.3 inches long, are placed side-by-side about 46 inches from the ground. The entire gun weighs about 900 lb without the distinctive pan magazine.

¶ An exceptionally sturdy open-topped iron box-body, held together with large slotted-head screws, has a top plate (pivoted at the front) that lifts up and forward to expose the breech—or, more accurately, the inner dust-cover over the mechanism. Removing the dust cover reveals two cylindrical breech-bolts attached to massive iron slides and driven by cam-plates on the transverse operating handle axle.

¶ Each slide consists of a base-block, rising at the rear to a cam path closed by a dovetailed bracket held by hexagon nuts. A massive 'V'-spring on the base provides the power for the striker, which is retracted and released by a rocking 'L'-bar with a tip that passes up into a slot in the underside of the bolt. The cam plates, one for each barrel, are rigidly attached to discs on the operating-handle axle. They control the operating sequence of the gun. An eccentric on the crank axle, on the left side of the body (looking from the rear), drives the magazine-rotating pawl by way of a slider attached to the left body side-plate; a similar eccentric on the right drives the feed-tray cam plate. The feed

tray, which is moved laterally by a peg acting in the cam-plate slot, is a vital component of the mechanism. It consists of two parallel bars, held apart by three spacers. The central spacer is raised to act as a partition between two rotating spools, each with four troughs, which control the supply of cartridges and the ejection process. Two 'C'-shaped leaf springs, with the tips extended, are attached beneath the rear of the feed tray by pegs and small screws. They run towards the front of the tray, where each splays outward.

¶ The magazine is a heavyweight pan, about 16 inches in diameter, comprising an iron base plate, a body containing brass chambers in groups of ten between radial spokes, and a comparatively light sheet-iron top cover. Each of the chambers can hold two .450 cartridges with their noses towards the centre. The magazine locates over a spindle projecting from the centre of the feed-block cover plate.

¶ The operating cycle is relatively simple. If the right-hand bolt is forward, with a spent case under its extractor, then the left-hand bolt is at the limit of its rearward stroke, drawn back behind the feed tray. The parts begin to move as the operating handle is turned towards the firer. The right-hand bolt is drawn back, extracting the spent case, and the left-hand bolt moves forward against the base of the cartridge that has dropped from the feed way into one of the troughs in the left-hand feed tray spool. As the crank handle rotates farther, the right hand bolt pulls the spent case out of the chamber and the left hand-bolt pushes a new round home. Nearing the end of the stroke, the right-hand extractor is cammed upward to release the spent case. At the very end of the stroke, the left-hand cam disc suddenly releases the rocking lever it has been pressing down, and the lever head propels the left-hand striker to fire the cartridge in the left-hand chamber. Continuing to turn the lever repeats the process in reverse, and the right hand-barrel fires to complete one revolution of the crank handle.

¶ During the firing process, two additional things happen: the eccentric in the right hand side of the body oscillates the feed tray, flicking an extracted case sideways (as the backward-moving bolt clears the end of the sprung spool) and positioning a spool-trough to receive a new round from the feed way. Cartridges are delivered by turning the magazine one-sixtieth of a revolution during each operating cycle, the movement being undertaken by a spring loaded pawl driven by the left-hand eccentric by way of a slide fixed in the left body wall. The magazine-rotating pawl protrudes through a slot cut in the sheet-metal shroud that slots vertically into the body beneath the front edge of the top-cover. The magazine is prevented from over-rotating by a regulating pawl, with an attendant spring, set into the left rear side of the feed-cover plate.

¶ Two sets of sights were provided: one for point-blank range, consisting of a groove in the rear of the cascabel plate and a blade on top of the magazine spindle; and another, for longer ranges, in which the blade on the spindle was used in conjunction with another blade mounted above the muzzles. A

decorative sheet-brass clinometer, with a hanging pendant, lies on the left rear side of the body. However, as there are neither graduations nor any way of compensating for the angle the gun may make with the ground, its value would have been minimal.

¶ The Bira Gun is exceptionally sturdy for a rifle-calibre cartridge. The method of attaching the barrels to the front plate of the body is unusual, as they require a sturdy cross-pin (held to the gun by a captive chain) and a cradle beneath the breech to hold them in place. The cartridges chamber directly into the barrels, so any play in the construction, though it may affect point-of-strike, would not compromise safety.

¶ Another quirk lies in the construction of the feed-cover plate, where the cartridge-aperture block is held by a narrow transverse shim (held to the block by a hidden screw) and then by a broader flat fillet dovetailed on each side into the feed-cover plate. This presumably allowed artificers to try a selection of shims to be tried until the parts meshed satisfactorily. Most of the individual parts are numbered, even to the eccentric straps and the feed block 'C' springs, and the 'handed' parts are also identified by the initial Nagari characters of the words 'left' or 'right'. The Bira Guns were all hand made and adjusted individually during assembly; consequently, the major parts will only occasionally interchange satisfactorily.

Bircham. Charles O. Bircham was an English gunsmith occupying premises in 124 Poplar High Street, London E.C., from 1867 until the twentieth century. The trading style became '& Son' from 1891 onward.

Bird John Frederick Bird, a machinist residing at 38 Lingard Street, Birmingham, Warwickshire, England, was co-patentee with Walter →Bernard of an electrically operated →bell target. See British Patent 7340/08 of 1908.

Bird Scaring Cartridge A name given to a 4-bore 'shotgun' cartridge with a 4-inch brass case, made by James →Pain & Sons of Salisbury. See also 'Brock's Explosives Ltd'.

Birmingham The centre of the English provincial gunmaking industry, and of the first successful moves towards mechanisation. The environs of Birmingham, notably Coalbrookdale and the Ironbridge Gorge, were effectively the cradle of the Industrial Revolution; and it was natural that ironsmithing and associated trades should grow nearby. Gunmaking had been organised as early as 1689, when the local Member of Parliament petitioned King William III that his constituents be allowed to tender for Board of Ordnance contracts. A lengthy series of European and colonial wars ensured prosperity. Birmingham's affairs were refined by the establishment in Bagot Street in 1797 of a 'Proof and Viewing House' for military arms, and then, owing to the provisions of the contemporaneous Gun Barrel Proof Act, an official Proof House was founded in 1813.

¶ By the beginning of the nineteenth century, gunmakers, gun-stockers, gun-riflers and associated trades had come to dominate the area subsequently known as "The Gun Quarter", bounded by Slaney Street, Shadwell Street,

Loveday Street and Steelhouse Lane. Participating businesses rose from about fifty at the outbreak of the American War of Independence in 1776 to more than five hundred in the 1850s. The census of 1851 recorded that 5167 of the 7731 gunsmiths and gun-workers recorded in England and Wales worked in Birmingham; in 1865, there were 174 gunmakers, 32 barrel makers, 25 lock-makers, 61 implement makers and 600 retailers and distributors.

¶ Production was stupendous. More than seven million guns, barrels and locks were made for the British government in 1804–15, and the numbers of barrels successfully passing through the Proof House peaked at 961,459 in 1868. However, the loss of work to the →Royal Small Arms Factory, Enfield, and the advent of large-scale manufacturers such as →BSA, formed in 1861, threatened the livelihood of many independent smiths; by 1900, only three hundred gunmakers were working in the Birmingham district.

¶ The establishment of colonies of specialised trades in the environs of Birmingham was initially often due to, in the case of barrel makers, reliance on sources of wind- or water-power. Consequently, lock-making centred on Darlaston, Wednesbury, Willenhall and Wolverhampton; and the barrel makers congregated in Aston, Smethwick or West Bromwich.

¶ One of the best sources of information about the Birmingham gunmaking industry is *English Gunmakers* (1978), by De Witt Bailey and Douglas A. Nie; also helpful is *The Gun Trade of Birmingham*, by Keith Dunham (1955), produced by the City of Birmingham Museum and Art Gallery, and “Birmingham’s Gun Quarter and its Workshops” by D.M. Smith, published in the *Journal of Industrial Archaeology* (vol. 1, 1964/65).

Birmingham Gun Trade [The]. This association of Master Gunmakers and Master Gun Barrel Makers was formed in 1854 in an attempt to regulate what had become unruly trades, with tremendous variety in working practices, wages and selling methods. The association was recognised by the Gun Barrel Proof Acts as that from which the fifteen Guardians of the Birmingham Proof House were elected.

Birmingham Small Arms Co. Ltd [The], also known simply as ‘BSA’; Steelhouse Lane and Armoury Road, Small Heath, Birmingham, Warwickshire, England. This gunmaking business was founded on 7th June 1861, when several leading Birmingham gunmakers purchased shares in a new company intended to be capitalised at £50,000. Principal shareholders included Isaac →Hollis, John F. →Swinburn, William →Tranter and Thomas →Turner. The goal of BSA was to mass produce guns with fully interchangeable parts, in competition with the →London Armoury Company and the Royal Small Arms Factory at →Enfield Lock. After negotiating a terrible slump in the mid 1860s—when few armies were re equipping—BSA obtained a lucrative British government contract to convert English rifle muskets to the →Snider system. About 156,000 guns were altered in 1867–8, and the first batches of 93,000 new guns were delivered in 1869. A lucrative contract for →Martini-Henry rifles was obtained in 1871, but the company was voluntarily liquidated in 1873 and re-emerged

as the 'Birmingham Small Arms & Metal Co. Ltd' (below). The history of BSA in all its guises can be found in greater detail in John Walter, 'The Rise of the Piled Arms C A Short History of the Birmingham Small Arms Company' in *Guns Review*, 1983-4 and 1987.

Birmingham Small Arms Co. Ltd [The]; Armoury Road, Small Heath, Birmingham, Warwickshire, England. The post-1901 reincarnation of BSA, having completed rifle contracts placed during the Boer War, also continued the bicycle making operations begun by its immediate predecessor (BSA&MCo.). The first motor cycles were made in 1909, and, in 1910, BSA bought the British Daimler car making business. However, increasing interest in airgun shooting in the early 1900s also prompted BSA to acquire manufacturing rights to an underlever cocking rifle designed in 1904 by George Lincoln →Jeffries. These guns were initially made under licence, alongside Lee Enfields and a series of experimental auto loading firearms; in 1907, however, BSA commenced production of airguns on its own account and, helped by improvements due to Augustus Driver and George Norman, had made about seventy thousand by 1914. A few training guns in →SMLE or Long Lee-Enfield guise had also been produced. By 1914, BSA was operating three factories in the Birmingham area C Small Heath, Sparkbrook, Coventry Road C and a fourth in nearby Redditch. Large numbers of weapons were produced during the First World War. In addition to the Lee-Enfields, BSA was also the British licensee of the light machine gun credited to Isaac N. →Lewis. Many thousands of Lewis Guns had been delivered by 1918 to the British and Belgian armies, for land and air service alike. In 1919, BSA, which had become too large to operate as a single unit, was split into three divisions: BSA Cycles Ltd, →BSA Guns Ltd and BSA Tools Ltd. The individual gun designs are considered separately under the names of their patentees: 'John H. Cox', 'Augustus H.M. Driver', 'Lincoln Jeffries' and 'George Norman'.

Birmingham Small Arms & Metals Co. Ltd [The] (or 'BSA&MCo. '); Armoury Road, Small Heath, Birmingham, Warwickshire, England. This 1873 vintage successor to the original Birmingham Small Arms Co. Ltd (above) retained the Small Heath factory, though a sales office was also maintained in London at 6 Great Winchester Street from 1885 onward. Though BSA&MCo. enjoyed comparatively little success in the 1880s, its fortunes were partly restored by the adoption in British service of solid drawn cartridge cases and the →Lee Metford magazine rifle. However, in the middle of frantic War Office work, the company once again sought voluntary liquidation for the purposes of reconstruction (in 1897) and emerged in 1901 to trade once again under its old name. In the intervening period, it had made substantial quantities of →Lee-Metford Mk I, Mk I→ and Mk II rifles, and Lee-Enfield Mk I and I→ rifles. BSA&MCo. also offered .303 →Lee-Metford and →Lee-Enfield rifles commercially from 1892 onward, utilising actions taken from regular production runs. They had commercial proof marks and were marked LEE SPEED PATENTS. BSA&MCo. and its successor, the →Birmingham Small Arms

Co. Ltd, also offered 'High Velocity Sporting Patterns No. 1, No. 2 and No. 3' prior to 1914, chambered for cartridges ranging from 7×57 to .375 Flanged Nitro Express cartridges. There were also four differing Magazine Sporting Pattern Carbines in 7×57, .303 or 8×51. Many other British gunmakers handled Lee-type sporters, usually bought wholesale from BSA. These will usually bear a discreet →Piled Arms trademark on the action.

Birmingham Small Arms Trade [The]; Steelhouse Lane, Birmingham, Warwickshire. This British trading association was formed in 1854, during the Crimean War, by twenty of the area's leading gunmakers keen to share government contracts amongst themselves. Though discontent led to the formation of the →Bormingham Small Arms Company by some of its participants, the Small Arms Trade association staggered on until 1878. Among the firearms made under its control were French Chassepot needle-guns and 1869-pattern Russian Krnka infantry rifles.

Birnie Roger Birnie, Junior, ranked as a lieutenant in the U.S. Army when he accepted small arms marked 'RB' in 1879-80. See also "U.S. arms inspectors' marks".

Bishop William Bishop, 'Billy Bishop' or 'The Bishop of Bond Street'. Listed at 170 New Bond Street, London, from 1861 until 1870, this member of the English gun trade is best known as an agent for Westley →Richards of Birmingham.

Bishop, *usually found as* "The Bishop". A name associated with shotgun ammunition made by →Eley Brothers prior to the First World War for the London gunmaker Charles →Riggs. It may be accompanied by a punning trademark in the form of a bishop's mitre atop a five-bar gate.

Bishopgate [The]. A brand name associated with the shotgun ammunition sold by Alfred →Davis of London.

Bisley Named after Britain's premier shooting range, this spring air pistol was designed by Lincoln →Jeffries (Junior). The subject of British Patent 10250/10 of 27th April 1910, it was cocked by a lever forming the back-strap of an air cylinder doubling as a butt. However, only a few hundred pistols of this pattern were made in 1912-13, when they were superseded by the →Lincoln.

Bisley Model Similar mechanically to the →Canberra, the →Parker Hale M84 Mk II Bisley Model had plain right- or left-hand stocks.

Bisley Model This adaptation of the →Colt →Single Action Army revolver was made for target shooting from 1894 until 1915. It was easily recognised by the position of the grip, which had been moved upward in relation to the frame and barrel, and the low spur hammer. The 'Bisley Flat-Top Target' was similar, but had differing sights.

Bisley A modified version of the →Single Six (rimfire) or →Blackhawk (centrefire) revolvers introduced by →Sturm, Ruger in 1986. Approximating with the original Colt patterns, the guns lie higher in the hand than the standard Rugers (owing to the repositioned grip) and the hammer spur is notably lower. Chamberings to date have included .22 LR rimfire, .32 H&R Magnum, .357

Magnum, .41 Magnum, .44 Magnum and .45 Long Colt.

Bisley Works The manufactory owned by A.G. →Parker & Co. Ltd and then by →Parker Hale Ltd, until the latter moved to Golden Hillock Road, Birmingham, in 1967.

Bissell Thomas Bissell, an English gunsmith, was listed in London directories at various addresses in Tooley Street (1857–76) and at Star Corner (1876 only), London E.C., before a move to 75–77 Cranham Road, Rotherhithe New Road, London E.C., occurred in 1877. Business seems to have ceased temporarily in 1886, but re opened in new premises at 98 Hollydale Road, Peckham, in 1889. Work ceased in 1891, perhaps on Bissell's death or retirement.

Bitkov' A.A. Bitkov' of Moscow was one of Russia's leading distributors of guns, ammunition, sporting goods, clothing and footwear. Founded in 1889, the business traded until 1918 from an office located at 20 Bolsh. Lyubyanka Mosta, and warehouses situated in Bolsh. Lyubyanka and Kyuzhnetskago Mosta 8.

Bittner Gustav Bittner was one of the leading gunmakers operating in →Weipert, Bohemia. He was also one of the principal members of a co-operative formed in 1887 to produce components for the straight-pull →Mannlicher service rifle that had been adopted for the Austro-Hungarian army. His workshop was particularly well equipped, with a range of machine tools driven by steam engines, but the scheme did not last. He is also renowned as the manufacturer of a mechanical repeating pistol developed by →Passler & Seidl. Operations seem to have ceased in the 1920s.

Bittorf K. Bittorf of Suhl in Thüringen, Germany, made sporting guns in the 1930s, being listed in the *Deutsches Reichs-Adressbuch* for 1939.

Bizon This is a 9mm Russian submachine-gun, based on some of the components of the →Kalashnikov assault rifle and made in →Izhevsk. A special helical-feed magazine protrudes beneath the barrel.

BJ *superimposition-type monogram, 'J' within 'B'*. This is correctly interpreted as 'JB'. It was used by Manufacture Générale d'Armes et Munitions Jules →Bertrand.

bk A mark associated with small arms and ammunition components made by Metall-, Walz- und Plattierwerke →Hindrichs Auffermann AG of Wuppertal Barmen, Germany, during the Second World War.

BKIW 'Berlin-Karlsruher Industrie-Werke': a trademark and trading style adopted in 1922 by →Deutsche Waffen & Munitionsfabriken. It was used until 1936.

bky Used on small arms components made under German supervision by the Ung. Brod factory of →Böhmische Waffenfabrik AG in 1941–5.

BL: see 'Benjamin Lyon'.

bla A mark found on cartridge clips and chargers made by E.G. →Leuner GmbH of Bautzen, Germany, in 1941–5.

Blachon Pierre Blachon, a French gun designer, was the co-patentee of the →Le Français semi-automatic pistol. See 'Manufacture Française des Armes et Munitions'.

- Black** John Black. A gunsmith trading in Bollington, Cheshire, England, Black loaded, or perhaps simply sold shotgun cartridges under the brand name →Bollin.
- Black Bird [The].** A brand name used by the →Chamberlain Cartridge Company of Cleveland, Ohio, U.S.A., on shotgun ammunition.
- Black Box** A nickname, often claimed to be a brand name, associated with the Danish-made →Pallet airgun ammunition.
- Black Boy** An early diabolo type airgun pellet, made by →Eley Bros. from 1910 until the beginning of the First World War.
- Black Forest Arms Factory:** see 'Voetter & Co.'
- Black Hills Rifle** Made by E. →Remington & Sons from 1875 until the early 1880s, this was a minor variant of the No. 1 Sporting Rifle. It usually had a round barrel hambering the .45–70 Government cartridge. See also 'Remington rifles, rolling-block action'.
- Black & Owen** A →Suicide Special revolver made by the →Hopkins & Allen Arms Company of Norwich, Connecticut, U.S.A., in the late nineteenth century.
- Black Twenty**, *usually as* 'The Black Twenty'. Found on shotgun cartridge made by →Eley Bros. prior to the acquisition of the company by Explosives Trades Ltd in 1918.
- Blackadder** C.G. Blackadder, a gunsmith and ironmonger trading in Castle Douglas in Kirkcudbrightshire, Scotland, offered shotgun ammunition under the brand name 'Castle Douglas'.
- Blackhawk** A single-action revolver, inspired by the Colt →Peacemaker, introduced by →Sturm, Ruger in 1955. The Blackhawk has a swinging loading gate and a reciprocating ejector rod in a case beneath the right side of the barrel, but relies exclusively on coil springs instead of the Colt-type leaves. Guns made after 1973, sometimes known as the 'New Model Blackhawk', incorporated a →transfer-bar safety system to comply with the Gun Control Act of 1968. They can be recognised by three axis-crew heads visible on the right side of the frame instead of the original two. See also 'Super Blackhawk'.
- Blackhawk Convertible** A variant of the standard revolver offered with an exchangeable cylinder. The standard pairings were 9mm/.357 Magnum and .45 Colt/.45 ACP.
- Blackhawk Flat-Top** A name given to a variant of the standard Ruger Blackhawk with a flat-top frame and an adjustable back sight. About 43,000 were made in 1955–63, exclusively in .357 Magnum though barrel length varied from 4.625in to 10in.
- Blackhawk Flat-Top Magnum** This was an enlarged version of the .357 Blackhawk Flat-Top chambering .44 Magnum. About 28,000 were made in 1956–63, with barrels ranging from 6.5in to 10in.
- Blackington** A.B. Blackington, a U.S. Federal government arms inspector active in the early 1860s, marked Starr and Colt cap-lock revolvers with 'ABB'. See also "U.S. arms inspectors' marks".
- Blackjack pistols:** see 'truncheon guns'.

- Blackmoor Vale** [The]. A brand name found on shotgun cartridges sold by H.C. →Little & Son of Yeovil, Somerset, England.
- Blagdon, Blagdonette** [The]. Found on shotgun ammunition sold by →Cogswell & Harrison.
- Blagdon Shooting School** [The]. A shooting club in Malden, Surrey, this had repair facilities of sufficient stature to be regarded by H.J. Blanch, writing in 1909, as a member of the English gun trade.
- Blake** James Blake. Trading from premises at 12 The Square, Kelso, Roxburghshire, Scotland, Blake handled shotgun ammunition under the 'Roxburgh' brand name.
- Blake** John Blake of New York City designed a bolt action rifle in the early 1890s, two .30 prototypes being tested by the U.S. Army in 1891–3 though they were unable to challenge the Krag-Jørgensen. Both were stocked in military fashion and had spool magazines. Blake subsequently sought a patent, granted in July 1898, and rifles were advertised commercially in Grades 'A' (best) to 'D' (plain). The standard 'D' grade rifle was offered in .236 (6mm Lee), 7×57, .30–40 Krag, .30–30 Winchester or proprietary .400 chamberings.
- Blake** John Alkin Blake; London. The marks of this gunmaker have been reported on self cocking →pepperboxes dating from the middle of the nineteenth century.
- Blake** John A. Blake & Company. This gunmaking business (probably run by John Alkin Blake, above) began work prior to 1850, being listed in the 1851 census at 253 Wapping, London, England. Additional premises were opened at 35 Upper East Smithfield in 1853, the Wapping shop being closed shortly afterwards. Trading continued until 1864.
- Blake Brothers & Company**, provincial ironmongery business trading in the small Herefordshire town of Ross on Wye, handled shotgun cartridges marked 'The →Wye Valley'.
- Blakemore** V. & R. Blakemore, based in London, are perhaps best known for fulfilling contracts to supply (among other items) →Swinburn-Henry rifles and carbines to the government of Natal. This suggests that Blakemore, trading from 46 Leadenhall Street in 1866–74 and 8 Lime Street in 1875–97, was more a wholesaler and agent than a manufacturer. The marks have been mistakenly identified as 'N. & R. Blakemore'.
- Blanc** Trading from rue Michelet 40, Saint Étienne, France. Listed in 1892 as a gunmaker.
- Blanc** Philippe Blanc; rue Traversière 9, Saint Étienne. A gunmaker active in France in 1892.
- Blanch** John Blanch. This English gunmaker was active prior to 1812—when he was trading in London from 39 Fish Street Hill—until at least 1848, when his son was taken into partnership. Pistols, muskets, pepperboxes and air canes were among Blanch's many products.
- Blanch** John Blanch & Son. Formed in 1848 and trading from 29 Gracechurch Street, London E.C., until the First World War or later. Harold John ('H.J.')

Blanch is as well remembered for his assiduous collection of details concerning the English gun trade as for the excellent quality of his sporting guns, pepperboxes, revolvers, airguns and air canes. The company was eventually taken over by Alfred Davis.

Blanchard Grange; 67 rue Antoine Durafour, Saint Étienne, France (in 1951). Listed in 1933-55 as a gunmaker.

Blancheton; rue de la Comédie, Saint Étienne, France. Listed in 1879 as a gunmaker.

Bland E.J. Bland. Listed at 17 Brook Street, London, in 1897-8, this English gunmaker may have been a member of Thomas →Bland & Son.

Bland Thomas Bland & Son. Bland's name was renowned among nineteenth-century London gunmakers, trading from the 1840s well into the present century. Operating in the 1860s from 4 & 5 King William Street, Bland traded thereafter from 106 Strand (1876-88), 430 Strand (1887-1900) and 2 King William Street from 1900 onward. Shotguns, sporting rifles, pistols, pump up air canes and walking stick guns were amongst the company's wares.

Blanks William Blanks; Rochford, Essex. The marks of this English gunmaker, working from 1831 until 1869 or later, have been reported on sporting guns and self cocking →pepperboxes from the middle of the nineteenth century.

Blanton R. Blanton. A gunmaker trading in Market Place, Ringwood, Hampshire, England, Blanton is recorded as handling 'foreign made' shotgun cartridges named →Competitor and →Imperial.

Blaser Jagdwaffen GmbH; Isny/Allgau, Germany. A maker of a wide variety of break-open, dropping-block and bolt-action rifles, often embodying innovative design features. Additional details will be found in John Walter, *Rifles of the World* (Krause Publications, third edition, 2006).

Blatt Aug. Blatt; Albrechts bei Suhl in Thüringen, Goldbach Strasse 37 (1941). Listed in the 1920s as a maker of gun and gun parts, when an 'ABA' mark was used, this metalworking business was specialising in gun-barrels when the Second World War began.

Blaze John Blaze. Patentee, with Daniel →Wesson and John →Stokes, of the →Wesson shotgun. See U.S. Patents 72434 of 17th December 1867 and 84314 of 24th November 1868.

Blazer [The]. A name associated with shotgun ammunition sold by T. →Naughton of Galway; it was made by →Irish Metal Industries.

blc Found on German military optical equipment made by Carl →Zeiss of Jena in 1941-5.

Blickensdorfer John Blickensdorfer; St Louis, Missouri. Also listed as 'Johann Blickendoerfer', 'Blickendorffer' and other variations, this German-born gunmaker, specialising in →Gallery Guns, is first recorded in the St Louis directories for 1864; by 1869, however, partnership had been struck with Frederick Schilling.

Blickensdorfer & Schilling, a partnership of John Blickensdorfer and Frederick Schilling, traded from 12 South Third Street, St Louis, Missouri, from 1869 to

c. 1875, having succeeded the earlier Blickensdorfer operations. A few breech loading spring-and-piston → Gallery Guns may have been made in addition to sporting guns.

Blish John Bell Blish (1860–1912) retired from the U.S. Navy in 1905, ranking as commander, and applied his enthusiasm to the development of a breech-locking system that relied on the friction generated when two surfaces of differing metal attempted to slide across each other under pressure. Patented in the U.S.A. in 1913, posthumously, the ideas were subsequently licensed by Blish's executors to the → Auto-Ordnance Corporation and duly incorporated in the earliest → Thompson submachine-guns. However, the failure of the high-powered Thompson Automatic Rifles (which from suffered gas leaks and unacceptably harsh extraction) and experience with the submachine-guns suggested that the complication was not justified by results. Guns made during the Second World War reverted to → blowback operation without performing notably badly.

Bliss Gunsmith William Bliss of Norwich, Connecticut, U.S.A., was granted U.S. Patent 202627 of 23th April 1878 to protect a 'firearm'; 283854 of 28th August 1883 for a 'firearm safety lock'; and 313048 of 3rd March 1885 for a 'revolving firearm'. Sold by → Maltby, Curtiss & Co. and Maltby, Henley & Co. of New York City, the guns were undoubtedly made elsewhere in New England.

Blissett John Blissett. A member of the English gun trade operating from 321–322 and then 322 High Holborn, London, in 1850–66. The trading style became 'John Blissett & Son' in 1867, continuing business from the same address until a move to 98 High Holborn occurred in 1876. The name changed again to 'John Blissett, Son & Tomes' in 1878, but work continued only until 1883. Blissett is known to have made shotguns, sporting rifles, pepperboxes, pistols, airguns and air canes.

Blissett Thomas Blissett. A gunmaker listed in 1864 at 16 Water Lane, London E.C., England.

Blitz A brand name associated in the early 1950s with German bolt action airgun trainers, which may prove simply have been pre-war → Haenel Sportmodelle (or similar guns assembled from parts) being sold by wholesalers.

Blitz A mark found on an Italian-made barrel cocking spring air pistol, otherwise known as the 'BBM' or → BMB.

Blitz, usually as 'Blitz Gewehr' ('Lightning Rifle'): a nickname bestowed on the Bavarian → Werder rifle during the Franco–Prussian War.

Block action A mechanism relying on a block placed behind the chamber to seal the breech, which may be encountered in many differing guises. Dropping or falling blocks slide vertically downward through a mortise. The Farquharson, Sharps and Browning (Winchester) rifles are typical examples. Rising blocks—rarely encountered—should move vertically upward. Swinging blocks are common, though encountered in a variety of guises and difficult to categorise accurately. A few swing up and back. Some swing up and forward (e.g., Albini-Braendlin, Springfield-Allin). Some swing laterally backward (e.g., Restell) or

forward (Milbank-Amsler). Many swing back and down (Remington Rolling Block, Spencer); others move down and back (Peabody, Martini). The Snider and similar breech-blocks swing laterally on a longitudinal pin.

Block et Lévy; rue Tréfilerie 14, Saint Étienne, France. Listed in 1892 as a gunmaker, by which time 'Veuve Block' ('widow Block') had succeeded her husband.

Blocks the Sear A slogan associated with the →Infallible pistol, made in the U.S.A. by the →Warner Arms Company.

Blómen Axel Linus Blómen, described in the earliest Swedish patent specifications as a 'clerk', was co patentee with Per Samuel Ewerlöf of the →Excellent gas powered rifle. The two men were the major shareholders in AB Våpenfabriken 'Excellent', formed about 1906. Blómen was the designer while his partner, Ewerlöf, was the financier and administrator. The guns seem to have been made by AB →Bahco. The later patent specifications seem to suggest that Ewerlöf had lost interest in the project by 1910. Relevant protection included Swedish Patent 20939 of 24th August 1904, granted to Ewerlöf & Blómen for the basic construction and valve mechanism of the 'Excellent' rifle. British Patent 25579/05 of 1905 was comparable. Swedish Patent 20423 of 31st December 1904 protected a variant of the valve and charging system, but was delayed in its progress through the Stockholm patent office and was not accepted until after 20939. Swedish Patent 27316 of 9th December 1907 was granted to Blómen and AB Excellent for a bolt loading system, and 29226 of 5th December 1908 (and British equivalent 28192/09 of 1909) protected a gas-charging unit with an under-bench reservoir. Swedish Patent 33298 of 23rd January 1911 was granted to Blómen and AB Excellent to protect another modification to the valve and charging mechanism, whereas patent no. 51181 of 17th November 1919 allowed a claim for a spring-and-piston air gun cocked by a top lever along the butt wrist. Swedish Patent 60763 of 1st July 1924, granted to Axel Blómen alone, described a sliding barrel system; 72414 of 14th November 1929 (to Blómen and AB →Excellengeväret) depicted a spring-and-piston air pistol cocked, most unusually, by its sear bar.

Blondeau; Saint Étienne, France. Listed in 1933 as a gunmaker, and at 7 place Villeboeuf in 1951.

Bloodhound A cheap →Suicide Special revolvers made in the late nineteenth century by →Ely & Wray of Springfield, Massachusetts, and the →Harrington & Richardson Arms Company of Worcester, Massachusetts.

Blowback Also known as 'case projection', this relies on nothing but the inertia of a heavy breechblock, friction between sliding surfaces and the opposition of a powerful spring to delay the opening of the breech; delayed blowback adds elements such as swinging levers or multi-part breechblocks to buy a little more time before the breechblock begins to move back. As the breech is not locked at the moment of discharge, operation of this type was initially confined to pistols and a few light automatic carbines chambering low-power cartridges. Few blowback auto loading rifles other than the →Winchesters

designed by Thomas →Johnson had been notably successful prior to 1914, as attempts to use military pattern cartridge were generally doomed to failure. Extraction was customarily harsh unless the cartridges were lubricated—manufactured with a wax coating perhaps, or squirted with oil as they entered the chamber. Extractors were prone to tear through the case-rims or even rip the entire case head away, jamming the action. Though blowback operation was viewed with suspicion by most military ordnance authorities prior to 1945, views of this type have now been altered by the success of roller-locking systems. The first of these were used in a delayed blowback form by several experimental →Mausers tested in the closing stages of the Second World War, but have been featured more recently in many →CETME/→Heckler & Koch designs. The French AAT52 embodies a two-piece bolt and a lever-like ‘retarder’, and some of the SIG designs also rely on roller units. Most delayed-blowback guns still require fluted chambers, effectively floating cartridges on a cushion of gas in an attempt to improve extraction, but this complication (which prevents cartridges being reloaded satisfactorily) is accepted in return for constructional simplicity. See also ‘gas operation’, ‘delayed blowback’, ‘locked breech’, ‘operating systems’ and ‘recoil operation’.

Blow forward The reverse of blowback operation (see above), this relies on the barrel being projected forward by chamber pressure. The empty case is ejected before a spring returns the barrel to chamber a new cartridge. Though extraction and ejection are simplified, blow forward has too many problems to attract rifle designers: the excessive weight of the moving parts disturbs aim too easily. The best-known examples are the 1894-type Mannlicher pistol and the Schwarzlose pattern of 1908, which was made in surprisingly large numbers in Germany and the U.S.A. SIG made a few AK 53 rifles in Switzerland in the early 1950s, but few other blow forward rifles have ever encountered success.

B.L.R. Usually stencilled or painted on the butts of British military rifles ‘Beyond Local Repair’ and thus destined to return to a major depot.

Blue Flash [The]. Found on shotgun cartridges loaded and sold by →Garrett of Evesham, Worcestershire, England.

Blue Jacket Three differing →Suicide Special revolvers made in the U.S.A. in the late nineteenth century by the →Crescent Arms Company of Norwich, Connecticut; by the →Hopkins & Allen Arms Company of Norwich, Connecticut; and by →Johnson, Bye & Company and/or →Iver Johnson of Worcester and Fitchburg, Massachusetts.

Blue Roc [The]. A brand name found on Kynoch made shotgun cartridges sold by →Langley & Company (prior to 1914), →Langley & Lewis (in the 1920s and 1930s?) and Aubrey →Lewis (c. 1945–69).

Blue Shell This mark will be found on shotgun cartridges handled by John →Dickson of Edinburgh, Scotland.

Blue Streak A brand name used in recent times to distinguish the blued finish .20 calibre pump up pneumatic rifles made by →Sheridan of Racine, Wisconsin,

U.S.A., from its gaudier nickelled 'Silver Streak' equivalents.

Blue Whistler A →Suicide Special revolver made by the →Hopkins & Allen Arms Company of Norwich, Connecticut, U.S.A., in the late nineteenth century.

Blum Budapest-based gunsmith Friedrich Blum is now generally credited with the design of the drum magazines (TM. 08 and TM für FSK) issued with the German →Parabellum pistols and →Mondragon rifles during the First World War. Blum was granted three relevant German patents in this period: 302455, 305074 and 305564. See also 'Tatarek & von Benkö' and 'Trommelmagazin'.

Blunt Stanhope English Blunt, then a captain in the U.S. Army, inspected the →Colt revolvers displaying a 'SEB' acceptance mark in 1889–90; see also "U.S. arms inspectors' marks".

Blunt & Syms; New York City. This partnership between the inventor Orison →Blunt and the Syms brothers, William and Samuel, dated from 1848. Trading first from 44 Chatham Street and then 177 Broadway, the business made sporting guns, muskets and spring air Gallery Guns before the business passed to John G. →Syms.

BM *floriated monogram, often superimposed on a sunburst motif.* This will be found on the grips of →Hermetic semi-automatic pistols, made in France by Établissements →Bernardon-Martin et Cie of Saint-Étienne.

BMB This trademark has been found on a barrel cocking spring air pistol, apparently Italian, which is also known as the 'BBM' or 'Blitz'. Any connection with →Breda Meccanica Bresciana is still open to debate.

bmj Associated with optical equipment made during the Second World War by M. →Hensoldt & Söhne of Wetzlar, Germany.

bmz Marks of this type will be found on German small-arms and ammunition components made during the Second World War by →Minerva Nähmaschinenfabrik AG of Boskowitz.

B above N, separated by a horizontal bar. A trademark used on →Parabellum drum magazines (TM. 08) made during the First World War by Gebr. →Bing of Nürnberg.

bne Identifying small arms ammunition and components made in the Second World War, this code was used by Metallwerke →Odertal GmbH of Odertal Post Lautenberg/Harz, Germany.

bnl Used during the Second World War by →Ostmarkwerke GmbH of Gbell bei Prag on small arms components, made in German-occupied Czechoslovakia.

BNP *and a crown.* The definitive nitro proof mark applied by the Guardians of the Proof House in Birmingham, Warwickshire, England, this replaced the 'BP' black powder and 'NP' nitro proofs in 1954.

bnz Associated with the products of →Steyr Daimler Puch AG made in 1941–5, including machine guns, pistols, rifles and relevant components

Boa Based on the proven Mark V action, these .357 Magnum revolvers were made in 1985 by the Firearms Division of →Colt Industries, for Lew Horton Distribution Company of Southboro, Massachusetts. Only 1200 guns were made, distinguished by 4-inch or 6-inch barrels with ejector-rod shrouds.

There were also a hundred special cased two-barrel sets.

- Boardman** Edward P. Boardman of Lawrence, Massachusetts, U.S.A., was co-designer with Andrew Peavey of the →Little All Right revolver, protected by U.S. Patent no. 172243 of 18th January 1876.
- Bobcat** or **Bob Cat** Otherwise known as the 'G85/1', this was a .177 calibre barrel cocking spring air rifle made by →Milbro Ltd in 1979–82 for the juvenile market.
- Bobcat** A gas-powered rifle sold by →Precise Imports Corporation of Suffren, New Jersey, U.S.A., but made in Japan by Taiyo Juki of Miroku.
- Bobichon fils**; rue Saint Denis 1, Saint Étienne, France. Listed in 1879 as a distributor of and agent for arms and ammunition.
- Bock** Oskar Bock; Dietzhausen in Thüringen, Hauptstrasse (1941). A maker of optical-sight mounts and associated components active in Germany early in the Second World War.
- Bock** Otto Bock; Berlin. This well-established German gunmaker, claiming to be one of the *Hoflieferanten* (purveyors to the royal household) made sporting rifles embodying Oberndorf made →Mauser actions. Many of these were chambered for the 9.3×62 cartridge developed by Bock in the early 1900s.
- Bockbüchsfllinte** A term applied to guns with one rifled and one smoothbore barrel, superposed. See 'Combination weapons'.
- Bockdoppelbüchse** A term applied to guns with two rifled barrels of the same chambering, superposed. See 'Combination weapons'.
- Bockdrilling** A three-barrelled gun with the smoothbore above the large-calibre rifled barrel, with a small-calibre rifled barrel alongside the barrel block. See 'Combination weapons'.
- Bodmin** [The]. A brand name found on shotgun cartridges sold prior to 1914 by →Jane of Bodmin, Cornwall, England.
- Bodson**, Liège. A maker of sporting rifles in Belgium in the mid-nineteenth century.
- Bodyguard** or 'Model 49'. A steel-frame version of the Bodyguard →Airweight, developed for the Massachusetts State Police, this .38-calibre swing-cylinder →Smith & Wesson revolver appeared in 1959. Most guns will be found with 2-inch barrels, and a special variant with a stainless-steel cylinder was made for the Michigan State Police in the 1960s. A stainless-steel version was introduced in 1986 as the Model 649.
- Boecker** Ulrich Boecker, or Böcker. Residing at Wilhelmstrasse 15 in Hohenlimburg, Germany, this 'sporting goods maker' patented a double spring airgun mechanism; see British Patent 380036, accepted on 8th September 1932.
- Bohemian design school** or 'Bohemian School'. A generic term coined to describe the repeaters made largely in the Weipert district by inventors such as →Bittner and →Passler & Seidl. See also 'Mechanical repeating pistol'.
- Bohlig & Eschrich** German gunmakers based in the Thuringian town of Zella St Blasii, and later in the Zella Mehlis conurbation.

- Böhme** Walter Böhme; Suhl in Thüringen, Germany. Listed in the 1930 edition of the *Deutsches Reichs-Adressbuch* as a sales agency.
- Böhmer** Hermann Böhmer. A gunmaker trading in Zella St Blasii and Zella Mehliis, Thüringen, Germany, early in the twentieth century.
- Böhner** Hermann Böhner; Zella St Blasii in Thüringen. Listed in the 1900 edition of the *Deutsches Reichs-Adressbuch* as a gunmaker, this entry may simply have been a misprinted form of ‘Hermann Böhmer’ (above).
- Boissy** P. Boissy; rue de la Badouillère 34, Saint Étienne, France. Listed in 1879-vintage directories as a gunmaker.
- Boitard** Paul Boitard; grande rue Saint Roch 4, Saint Étienne, France. A gunmaker listed in 1879, still active in 1900.
- Boker** Herman Boker; New York. A well-known distributor of firearms and edged weapons, Boker was sued in 1862 by →Smith & Wesson for selling revolvers made by the →Manhattan Fire Arms Company with bored-through chambers.
- Bolen** John G. Bolen, established at 104 Broadway in New York City prior to 1837, sold a variety of guns and ammunition until the mid 1850s. He advertised himself—perhaps with licence!—as the manufacturer of a ‘Patent Self-Cocking Pistol’ and sold cased pairs of →pepperboxes as “Bolen’s Life Preservers”; intriguingly, the pairs rarely matched, and could even be supplied by differing manufacturers.
- Bolles** Edward L. Bolles, a U.S. government arms inspector active in 1902, was identified by the initials ‘ELB’. See also “U.S. arms inspectors’ marks”.
- Bollin** [The]. A mark found on shotgun cartridges sold by John →Black of Bollington.
- Bolt** This closes the breech of a gun. Used on practically all military rifles made in 1890–1940, it usually comprises a cylindrical body containing the firing pin and firing pin spring. Several differing types of bolt have been used, but most rely on lugs rotating into the receiver (or sometimes into the barrel extension) to lock the action securely. Some guns have the lugs on the bolt body; others have a detachable head. A few retract the lugs into the bolt during the opening stroke and others may have a pivoting bar or locking strut.
- Bolt action** A system of operation relying on a cylindrical bolt reciprocating to extract, eject, reload and cock the firing mechanism. Though the rudiments of the system may be seen in medieval cannon, the originator of the modern bolt-action rifle is generally agreed to have been the Prussian inventor Johann-Niklaus →Dreyse, a one-time apprentice of Samuel →Pauly, whose *Zündnadelgewehr* (‘needle rifle’) was adopted by the Prussian army in 1840.
- ¶ Straight pull or ‘rectilinear’ action simply requires a handle to be pulled backward, usually transmitting a rotary motion to the bolt head by way of lugs and helical cam tracks. Associated with the later Austro Hungarian Mannlicher service rifles and the Swiss Schmidt (Rubin), this system may be operated quickly when clean and properly lubricated but offers poor primary extraction.
- ¶ Turning bolt action requires a handle to be lifted or the bolt body rotated to

disengage locking lugs before the backward movement can begin. Theoretically slower to operate than straight pull systems, it offers more effectual primary extraction and is less likely to be affected by variations in cartridge dimensions.

¶ Many books and countless articles have been written on this particular topic. Among the most accessible sources of information are... [details to add] See also 'Arisaka', 'Berthier', 'Lebel', 'Lee', 'Mannlicher', 'Mauser', 'Mosin-Nagant', 'Remington', 'Ross', 'Schmidt-Rubin', 'Springfield' and 'Winchester'.

Bolt Action Big Game Rifle No purpose built → Remington-Lee sporting rifles were offered in quantity until 1904, when a few of these were built on 1885-pattern 'Navy Actions' that had remained in store. They chambered the .43 Spanish, .44-77, .45-70 or .45-90 cartridges.

Bolt carrier A component or assembly that carries the bolt, commonly encountered in auto loaders. It may also control unlocking.

Bolt plug, *sleeve or shroud*. This term is applied to a housing attached to the rear of the bolt, generally surrounding the cocking piece (q.v.).

Bolt way The portion of the receiver (q.v.) in which the bolt rides.

Bolte & Anschütz; Mehlis and Zella Mehlis in Thüringen, Germany. Listed in 1900 as a weapon maker and wholesaler, when owned by Fritz Reuss, and as a gun- and weapon maker in 1914. The products included revolvers, pistols and small calibre rifles amongst a wide range of other metal goods. Listed in 1920 as a wholesaler of guns and metalware, owned by F. Reuss and A. Spiess. By 1925, the products were being recorded as 'revolvers, → Flobert rifles and pistols, self loading pistols'. The trademark of 'B & A' in a cross will be found on a variety of firearms and accessories, including sub calibre barrel inserts for the Luger (protected by DRGM 1364272 of 1936) and the rimfire 'B.u.A. Karabiner' of the 1930s. Listed in 1930-9 as a gun- and weapon maker; trading apparently ceased in 1945.

Boltun A small automatic pistol made by Francisco → Arizmendi of Eibar; 7.65mm, seven rounds, striker-fired. It was based on the → FN Browning of 1910, though a 6.35mm version based on the earlier Browning design of 1905 has also been reported.

Bolumburu. Gregorio Bolumburu of Eibar, Guipuzcoa, Spain, is credited with making the → Bufalo, → Gloria, → Marina, → Regent, → Regina and → Rex automatic pistols. 'Regent' guns may be marked by → Sociedad Española de Armas y Municiones (q.v.).

Bombrini, Parodi e Delfino, *or, alternatively*, 'Bombrini Parodi Delfino' ('BPD'). This was one of Italy's leading ammunition manufacturers, identifying its products by the inclusion of 'B.P.D.' in headstamps in a variety of forms. See also 'Mannlicher'.

Bomo [The]. A shotgun cartridge loaded by the → Schultze Gunpowder Co. Ltd prior to 1914.

Bonanza A cheap → Suicide Special revolver made by the → Bacon Manufacturing Company of Norwich, Connecticut, U.S.A., in the late nineteenth century.

Bonax [The]. Found on shotgun cartridges made by →Kynoch Ltd prior to the acquisition of the company by Explosives Trades Ltd in 1918, and in later years by →Eley Kynoch Ltd.

Bond Edward & William Bond. This English gunmaking partnership was listed at 45 Cornhill and Hooper Square, Goodman's Fields, London E., in 1850–5. The Hooper Square address remained until 1861, though Cornhill gave way to 42 Leadenhall Street in 1856. The directory entries for 1862–70 are in the name of 'Edward P. Bond', but a reversion to 'Edward & William Bond'—at 4 Northumberland Alley, Fenchurch Street, London E.C.—was made from 1871 until mentioned ceased in 1879. Edward Bond was the Managing Director of the →London Small Arms Co. Ltd. for many years and is credited with the design of the →Bolted Action for the Snider.

Bond George Edward Bond. This gunsmith continued to trade from Thetford, Norfolk, England, in succession to his father William Bond (1821–69). Trading continued until 1914 or later as 'G. Edward Bond & Sons'; marks of this type have been found on shotgun cartridges sold under the brand name →Invincible.

Bond William Bond; Thetford, Norfolk. This gunmaker traded from the Old Market in 1821, the earliest recorded directory entry, at St Magdalen Street in 1829–50. A move to Market Place occurred in 1851 or 1852, where work continued until the 1870s. Bond's marks have been seen on sporting rifles and self cocking →pepperboxes dating from the middle of the nineteenth century, though the latter have sometimes been attributed to 'G.E. Bond' of Thetford.

Bonehill Alfred M. Bonehill; Birmingham, Warwickshire, England. In 1926, Bonehill succeeded his father Christopher to the ownership of Bonehill & Company and continued to make sporting guns and rifles. The Birmingham directories list the business at 4 Prince Street from 1926 until 1961.

Bonehill Christopher George Bonehill; Birmingham. Bonehill was the owner of the Belmont Fire Arms Works in Birmingham from 1872 onward, apparently succeeding his father, and was himself succeeded by his son Alfred in 1926. Trading was originally centred on Charlotte and Morville Street in Birmingham, but had moved to the Belmont Fire Arms Works, Belmont Row, by 1882. This may have coincided with the first order received by Bonehill for →Snider rifles. A move to 4 Price Street had been made by the end of the First World War. Bonehill was particularly interested in sporting guns, obtaining several relevant patents between 1877 and 1908. His shotguns were popular in the U.S.A., where they were distributed by the H. & D. →Folsom Arms Co. among others. He is also remembered for the 'Bonehill →Britannia' air rifle, designed by Frederick S. →Cox. Other relevant protection included British Patent 13917/07 of 1907, sought with Henry →Homer to protect the →Improved Britannia air rifle, and 13567/08 of 1908 (also with Homer) for a pellet pusher.

Bonehill & Company, best known as a 'merchant' or 'distributor of arms, merchant and gunsmith' began trading in Birmingham in 1851. The premises

originally stood in Belmont Row, Birmingham, and were consequently known as 'Belmont Fire Arms Works' or, alternatively, as the 'Britannia Gun Works'. Christopher George Bonehill was listed as 'proprietor' from 1872 onward, but was followed by his son Alfred →Bonehill.

Bonna A brand name associated with a German 75 shot bolt action repeating air rifle, first identified by W.H.B. Smith in *Gas, Air & Spring Guns of the World*. It has been suggested that these guns were pre-war Venuswaffenwerk →Mars examples (possibly assembled from surviving parts) being handled by a distributor active in the early 1950s: said to have been W. →Schlumper of Düsseldorf. Nothing further is known.

Bonnard; 34 rue du Musée, Saint Étienne, France. Listed in 1951 as a gunmaker.

Bonnaud [The]. A name associated with shotgun cartridges made by F. →Joyce & Co. Ltd of London prior to 1907.

Bonnavion frères; rue Villeboeuf 8, Saint Étienne, France. These men were listed in 1879 as a gunmaking business.

Bonnet Trading in rue de Grand Gonnet, Saint Étienne, France. Listed in 1892 as a gunmaker.

Bonnet A colonel in the French army: see 'Lebel'.

Bonnie & Clyde A name given to a two-revolver set marketed in 1989–90 by the →Charter Arms Corporation, commemorating the brief and bloody career of bank robbers Bonnie Parker and Clyde Barrow, which came to its end in Louisiana in 1934. The guns had six round cylinders chambered for the .32 H&R Magnum (Bonnie) or .38 Special (Clyde) cartridges, the shrouded-ejector barrels measuring 2.5in. The grips were 'color co-ordinated wood laminate' and the set was accompanied by a gun-rug.

Bono [The]. A mark found on shotgun cartridges loaded by the →Cogschultz Ammunition & Powder Co. Ltd in 1911–14.

Bon Ton [The]. Associated with shotgun ammunition sold by →Graham of Inverness, Scotland

Boom A small →Suicide Special revolver made in the U.S.A. by C.S. →Shatuck of Hatfield, Massachusetts, in the late nineteenth century.

Boone Air Pistol This was an interesting BB calibre (.173) pistol made by the →Target Products Corporation of Jackson, Michigan, shortly before the Second World War began in the U.S.A. in December 1941. It had a gravity feed, and a backward moving piston cocked by pulling forward on a handle beneath the barrel.

Boot Gun A generic term for a small pistol, usually a single-shot underhammer cap lock, which could be carried tucked into the top of a riding boot.

Booth Howard R. Booth was a U.S. government inspector of →Colt revolvers in 1940, using the marking 'HRB'.

Booth Pomeroy Booth, a U.S. Federal government arms inspector, worked in the early 1860s,. He accepted small arms marked 'PB'.

Booth Thomas W. Booth. This government inspector, working for the Federal army during the American Civil War, accepted →Sharps and other carbines

marked with 'TWB' in a cartouche. See also "U.S. arms inspectors' marks".

Boragine Roberto Boragine, an Italian army officer (then holding the rank of major), made improvements in the design of the →Mannlicher-Carcano rifle in the 1940s.

Borchardt Hugo Borchardt was born in Magdeburg on 6th June 1844, but emigrated to the U.S.A. at the age of sixteen. He became Superintendent of Works for the short lived →Pioneer Breech Loading Arms Company in c. 1871, moving to the Singer Sewing Machine Company and then briefly to →Colt's Patent Fire Arms Manufacturing Company before going on to →Winchester. Borchardt was appointed Factory Superintendent of the →Sharps factory on 1st June 1876, patenting the →Sharps Borchardt rifle and developing tooling for a prototype →Lee-type bolt-action rifle. When the Sharps Rifle Company collapsed in the autumn of 1880, Hugo Borchardt returned to Europe in the autumn of 1882 to join →Fegyver es Gepgyar Reszvenytarsasag in Budapest. After returning briefly to the U.S.A. in 1891, Borchardt retraced his steps to Europe to perfect his pistol in association with first →Ludwig Loewe & Company and then →Deutsche Waffen und Munitionsfabriken. Improved toggle locked pistols and rifles were patented prior to 1914, but the life of a most versatile engineer otherwise passed without notice. All that is known with certainty is that Borchardt was living at Königgrätzer Strasse 66, Berlin, when his first patents were granted, and at Kantstrasse 31 in Berlin Charlottenburg when he died on 8th May (?3rd June) 1924.

¶ Protection granted to Borchardt included U.S. Patent 153310 of July 1874, for a method of machining lubricating grooves in hard lead bullets. U.S. Patents 185721 of 26th September 1876 and 206217 of 23rd July 1878, protecting elements of the Sharps Borchardt rifle, were sought from Peeskill in New York State and assigned to the Sharps Rifle Company. Patent 197319 of 20th November 1877 was granted for a gun sight; and 273448 of 6th March 1883, for a 'detachable magazine for machine guns', was assigned to Joseph W. Frazier of New York City. Borchardt was subsequently granted nearly forty patents and sixty registered designs in Germany between 1893 and 1911. They included German Patent 75837 of 9th September 1893, for the construction of the basic toggle lock pistol; a patent of addition, 77748 of 18th March 1894, made a specific claim for the roller used to break the toggle joint. British Patent 18774/93 of 18th November 1893 and U.S. Patent 561260, granted on 10th November 1896, were broadly comparable with the two German specifications. German Patent 83141 of 10th March 1895 protected a magazine with twin coil springs; and 91998 of 10th October 1896 was granted for a modified magazine with a follower doubling as a hold-open. Later patents such as British 17678/07 of 2nd August 1907 allowed claims for differing methods of breaking a toggle lock. German Patent 222222 of 27th February 1909 protected an improved trigger mechanism for toggle-lock guns, similar specifications being accepted in Britain (29622/09 of 17th December 1909) and the U.S.A. (987543 of 21st March 1911). German Patent 227078 of 27th

February 1909 was granted for an improved ejector for toggle-lock pistols, and 215811 of 30th April 1909 allowed the insertion of a short chain in the toggle assembly. Borchardt subsequently patented an auto-loading rifle of this type in the U.S.A. (patent no. 1160832 of 1914), but it was not successful.

Borchardt-Luger pistol Popularly known as the 'Luger', this was developed from the →Borchardt pattern in the late 1890s. Though the Borchardt worked well enough when it was properly adjusted, the management of →Deutsche Waffen u. Munitionsfabriken realised that serious weaknesses in the design should be eliminated. The return spring was delicate, and the overhang of the spring housing behind the grip upset the balance when the gun was used in the hand. ¶ Some time prior to trials held in Switzerland in the winter of 1898, Georg →Luger had developed a method of unlocking the toggle by using cam ramps on the frame instead of the Borchardt type internal roller. The 7.65mm pistols that arrived in Switzerland in November 1898, therefore, were the first of the true Borchardt Lugers. When the final eliminator began on 1st May 1899, DWM had submitted an improved Borchardt Luger with a manually operated safety lever set into the rear left side of the frame. ¶ This easily won the trials and finally, on 4th May 1900, the Borchardt Luger was adopted for service with the Swiss army. This encouraged DWM to offer the pistol commercially, and also to sell small quantities to countries such as Bulgaria, Portugal and the U.S.A. The subsequent history of the gun is summarised under 'Parabellum (2)'.

Borden William A. Borden. This U.S. government arms inspector, a lieutenant-colonel in the U.S. Army, accepted Colt pistols marked 'WAB' in 1936–9. See also "U.S. arms inspectors' marks".

Border Generally found, as 'The Border', on shotgun cartridges sold by →Forrest & Son of Kelso; by William →McCall & Company of Dumfries; and by Robert →Raine ("The Border Cartridge") of Carlisle prior to 1914. Their origins are not known, but are assumed to be →Nobel.

Border Patrol Chambered for the .38 Special cartridge, four hundred of these variant →Police Positive Special revolvers were made in 1952 by →Colt's Patent Fire Arms Mfg Co. They could be distinguished by a special heavyweight 4in barrel. About 6500 additional guns were made in 1970–1 on the basis of Mark III →Trooper frames.

Bore The axial hole through the barrel, usually rifled to spin the projectile. Bore diameter measurements usually exclude the depth of the rifling. See also 'Shot sizes'.

Bore sizes The universal Anglo-American standard was laid down in the British Gun Barrel Proof Act of 1868, which regularised the sizes of shot from 'A'—with a diameter of two inches—to fifty bore (a diameter of .453in), often listed as '50 gauge' or '50 gage' in North America. The Imperial measure equivalents of the most popular bore sizes are: ten bore, .775; twelve bore, .729; sixteen bore, .662; twenty bore, .615; and 28 bore, .550. The sizes below fifty bore were regarded as 'small bore' in the 1868 Act, and customarily described in imperial

measure. However, the cap lock pistols and revolvers made in Britain prior to the 1860s were classified in smaller sizes: e.g., 84 bore or 120 bore. The bore size equivalent can be calculated simply by cubing the dimension in inches and then dividing the result into 4.6578. For a .410 shotgun, therefore, the answer proves to be 68 bore ($0.410 \times 0.410 \times 0.410 = 0.06892$; $4.6578 \div 0.06892 = 67.58$). The method also works in reverse, as the equivalent of 84 bore is .381 ($4.6578 \times 84 = 0.05545$; $\sqrt{0.05545} = 0.381$). See also 'Teschner'.

Boreham J.S. Boreham; High Street, Colchester, Essex. This gunmaker traded from c. 1850 until he retired, selling the business to K.D. →Radcliffe in 1899.

Bormans Alard Bormans, Belgium: see 'Fabrique Nationale d'Armes de Guerre'.

Bornmann Johann Bornmann. This gunsmith worked for the well-known →Teschner business in Frankfurt an der Oder before striking out on his own account in nearby Drossen. Among his patented innovations were an eccentric locking bolt for shotguns and double rifles, and an automatic pop-up back sight for the →Drilling or three-barrel gun. His operations were apparently confined to the 1860–1900 era.

Bornmüller Richard Bornmüller; Suhl in Thüringen, Germany. Once a partner in →Bornmüller, Simson & Luck, this gunmaker traded independently in Suhl in the twentieth century. Most of the directories list the business as a wholesaler of guns and ammunition. The entry in the *Deutsches Reichs Adressbuch* for 1900 lists the owners as 'Edm. R. & Ernst H. Bornmüller'; by 1914, however, it was being operated by Ernst Hilmar Bornmüller. The 1930 directory entry still lists 'Bornmüller & Co.', and the 1941 edition lists 'Richard Bornmüller u. Co.' as a gunmaker; operations ceased in 1945.

Boromet; Saint Étienne, France. Listed in 1933 as a gunmaker.

Bortmess Gun Company; San Francisco, California? Founded by Dick Bortmess in the 1960s, this U.S. gunmaking business has made the →Ranger rifle.

Boru; rue Neuve 32, Saint Étienne, France. Listed in 1879 as a maker of gun parts and accessories.

Borzov Boris Afanasevich Borzov was born in Tula, USSR, in 1944. He graduated as a mechanical engineer in 1967 and was appointed to the design bureau in the →Tula small-arms factory. There he helped Petr →Yakushev to create the →YakB multi-barrel machine-gun.

Boss J. Boss & Company. Trading successively in London in the twentieth century from 13 Dover Street, 41 Albemarle Street and, in more recent days, 13/14 Cork Street, Boss handled rifles, sporting guns and ammunition. About 3900 →Lanchester submachine-guns were assembled during the Second World War, probably from parts made by the →Sterling Engineering Company. Boss also modified about 20,350 .303 No. 3 →Enfield rifles to 'Weedon Repair Standards' ('WRS') in the summer of 1939, and reconditioned about 1100 .303 →Hotchkiss Mk I and Mk I→ machine-guns in 1940. The code 'S 156' was allotted to J. Boss & Co. in 1940, but does not seem to have been widely used. See also "British military manufacturers' marks".

Boss Thomas Boss, one of the circle of 'Best' London gunmakers, is known for

- high-quality sporting guns and rifles. Operations were listed at 73 St James's Street, London S.W., from prior to 1850 on into the twentieth century. The trading style changed to 'Thomas Boss & Son' in 1860. Boss claimed to have invented the single-trigger lock for shotguns, but the claim was contested by many other gunsmiths.
- Bössel** Lorenz Bössel; Suhl in Thüringen, Germany. Listed in 1900 as a gunmaker, under the ownership of Carl Bössel.
- Boston** John Boston; Wood Street, Wakefield, Yorkshire, England. The marks of this gun and fishing tackle maker, trading from 1827 until about 1857, have been reported on self cocking →pepperboxes. Operations moved to Broughton (?) in 1857 and continued there for at least eight years.
- Boston Bull Dog** A .22-, .32- or .38-calibre double action Iver →Johnson revolver introduced in 1887. It was based on the earlier →American Bull Dog.
- Boswell** Among the best known of the gunmakers operating in twentieth-century London, founded in 1884, Charles Boswell traded from 126 Strand and, at a later date, from 15 Mill Street, Hanover Square. Shotgun cartridges have been seen bearing the Strand address and the name 'Special Express'.
- Bosworth** John Bosworth. Listed as 47b Richard Street, London E., in 1864–5, this member of the English gun trade is believed to have made gun parts.
- Bott** James Bott & Son. An English gunmaking business listed in London, 38 Lime Street, E.C., from 1890 until at least the time of the First World War.
- Boucher**; Saint Étienne, France. Listed in 1933 as a gunmaker, and at 45 rue Mulatière in 1951.
- Boudin et Gauthey**; Saint Étienne, France. Listed in 1933 as gunmakers.
- Bougy fils**; rue de la Loire 37, Saint Étienne, France. Listed in 1879 as a distributor of and agent for arms and ammunition.
- Boulet** René Boulet, living at 11 Avenue Bugeaud, Paris, France, obtained British Patent 614740 on 22nd December 1948. Granted to protect 'Improvements in or relating to Pneumatic Devices for throwing small projectiles', this included the essence of the Milbro →Cub squeeze bulb pistol. The British Patent contains the gist of two granted in France on 22nd November 1945 and 23rd May 1946, but the idea was by no means novel and had been preceded by a comparable U.S. Patent in the 1860s.
- Boult** Alfred Julius Boult worked as a consulting engineer and patent agent from the 1880s, from chambers at 323 High Holborn, London, England. He entered a loose partnership with William P. →Thompson about 1890, but this had ended prior to the formation of →Boult & Wade in 1896.
- Boult & Wade** This patent agency, a successor to Alfred →Boult about 1896 (though Anthony Tylerson suggests 1902 in *The Revolver 1888–1914*), acted for Walter →Benjamin and David →Mefford. British Patents 830/96 of 1896 and 12824/99 of 1899 are relevant. Boult & Wade were succeeded by Boult, Wade & Kilburn (1902–9), and then, from 1910, by Boult, Wade & Tennant.
- Bouniard et Barrière**; 17 rue de l'Épreuve, Saint Étienne, France. Listed in 1951 as gunmakers.

- Bourbon** Philip Bourbon: see 'Bouron'.
- Bourchez** A. Bourchez, a gunmaker based in Liège, Belgium, employed Richard →Long of London as his British representative in 1867.
- Bourderonnet**; rue Villeboeuf 10, Saint Étienne, France. Listed in 1879 as a gunmaker.
- Bourdevaux** Peter Bourdeveaux was listed as a member of the English gun trade in 1864–5, trading from 34 Hart Street, Bloomsbury, London.
- Bourgaud et Cie**; rue d'Annonay 9, Saint Étienne, France. Working as early as 1838, making cap-lock pistols 'in Scottish style'. Listed in 1879 and again in 1892 as a gunmaker.
- Bourne** Joseph Bourne; Birmingham, Warwickshire, England. Successor to 'Redfern & Bourne', this gunsmithing business—'Joseph Bourne & Son' from 1867—traded from 5 Whittall Street in 1849–78 and 9 St Mary's Row from 1879 onward. Sporting guns, rifles, pistols and revolvers, often destined for the African trade, have been reported with its marks. Bourne also maintained offices in London, operating from from 82 Mark Lane, London E.C., in 1877 and 4 Cullum Street in 1879–81.
- Bouron** Philippe Bouron of New Orleans, Louisiana, U.S.A., made a breech-loading dart gun with an under-barrel air reservoir. He has been recorded in Robert L. Gardner's *Small Arms Makers* at 257 Bayou Road, New Orleans in 1853 and 534 Chartres Street in 1860. However, Gardner also lists 'Philip Bourbon' in New Orleans in 1870–5, and is suspected that the two smiths are one and the same. Bouron's activities, therefore, spanned 1853–75 and possibly later.
- Bourzat**; petite rue Faure, Saint Étienne, France. Listed in 1879 as a distributor of and agent for arms and ammunition.
- Bowdler** William Bowdler, the inventor of a hand held pellet magazine (British Patent 1114/07 of 1907), lived at Reeves Street Farm, Bloxwich, Staffordshire, England.
- Bowe** George G. Bowe, an arms inspector working during the American Civil War, accepted rifle and carbine stocks marked 'GGB'. See also "U.S. arms inspectors' marks".
- Bowen** George F. Bowen, active in the late 1870s, could be identified by the initials 'GFB'. See also "U.S. arms inspectors' marks".
- Bowen** John Bowen. Trading in the Welsh town of Carmarthen, this gunsmith and ironmonger handled shotgun cartridges marked 'Myrddin'.
- Bowers** William J. Bowers, a U.S. government arms inspector working in 1938, accepted Colt pistols marked 'WJB'. See also "U.S. arms inspectors' marks".
- Bown** James Bown & Son; Enterprise Gun Works, Wood Street, Pittsburgh, Pennsylvania, U.S.A. The marks of this distributor, formed in 1871 by James and William H. Bown from the residue of Bown & Tetley (1842–70), will be found on a variety of firearms, including →Suicide Special revolvers and inexpensive shotguns. Trading ceased in 1884, when the assets were transferred to Bown & Hirth.

- Boxer** Edward Mounier Boxer (1823–98), commissioned into the Royal Artillery in 1839, is best known as the developer of the primer that now bears his name (see ‘cartridge’). Boxer became Superintendent of the Royal Laboratory, Woolwich, in the early 1860s and there developed a series of cartridges, fuzes and shells. The primer was distinguished by its own anvil, unlike the →Berdan pattern which had the anvil formed as part of the cartridge-case head. Ironically, Boxer primers have become more popular in North America than in Britain, where the Berdan version is preferred! Boxer was eventually forced out of the army, resigning his post in 1869 after a wrangle over the commercial exploitation of his patents.
- Box lock** This term is given to a shotgun with the strikers, springs, tumblers and associated components fitted inside the action body instead of carried on detachable side plates (cf., →side lock). The earliest successful box-lock gun was patented in 1875 by William →Anson and John →Deeley, and made by Westley →Richards of Birmingham. Box locks became universally popular when over-and-under shotguns became popular, but have never entirely displaced side locks on the best side-by-side doubles. Indeed, the construction of more than a few box locks has been disguised with false side plates.
- Boyd** Edgar B. Boyd, a Federal government arms inspector identified by the initials ‘EBB’, was active only in 1862. See also “U.S. arms inspectors’ marks”.
- Boyd** Francis E. Boyd of Hyde Park and Boston, Massachusetts, U.S.A., a ‘gun manufacturer’ active 1866–73, was the co-designer with P.S. →Tyler of the breech-loading shotguns protected by U.S. Patents 73494 and 88540 of 21st January 1868 and 6th April 1869 respectively. The barrel block pivoted on a longitudinal pin to expose the chambers.
- Boyd Breech Loading Arms Company** [The]; Boston, Massachusetts, U.S.A. This sales agency, operating from 81 Washington Street (1870) and 205 Broadway (1871–2), was formed to promote the shotgun patented in 1868–9 by Francis →Boyd and P.S. Tyler. The 10- or 12-bore guns were made in Boyd’s workshops in Hyde Park, Massachusetts, but had been overtaken by better designs when work ceased about 1873.
- Boyer** A. Boyer; Saint Étienne, France. Listed in 1933 as a gunmaker, and in 1951 at rue du 11 Novembre.
- Boyer** J.N. Boyer, a U.S. arms inspector working in 1905–6, accepted small arms marked ‘JNB’. See also “U.S. arms inspectors’ marks”.
- Boyington** C.M. Boyington, identified by the initials ‘CMB’, was active from 1901 until c. 1910. See also “U.S. arms inspectors’ marks”.
- Boyle** William Boyle: a gunmaker trading from 86 Leadenhall Street, London, England, in 1893–4.
- Boyle** William Robert Boyle of ‘The Chestnuts’, Finham, Coventry, Warwickshire, England, was granted British Patent 711542 to protect a lever-pumped pneumatic gun.
- Boynton** William E. Boynton was a U.S. government arms inspector, working in 1902–10, who accepted small arms marked ‘WEB’. See also “U.S. arms

inspectors' marks".

- Boy's Choice** A →Suicide Special revolver made in the U.S.A. by the →Hood Firearms Company of Norwich, Connecticut, in the late nineteenth century.
- Boy Scout's Rifle** An alternative designation for the 'Model 4S Military Model' →Remington rifle (rolling-block action) made by the →Remington Arms Company in 1913–33.
- Bozard & Company.** Listed as members of the English gun trade by H.J. Blanch, writing in *Arms & Explosives* in 1909, Bozard traded from 33 New Bond Street, London, in 1888–95 and 8 Bennett Street, London S.W., in 1896–7. The trading style then changed briefly to Bozard, Bedingfield, Philip & Company of 4 Panton Street (1898), and then back to Bozard & Company. Operations continued at the Panton Street workshop into the twentieth century.
- BP** or **B.P.**, and a crown, encircled. This mark was applied by the Budapest proof house (Austria-Hungary, then Hungary) from 1891 until 1948, originally accompanied by an →NPB nitro proof mark and then simply appearing above 'FN'. See also 'F, encircled'.
- BP** and a crown, often encircled. The definitive black-powder proof mark applied by the Guardians of the Proof House in Birmingham, England, 1904–54.
- BP** often in the form of superimposed monograms. Marks associated with Bernhard →Paatz of Mehlis and Zella-Mehlis, found on the grips of small open-frame revolvers, often with folding triggers, made prior to 1914.
- BP** monogram. This mark, with letters addorsed or 'back to back', was used by the →Eidgenössische Waffenfabrik, Bern, Switzerland, as a proof mark. Known as the 'Bernerprobe', it had replaced a small Federal Cross in 1919.
- BPC** with crossed sceptres and a crown: see 'BCP'.
- bpd** On optical equipment made in Vienna during the Second World War by C.P. →Goerz GmbH. The equipment was used by the German armed forces.
- BPD, B.P.D. or B P D** Found in the headstamps of cartridges made by →Bombrini, Parodi e Delfino.
- bpr** This mark was used in 1941–5 by Johannes →Grossfuss of Döbeln in Sachsen, on machine-guns and small-arm components made for the German armed forces.
- BR** beneath a crown, above a number. A mark applied by an inspector working in the →Royal Small Arms Repair Factory in Birmingham. See also "British military inspectors' marks".
- Bradbury** W.F. Bradbury, a U.S. government arms inspector working in 1898–1902, accepted small-arms marked 'WFB'.
- Bradbury** William Bradbury was a U.S. Federal government inspector, working in the early 1860s, who accepted small arms marked 'WB'. See also "U.S. arms inspectors' marks" for both entries.
- Braddell** James Braddell & Son, one of Ireland's best known gunmakers, trading from Arthur Street in Belfast, handled a wide range of guns and accessories. These included shotgun cartridges, which were sold under names such as 'Castle', 'J.B.', 'Mors' and 'Victory'. The cartridge cases often display a

trademark consisting of a 'JB' monogram on the Badge of the O'Neill family (the so called 'Red Hand of Ulster'). Braddell also supplied substantial quantities of →Winchester rifles to the British authorities in 1941.

Braddick Ltd Fabricators of silencers for the British Mk IIS →Sten Gun, together with →Auto-Engineering. Location and manufacturer's code unknown.

Braeckers Charles Braeckers & Cie; Liège, Belgium. A maker of gun parts, bayonets, sword-hilts and ironmongery, founded in the 1880s and trading until the First World War.

Braendlin Francis Augustus Braendlin, possibly of Belgian origin, worked for the Mont →Storm Gun Works in 1863–5. Braendlin was the designer of a breechloading rifle protected by British Patent 2147/63 of 31st August 1863, and co-patentee with William Mont →Storm of a modification to the latter's breechloading system protected by British Patent 708/65 of 14th March 1865. He was also the co designer with Augusto →Albini of the breechloading system protected by British Patents 2243/66 of 30th August 1866, 2652/66 of 13th October 1866, and 460/67 of 20th February 1867. Braendlin was the senior partner in →Braendlin & Sommerville, and then associated with the →Braendlin Armoury Co. Ltd.

Braendlin Armoury Co. Ltd [The]. Trading from 1–3 Lower Loveday Street, Birmingham, Warwickshire, England, this business was formed in 1871 to purchase the assets of Francis Augustus →Braendlin (who had been trading as →Braendlin & Sommerville). Among the major shareholders were several local gunmakers, including William →Powell and his son. Initially managed by George Conrad Braendlin, son of Francis Augustus, the Armoury concentrated on the importation of Belgian made rifles and shotguns. It was a licensee of patents granted to Friedrich von →Martini—specifically British 2305/68 and 603/70—and also of British Patent 1531/80, granted to A. →Martini. This enabled the Martini-Marres-Braendlin →Mitrailleuse pistol to be made in small quantities, but trading steadily declined and the Braendlin Armoury Co. Ltd was liquidated voluntarily in 1888.

Braendlin Armoury Company [The]. This dealership in guns and ammunition, operated by Charles E. →Greener in Birmingham, England, may have inherited either the Lower Loveday Street premises or the stock of the original Braendlin Armoury (above). Representation was maintained in London at 63 Cornhill (1886–95) and 13–14 Abchurch Lane (1896–8). It continued to trade on into the First World War, disappearing c. 1915.

Braendlin & Sommerville, *also known as* 'Braendlin, Sommerville & Company', was formed in England in 1867, partly to promote rifle muskets converted to the Albini-Braendlin breech loading system but also to make revolvers incorporating an extractor mechanism patented by →Galand & Sommerville in 1868. Trading from 1–3 Lower Loveday Street, Birmingham, Braendlin & Sommerville were succeeded in 1871 by the →Braendlin Armoury Co. Ltd.

Braithwaite John Braithwaite, often wrongly recorded in Birmingham, was listed at 91 Briggate, Leeds, Yorkshire, in 1833–61.

- Brand** Arms inspector C.A. Brand, a U.S. Navy lieutenant, accepted →Smith & Wesson revolvers at the end of the nineteenth century. The guns were marked 'CAB'. See also "U.S. arms inspectors' marks".
- Brand** Richard Farmer Brand. Designer of the distinctive breech loading carbine made in small numbers by by →Calisher & Terry. The gun was the subject of British Patent no. 1870 of 1853; made until c. 1860, it was distinguished by a large hinged ring on the rear of the breech behind the hammer.
- Břandejs**, *sometimes listed as 'Brandeis'*. Bedrich Břandejs, born in 1851 in Prague, Bohemia, was apprenticed to the gunmaker →Lebeda, becoming manager of the gun-shop in 1871. He was granted patents in 1872 to protect improvements to shotguns and breechloading rifles, but soon concentrated less on gunsmithing and more on journalism. His published works included *Die Moderne Gewehrfabrikation* (1886) and *Die Handhabung der Feuerwaffen* (1902); he was also responsible for the magazines *Ceský Střelec* (1884–6) and the much more influential *Der Waffenschmied* (Munich, 1881–90). Brandejs died in October 1918.
- Brand name**: see 'Trademarks and brand names'.
- Brandon** Joel P. Brandon, a gunmaker, traded from 119a Oxford Street, London, England, in 1873–7.
- Brant** [The] Found on shotgun cartridges loaded by the →Chamberlain Cartridge Company of Cleveland, Ohio.
- Bratt Colbran Ltd**; Lancelot Road, Wembley, Middlesex, England. Makers of magazines for the British 9mm →Sten Gun during the Second World War. The code 'S 159' may have been used instead of the company name. See also "British military manufacturers' marks".
- Braungardt** Leonhard Braungardt; Suhl in Thüringen, Germany. A gunsmith active in 1939.
- Braungardt** W. Braungardt; Suhl in Thüringen, Germany. A maker of sporting guns and accessories, founded in 1883. Listed in 1920 as a gunsmith, and in 1930–9 as 'Wilhelm Braungardt', gunsmith/gunmaker. The owner was then Fr. Härting.
- Bray** Alfred Bray & Son (also listed as 'A. Bray & Co. '); Leicester, England. Makers of .303 →Vickers machine-gun tripods during the Second World War. These may be marked simply 'M 602'. See also "British military manufacturers' marks".
- Bray** Edward P. Bray; New York City. Co designer with Joseph →Merwin of an auxiliary cap lock ignition system used on →Ballard guns during the American Civil War. This was protected by U.S. Patent no. 41166, granted on 5th January 1864.
- Brazier** Joseph Brazier [& Sons]; Wolverhampton, Staffordshire, England. One of Britain's most prolific manufacturers of gun-locks, initially also listed as a gun and pistol maker, Joseph Brazier—perhaps the son of Benjamin Brazier (working c. 1815–30) began his career in Great Brick-kiln Street in 1827, but claimed origins extending back to the middle of the eighteenth century. The

factory being named 'The Ashes' in the early 1830s. A move to Lord Street occurred in the early 1880s, possibly after the Brazier family lost control, but the Ashes name was retained. The trading style became '& Son' in 1849, then '& Sons' in 1874. J. & R. Brazier displayed gun locks at the Great Exhibition held in London in 1851; Joseph was also the recipient of British Patent 760 of 1855, protecting a rammer for the →Adams self-cocking revolver. British Registered Designs were granted for a spring clamp and a locking vice (1056 and 1068 of 1859 respectively). →Anson & Deeley actions were made under licence from Westley →Richards, from 1876 onward, and a patent granted in November 1896 (25994/96) to G. Brazier and W. Cashmore, protecting a safety catch for hammerless sporting guns, was also used. The quality of the gun locks could often be assessed from their markings—the cheapest may often have gone unmarked, or borne nothing but 'IS' or 'JS'; the next group bore Brazier's name; and the best included both the Brazier name and 'Ashes'. Work continued until the the business was acquired by Edwin →Chilton & Company in the 1920s (?). See also 'William →Mansfield' and 'William →Cashmore'.

Brazier Thomas Brazier; Wolverhampton, Staffordshire. Listed in local directories as a gun-lock maker (1827–31), trading from Bloomsbury Street, and then as a gun and pistol maker until 1872. He was probably a brother of Joseph, but confirmation is lacking.

Brazier J. & R. Brazier; Wolverhampton. This is believed to have been an alternative trading style of what is customarily better known as 'Joseph Brazier & Son'.

BreakO, Break-O A recoil-suppressing system fitted since the late 1980s to some of the rifles made by H. →Krieghoff of Ulm/Donau.

Breda Ernesto Breda [Società Italiana Costruzione Meccaniche, or 'SICM']. Based in Brescia, this business was renowned more for its heavy guns than small arms. However, the Greek-type Mannlicher-Schönauer rifles used by the Austro-Hungarian armies during the First World War were given to Italy in 1919, together with surviving spare parts. They were subsequently refurbished and, ironically, shipped to Greece.

Breech The rear end of the action (q.v.), containing the breech block and giving access to the chamber. See also 'receiver'.

Breech block, breech-block Any non cylindrical means of closing a breech. Breech blocks may take a wide variety of forms C e.g., sliding vertically, pivoting laterally, or tipping upward.

Breech bolt: see 'bolt', above.

Breech Loading Armoury Co. Ltd An English gunsmithing business registered at 4 Pall Mall, London, in 1861-4. Products unknown.

Brecht Gustavus V. Brecht or 'Brecht'; St Louis, Missouri, U.S.A. A maker of butchers' knives and spring air →Gallery Guns active in 1864–75.

Breda Meccanica Bresciana This well established engineering organisation is far better known for its shotguns, sporting rifles, military vehicles and railway

locomotives than the crude spring air 'BMB' brand pistols with which it is sometimes associated.

Breen John J. Breen. A captain in the U.S. Army, this arms inspector accepted the →Colt revolvers marked 'JJB' in 1886. See also "U.S. arms inspectors' marks".

Breitenstein J. Breitenstein; St Louis, Missouri, U.S.A. A maker of sporting rifles and spring air →Gallery Guns active in 1865–70.

Bren Gun The end of the First World War, heralded as the advent of the Great Peace, presented most armed forces with paradoxical arguments. The reduction of the army establishment to a fraction of its wartime strength led to the scrapping of thousands of guns; on the other hand, however, the emergence of new types of firearm could not be ignored. Among the most important new infantry small arms were the 'machine pistol' (submachine-gun) and the light machine-gun, and most military agencies were well aware that development work was needed to keep abreast of their rivals.

¶ Trials were eventually undertaken in Britain in December 1922 with a bipod-mounted Browning Automatic Rifle, a Danish Madsen, a Beardmore-Farquhar, a Hotchkiss and a lightened Lewis Gun. Apart from the Beardmore-Farquhar and Lewis, both of which had pan magazines, the guns all fed from detachable boxes on top of the receiver. Reports submitted by the 13th Hussars and the Dorset Regiment suggested that none of the guns were good enough to replace the Lewis Gun in British service, though the Browning Automatic Rifle performed sufficiently well in supplementary tests to persuade the Small Arms Committee to recommend it for standardisation. Procurement of the 'Browning Light Machine Gun' then fell foul of the Treasury and the project proceeded no farther than some prototypes.

¶ The Beardmore-Farquhar performed well in trials undertaken in 1919 by the Royal Air Force, encouraging the promoters to enter a modified version in the Army light machine-gun trials. An unusual combination of gas and spring action allowed the weapon to be slightly built by the standards of its day, weighing merely 16½lb with a 77-round pan magazine. This was appreciably less than the Lewis Gun, but the Small Arms Committee worried about the exposure of the operating mechanism to the elements.

¶ Owing to lack of enthusiasm for new weapons, and a perceived lack of need, the trials meandered through the 1920s. Improved Beardmore-Farquhars were tested against French Mle. 24 (Châtelleraut) and Swiss Furrer designs. A .303 Browning Automatic Rifle proved inferior to the original .30-calibre pattern and was swiftly abandoned.

¶ By 1930, work was concentrating on the Browning Automatic Rifle, a Vickers-Berthier, a Danish Madsen, a Hungarian Kiraly—all chambered for the rimmed .303 cartridge—and the 7.9mm Czechoslovakian ZB vz. 27. The tests were undertaken with a commendable attention to detail, including accuracy, endurance and handling characteristics. The ZB vz. 27 was eventually preferred to the Vickers-Berthier, though differences in chambering (7.9mm

and .303 respectively) hindered direct comparison.

¶ The ZGB had originated in a series of guns designed in the early 1920s by Vaclav Holek for Zbrojovka Praga. Beginning with the Praga 1, Holek had progressed by way of the Praga 2a and 1-23 to the perfected M-24 'Hand-held Machine Gun'. No sooner had this been adopted by the Czechoslovakian army, however, than the Praga company encountered such severe financial problems that production was switched to the state-owned Zbrojovka Brno.

¶ Once technicians had made some minor changes to facilitate mass production, the M-24 became the ZB vz. 26. Series production began immediately in Brno for the armed forces, but improvements in the bolt and gas system soon led to the vz. 27. The principal difference concerned the method of unlocking the bolt, which was achieved by cam tracks on the outside surface of the piston-rod extension (vz. 26), acting on the front of the breech-block, or by a cam surface on the piston post (vz. 27) acting towards the rear of the breechblock. The vz. 27 was not standardised by the Czechoslovakian army, where it was superseded by the vz. 30. This had an additional safety lug on the barrel lock-nut collar, a stronger piston and a better gas-regulation system. Czechoslovakian machine-guns were very popular prior to the Second World War, selling in large numbers. Production licences were granted to Romania and Yugoslavia, whilst Brno-made examples went to (among others) Bulgaria, China, Portugal and Turkey.

¶ Cartridge-compatibility problems with the ZB vz. 27 were overcome by ordering a .303 version, the prototype ZGB Model 1 arriving in Britain from Brno early in 1931. It soon proved to be good enough to see off an improved Vickers-Berthier and a .303 Darne in the summer of 1931, though excessive fouling accumulated at the gas port and the action had too little power to extract and eject satisfactorily in adverse conditions. Holek altered the ZB vz. 30 Model 1 in 1932 (perhaps in the Enfield workshops) and the short-tube version performed well enough to convince the British to continue work.

¶ The improved ZGB Model 2 of 1932 also had its gas port closer to the breech, but the body and barrel assembly were allowed to slide back against a buffer to reduce the recoil sensation. The ZGB Model 3 (also dating from 1933) had a new thirty-round magazine and an attachment for an experimental 'Tele-Lensatic' sight under development for the Vickers Gun.

¶ Virtually a prototype of the perfected Bren Gun, the ZGB Model 4 of 1934 had a shorter barrel than the preceding guns. The fins radiating from the barrel were abandoned, as they complicated manufacture out of all proportion to their beneficial effect on cooling; it was far easier to provide exchangeable barrels. The back sight of the ZGB Model 4 lay on the receiver behind the magazine, and the rate of fire was reduced from 600 rds/min to 480 rds/min to reduce dispersion. The ZGB Improved Model 4 (also known as the Model 4 Type 2), the last gun in the series, had a vertical back sight notch-plate. Two examples were tested in January 1934, identifiable by the auxiliary handle beneath the butt to allow an underhand grip.

¶ A total of 62 Improved Model 4 machine-guns, ordered from Czechoslovakia in December 1934, appeared in Britain early in 1935. The success of the trials, the finalised ZGB was approved for British service under the acronym 'Bren' (for Brno and Enfield) and a production licence was signed on 24th May 1935.

¶ Though 84 'Guns, Machine, Bren, .303-inch Mark I' were sought from Brno in April 1936, the first of ten thousand ordered from the Royal Small Arms Factory at Enfield on 13th November 1936 was completed in September 1937. The order was completed in May 1939 with the assistance of BSA Guns Ltd (which supplied the butts, bipods and carrying handles). The first British-made Bren Gun was test-fired on 3rd September 1937 and series production began in Enfield in the Spring of 1938. In October 1938, a supplementary order for five thousand was given to the John Inglis Company of Toronto, the first Canadian-made Mk I being test-fired in March 1940.

¶ The first seventeen tripod mounts (copied from the ZB 206) came from Brno in November 1937, destined for India. They were successful enough to persuade the British authorities to place a 3500-piece order for 'Mounts, Tripod, Bren, Mark I' with BSA Guns Ltd in 3rd February 1939; more than 127,000 Mk I and Mk II tripods had been made in Birmingham when the Second World War ended, though most were destined to spend their lives in store.

¶ When the Second World War began in September 1939, Enfield had received orders for 15,512 Mk I Brens. Production was so slow and deliberate that the last guns from these pre-war contracts were delivered only in 1942. Consequently, the Bren was only just displacing Lewis Guns from front-line service when war hostilities began. The loss of vast quantities of equipment on the beaches of Dunkirk soon reduced the inventory of Bren Guns to just 2130, forcing the British, fearful of imminent German invasion, to impress obsolescent Lewis and Hotchkiss guns from store. Production of Bren Guns was put on a better footing, and attempts were made to simplify the basic design.

¶ Orders placed for Bren Guns between 3rd September 1939 and 14th March 1944 amounted to 416,658, roughly 220,000 emanating from the Enfield factory in 1940-6. Most of the others were made in Canada by Inglis of Toronto, or in Britain under the Monotype Scheme. Monotype & May Ltd, the power behind Britain's leading manufacturer of type-casting machinery, intended to make Bren Guns by combining components made by an engineering syndicate-minimising disruption if any of the individual factories were disabled by air-raids.

¶ The principal participants were the Daimler Co. Ltd, the Hercules Cycle Co. Ltd, the Monotype Corporation Ltd, the Climax Rock Drill & Engineering Company, Tibbenham & Company, the British Tabulating Machine Co. Ltd and Sigmund Pumps Ltd. Each company made only a few individual components, which were then assembled into Bren Guns in the Monotype factory in Salfords (near the small Surrey town of Redhill) where four hundred guns

were completed weekly. Construction of an additional proof-firing range near the Climax factory in Carn Brea was authorised in October 1940. Beginning with five thousand Brens ordered in January 1940, the Monotype Scheme produced 83,438 guns; the final ten thousand were ordered in March 1944.

¶ Many other engineering companies were recruited to accelerate production. The origin of these parts are often identifiable by numerical codes, prefixed by letters 'M', 'N' and 'S' indicating that the factories were in the Midlands, the north or the south of Britain respectively. Participants ranged from the Austin Motor Company Ltd ('M 13'), which made box magazines and magazine components in its Longbridge Works, to Wilson & Mathieson Ltd of Leeds ('N 90'), a maker of parts for the 100-round drum magazine.

¶ Tooling had begun in the Toronto factory of the John Inglis Company in 1939, but production was still insignificant by the period of the Dunkirk evacuation. However, Inglis subsequently made Bren Guns for Canadian and British forces, about 120,000 .303 guns in 1938–43, and also for China (about 43,000 7.9mm guns in 1943–5). A few experimental .30–06 guns were also made.

¶ The Mark I, the original .303 weapon approved in 1935, was superseded by the Mark I (Modified). Introduced in the autumn of 1940, this .303 Bren Gun had an angular (Mk 1*) receiver, lacked the bracket for the optical sight, and the barrel-handle base became a simple welded tube. The butt slide (Mk II) was simplified and a new bipod (Mk II) was fitted. The Mk I (Modified) Bren was made only by Enfield in Britain, though some were subsequently made in Australia in the Lithgow factory. These have Australian Mk 3 bipods. Approved in June 1941 and made exclusively under the Monotype Scheme, the .303 Mark II had a simpler body, a leaf-pattern back sight, a fixed cocking handle instead of the folding pattern, a simple stamped butt plate, a modified barrel with a detachable flash-hider/front-sight assembly, and a single recoil spring instead of two in the butt. The guns were originally made with Mk II bipods, but so many were repaired or altered at a later date that hybrids will be found.

¶ The Mark 2/1, Introduced in 1943, was simply a .303 Mark II with a modified cocking handle and slide assembly, replacing the simplified fixed pattern developed in 1940. It was supplemented by the .303 Mark 3 (approved in May 1944), with a shorter barrel, a lightened receiver, simpler magazine-well and ejection port covers, and a plain (Mk 4) butt. Mk I or Mk 3 bipods were standard. Approved concurrently with the Mk 3 to conserve raw material, the Mark 4 had a modified Mk II-type barrel cradle, noticeably less metal in the receiver, and an ultra-short barrel with a new flash-hider.

¶ The C. Mk I, the standard Canadian version of the .303 Bren Mark I, was made exclusively by Inglis in Toronto; C. Mk I Modified was essentially similar to the Enfield-made .303 equivalent; and C. Mk II had a distinctive Canadian-made variant of the Mk 3 bipod.

¶ The .303 round clearly had no long-term future in British service after 1945,

and many British Bren Guns were eventually converted to accord with NATO standards. The Canadians, after experimenting with .280 and .30 T65 Bren adaptations, accepted the heavy-barrelled FAL (which subsequently proved to be a grave error). Ironically, in its Inglis-made form, the Bren Gun had already proved to be capable of handling cartridges such as the German 7.9mm (known as '7.92mm' in Anglo-Canadian service) and US .30-06.

¶ After the experimental .280 round had been abandoned, the British decided to convert the .303 Mk 3 Bren to chamber the standard 7.62×51mm NATO cartridge, an X10E1 prototype being made at Enfield in 1954. It had a modified Canadian 7.92mm breech-block, a barrel rifled with four grooves twisting to the right, and a special thirty-round magazine designated X3E1 (later L3A1).

¶ The conversion was so successful that 1500 guns were altered at Enfield in 1955-7, and issued from November 1957 as 'Guns, Machine, Light, 7.62mm L4A1'. Attempts were also made to adapt the Bren as a sustained-fire machine-gun (SFMG), but nothing came of this project or the belt-fed .280 Taden. Designed by Reginald Turpin ('T'), the Armament Design Establishment ('AD') and Enfield ('EN'), this modified tripod mounted belt-fed Bren was replaced in the mid 1950s by another Bren-type SFMG designated 'X11'. BSA made a single X16, an elegant and allegedly very efficient belt-feed Bren credited to Josef Vesely, but political pressure to adopt the FN-designed MAG was too strong.

¶ The short-lived L4A1 Brens were replaced by an improved X10E2, standardised as the L4A2; nearly eight thousand were ordered in 1959. The 7.62mm L4A4 Bren Gun proved most useful during the South Atlantic campaign of 1982, not least because it could accept the standard twenty-round L1A1 rifle magazine in an emergency. The L7 GPMG was much more cumbersome than the Bren in a light support role, but the L4 series was replaced by the 5.56mm L86A1 Light Support Weapon...a very poor tool by comparison.

¶ Experimental adaptations of the Bren made prior to 1939 included 7.92mm DD/E/2143, developed to standardise ammunition with the Besa. This gun was hastily abandoned when the Second World War began, though trials had already shown its great potential. Enfield converted a few Bren Guns to .30-06 in 1947-8, for delivery to Italy; Brens in this chambering were also made in Canada (very few) and China (large numbers). The 7.62mm-calibre service patterns began with the L4A1, approved in 1957, a conversion of the .303 Mk 3 Bren Gun. It accepted an improved L3A2 magazine and was accompanied by two barrels. Most L4A1 guns were subsequently converted to L4A2 standards. Converted from Mk 3 Brens in 1959-61, L4A2 accepted the finalised 7.62mm L4A1 magazine. The extractor and the ejector were improved, the breech-block was modified to make production easier, and changes were made to the magazine-well aperture. L4A3 was a variant of the 7.62mm L4A2, issued with a single chromed-bore barrel instead of two standard ones. Converted from the .303 Mk 3, the L4A3 is rarely seen: only a few hundred were made for British

service, all but 134 being sold to Libya in 1961–2.

¶ The standard British 7.62mm L4A4 Bren Gun, accompanied by a single chrome-lined spare barrel, was converted from wartime Mk II (rare) or Mk 3 (common) guns in 1960–1. Seven thousand were made in this way, and another five hundred were assembled from a mixture of newly-made parts and old-but-unused parts taken from store. Converted from the .303 Mk II, the 7.62mm L4A5 pattern was approved for Naval Service in April 1960; the guns were generally comparable with the L4A4, but were issued with two chromed-bore barrels. Approved in November 1960, L4A6 was a 7.62mm L4A1-type gun with the magazine-well aperture altered to accept the perfected L4A1 magazine instead of the L3A2. It also had a chromed-bore barrel. The solitary 7.62mm X10E6 prototype, also known as 'L4A7', was converted from a Mk I Bren in 1962.

¶ Guns designated 'IA', by the Indian Army designation, are Ishapur-made .303 Mk 3 Bren Guns converted for the 7.62×51mm NATO round.

¶ By far the best source of information is Tom Dugelby's *The Bren Gun Saga* (Collector Grade Publications, 1986), though Miroslav Sada's *Ceskoslovenské rucní palné zbrane a kulometry* (Prague, 1971) is helpful if the language barrier can be overcome. A summary of helpful information can also be found in *Guns of the Empire* by George Markham (Arms & Armour Press, 1990).

Bren Gun accessories Bren Guns will be encountered on three differing tripods: the original Mk I, with folding legs and an anti-aircraft adaptor; the simplified Mk II with fixed legs, introduced about 1941; and the lightweight Mark II* of 1944, intended for airborne troops. Among the special anti-aircraft mounts developed during the Second World War were the Motley cradle and the 'Gate', with guns suspended from overhead frames. The Lakeman Mount, a pendent system popular on armoured vehicles in 1940–1, had a large coil spring behind the support arm.

¶ Even the earliest Bren Guns proved to be very efficient, but the magazines were troublesome. The basic design had soon proceeded from the Mk I to the perfected Mk II* by way of Marks I*, I*** and II. Total production of the .303 box magazines was approaching ten million when the war ended. The Enfield factory had been the sole source until May 1939, when new contractors were recruited: the Austin Motor Co. Ltd ('M 13'), BSA Guns Ltd ('M 47'), the Hercules Cycle Company ('M 117'), the Monotype Corporation Ltd ('S 81'), and Wilson & Mathieson ('N 90'). The roster was subsequently extended on more than one occasion. Fifteen thousand fourteen-round chargers were made in 1944–5 by Elkington & Co. Ltd ('M 78') and Lines Bros. Ltd ('S 68').

¶ The success of the Bren Gun encouraged the British authorities to find it additional roles. Though the limited capacity of the box magazine was clearly a limiting factor in any situation which demanded sustained fire—e.g., infantry support or anti-aircraft use—the problem had been recognised as early as 1937, when Vickers-Armstrong supplied six modified sixty-round Vickers-Berthier pan magazines for trials. Two experimental 100-round

drum magazines were acquired from the same source in 1938, but were not successful. Eventually, however, a new design was adopted for service. Mark I magazines of this pattern were made by the Austin Motor Co. Ltd ('M 13'), Lines Bros. Ltd ('S 68'), the Vickers-Armstrong factory in Bath ('S 121'), and Wilson & Mathieson ('N 90'); and Mark II examples—with a folding 'L'-shape winding handle—by ESS (Signs) Ltd ('S 223'), V. & N. Huntley ('N 29'), Sigmund Pumps Ltd ('N 65') and Waygood Otis Ltd ('S 292'). Production is said to have approached 950,000, but this may be the total orders instead of actual quantities. In addition, 147,500 filling tools were made in 1941-2, nearly half by Lines Bros. Ltd ('S 68'). A special 200-round High Speed Drum magazine was developed for anti-aircraft use, but made only in small numbers.

Bren Manufacturing Company; Gateshead, Northumberland, England. Formed in 1942, this metalworking business made components for the →Bren Gun. Coded 'N 10', they included piston parts and sears. Assembly of piston and breech block units was also undertaken.

Bren Ten A short-lived U.S. adaptation of the →Ceska Zbrojovka CZ 75, developed for the 10mm Norma cartridge by Jeff Cooper. The gun was introduced by →Dornaus & Dixon in 1983, but, though offered in a range of options—'Pocket Model', 'Military & Police Model', 'Dual-Master Presentation Model' (10mm/.45 ACP)—had disappeared within a few years owing to the failure of manufacturing facilities to match demand.

Brenier et Cie; 68 rue Antoine Durafour, Saint Étienne, France. Listed in 1951 as a gunmaker.

Brennan The marks of Sydney J. Brennan, trading from 155 Upper Thames Street, London, England, from 1899 until the First World War, have been reported on sporting guns and ammunition.

Brenneke Wilhelm Brenneke; Leipzig and Berlin. This well-known German gunsmith was concerned more with development of ammunition than sporting guns, though rifles embodying Oberndorf →Mauser actions were made from 1912. They chambered the distinctive 7×64, 8×64 or 9.3×64 Brenneke cartridges introduced in 1912-24. The 8mm chambering reappeared in the late 1950s when W. Brenneke GmbH of Berlin Schöneberg, a resurrection of the pre 1945 company, began to make sporting rifles on the basis of old war surplus or new →FN Mauser actions.

Brescia arms factory This Italian government-owned arms factory made, amongst other equipment, 6.5mm →Mannlicher-Carcano service rifles marked 'FAB'.

Bretton; 6 cours Fauriel, Saint Étienne, France. Listed in 1951 as a gunmaker, renowned for the 'Bretton' and 'Baby Bretton' shotguns made in small numbers by →Société Générale de Mécanique of Saint Étienne. The lightweight Bretton had barrels which could slide forward on rails anchored in the frame. A radial locking lever lay on the right side of the breech. The barrels could be removed from the mounting collar at will, allowing the firer to select differing combinations.

- Breuer** Eugène Breuer; Liège. A Belgian gunmaker, active in the 1850s and 1860s. The family gunmaking business maintained an agency in Turin, managed by Alphonse Bormans, Breuer's brother in law.
- Breuil** Claude Breuil; 4 rue de Rozier, Saint Étienne, France. Listed in 1951 as a gun barrel maker.
- Breuil** Jean Breuil; 13 rue Montesquieu, Saint Étienne, France. Listed in 1951 as a gun barrel maker.
- Brewer** Eugene Brewer. A member of the English gun trade, occupying premises at 37 Queen Street, London E.C. (1877–81), and 9 New Broad Street, London (1882–5).
- Brewer** Nicholas Brewer. This gunmaker-inventor has been credited with development of, among other things, the →Savage Model 110 bolt action rifle.
- Brewer** Roland L. Brewer. Recipient of U.S. Patent 239414 of 5th April 1881, protecting the construction of a 'base-pin catch for revolvers'. →Suicide Specials of this type were made before the grant of the patent by the →Pittson Arms Company and then by its successor, the Lee Arms Company of Wilkes-Barre, until 1889.
- Brewer & Son** An English patent agency with chambers at 33 Chancery Lane, London, and 7 East Parade, Leeds, Yorkshire, Brewer & Son advised William S. →Armstrong and Andrew →Forbes.
- brg** Used in 1941–5 on Kar. 98k and other German small arms components made by H.W. →Schmidt of Döbeln in Sachsen.
- Briden** George Briden. An English gunmaker listed by H.J. →Blanch among the many active in London in the fifty years from 1850 onward, Briden was trading from 30 Bow Street, London W.C., in 1856.
- Bridesburg Machine Works:** →'Alfred Jenks'.
- Bridge Gun:** →'Billinghurst & Requa Gun'.
- Briggs** George W. Briggs; New Haven, Connecticut. Patentee on 16th October 1866 (U.S. no. 58937) of an improved magazine for the →Henry rifle, assigned to →Winchester.
- Briggs** Henry A. Briggs; Norwich, Connecticut. Co-patentee with Samuel →Hopkins of a 'revolving firearm', U.S. Patent no. 41117 of January 1864, assigned to themselves in association with Charles A. Converse. Briggs subsequently moved to Philadelphia, where he was granted U.S. Patent 327860 (October 1885) to protect a 'breech-loading firearm'.
- Briggs** Horace A. Briggs; Norwich, Connecticut. Assumed to have been the son of Henry Briggs (above), this gunsmith was granted U.S. Patent 429110 of 3rd June 1890, jointly with William W. Armington, to protect a 'firearm'. He also received, jointly with Charles →W. Hopkins, son of Samuel Hopkins, U.S. Patent 498366 of January 1893.
- Briggs** William Briggs; Main Street Street and later West Main Street, Norristown, Pennsylvania. Trading from the late 1840s until 1876, Briggs designed a 'Gun-Lock' and a lever-operated breech mechanism that slid the barrel forward to give access to the chamber: U.S. Patents 25244 of 30th

August 1859 and 88605 of 6th April 1869 respectively.

Bristol, often as *"The Bristol"*. Found on shotgun cartridges sold by George →Gibbs of Bristol, and on others loaded from →Eley-Kynoch components by T. →Page-Wood of Bristol.

Bristol A.J. Bristol, a U.S. government arms inspector, accepted →Remington revolvers and →Sharps carbines in the 1870s, marking them 'AJB'. See also "U.S. arms inspectors' marks".

Bristol Fire Arms Company; Bristol, Rhode Island, U.S.A. In 1855, before the patent had been granted, Ambrose →Burnside had organised the Bristol Fire Arms Company in Bristol, Rhode Island. Unfortunately, the army order of September 1858 was small—merely for 709 guns—and the absence of large scale orders coincided with a severe economic depression that hit the New England firearms industry particularly badly in the autumn of 1857. In desperation, Burnside sold his patents to his creditors and the Bristol Fire Arms Company went into liquidation.

Britannia A spring-type air rifle with the air cylinder in the butt, designed by Frederick S. →Cox in 1902–4. It was a greatly improved form of the →Gem. The barrel cocking Britannia had the merits of compact design, particularly compared with its near contemporary, the →Jeffries Pattern, but only about four thousand were made in 1905–9 by C.G. →Bonehill. Though there was a weakness in the trigger mechanism, the Britannia probably failed because BSA marketed the Jeffries Pattern rifles with far greater resources than Bonehill could bring to Cox's design. The Cox type Britannia was superseded by the →Improved Britannia of Bonehill & Homer, which was unarguably an inferior design. True Britannia rifles often bear retailer's brand names, principally the 'Anglo Sure Shot Mark I' of →Ramsbottom of Manchester.

Britannia Found on a telescoping-barrel air pistol dating from the 1930s. Despite being marked 'Made in Britain', this may still prove to be a Mayer & Grammelspacher →Diana LP2.

Britannia A brand name (often listed as "The Britannia") associated with shotgun cartridges marketed by J. →Mather & Company of Newark and Southwell, but made by J.R. →Watson & Company of London.

British Bulldog, or, alternatively, *'British Bul-dog'*. This mark will be encountered on compact six-shot double-action .320 and .380 revolvers, based on the Webley →Bulldog but customarily made in Belgium prior to 1914. Most have rounded or bird's-head butts, lanyard rings being optional. Not all give clues to their manufacturers, though some bear either the crowned 'R' or the name of J.B. →Rongé fils.

British Bull Dog A brand name associated with a .38 single action →Bull Dog type revolver made in the U.S.A. by →Forehand & Wadsworth c. 1879B83.

British Bull Dog Found on →Suicide Special revolvers made by the →Hopkins & Allen Arms Company of Norwich, Connecticut, U.S.A., in the late nineteenth century.

British Bull Dog A double action .38 and possibly also .41 revolver introduced in

the U.S.A. by →Johnson & Bye in 1881.

British Champion [The]. Found on shotgun ammunition loaded by the →Mullerite Cartridge Works of Birmingham, England, c. 1925B35.

British Constabulary, or '*British Constable*'. This mark was associated with Belgian-made five- or six-shot .44 or .450 revolvers, similar to the →British Bulldog but larger. Dating prior to 1914, they have squared butts and lanyard rings. Few bear manufacturers' marks.

British & Foreign Lee Arms Co. Ltd Registered at 23 Queen Victoria Street, London, from 1900 onward, this business was formed to look after the patent rights of the inventor James P. →Lee.

British Lion Airgun pellets apparently made by →Kynoch, possibly correctly known simply as 'Lion'.

British Magazine Rifle Co. Ltd This business occupied premises at 13 Austin Friars, London, from 1896 until the early 1900s.

British military inspectors' marks Unlike their U.S. counterparts, these cannot be linked with individuals merely by deciphering initials. The standard form was a crown above an identifier of the factory (e.g., 'E' for 'Enfield') above the number of the individual inspector. No list of numbers and names has yet been published, but the agency codes were 'B' or 'SK' for the →Royal Small Arms Factory in Sparkbrook, Birmingham (Roman or upright); 'B' (cursive) for the →Birmingham Small Arms Co. Ltd and →BSA Guns Ltd; 'BR' for the →Royal Small Arms Repair Factory in Bagot Street, Birmingham; 'E' for the →Royal Small Arms Factory, Enfield Lock; 'GRI' for the →Ishapore factory in India; 'S' for the Australian inspection facilities in Sydney; and 'X' for the →London Small Arms Co. Ltd. The Ishapore mark was subsequently replaced by 'IS' after India gained independence, and the Sydney mark was superseded by those applied by the small arms factories in →Lithgow ('ACP' on a shield, 'A' on a six point star or 'L' above a broad arrow) and Orange ('O' above a broad arrow). The Canadian arms factory in Long Branch used 'IP' beneath crossed pennants under a crown.

British military manufacturers' codes The regional system was developed during the Second World War to disguise the identity of participants in the ordnance industries. The essence was a letter prefix 'M', 'N' or 'S'—indicating whether the manufacturer concerned was in the Midlands, north or south of Britain; a number identified individual companies. More information will be found under 'M', 'N' and 'S'.

British military proof marks These normally consisted of crossed pennants, with 'P' in the lower quadrant and the monarch's initials beneath a crown in the upper quadrant (see →Royal cyphers). The Royal Navy, however, used plain pennants above 'N' in the bottom quadrant; the Australian (Lithgow) mark had 'L' in the top quadrant and 'P' in the bottom; South Africa used 'U' and 'P'; whilst India used a crowned 'GRI' in the top quadrant and 'P' in the bottom. The post independence Indian mark substituted the four tiger *Asoka* for the crowned 'GRI'. The Dominion of Canada also used crossed pennants, but the

quadrant lettering was 'P' to the left, 'D' in the top and 'C' to the right; the fourth (bottom) quadrant was blank.

British military unit markings Only weapons issued for service from army stores were marked in accordance with *Regulations for Army Ordnance Services*, Part One. Magazine rifles and carbines bore the 'ordnance marks'—number of the month and year of issue (e.g., 5/96)—together with the 'Corps marks and consecutive numbers' on the butt disc. On older guns with brass butt plates, only army ordnance marks were to be struck into the strap; corps marks did not appear. On guns with iron butt plates, the ordnance marks were to appear in the centre of the butt, two inches from the butt plate, with the corps marks between the two. Webley revolvers customarily bore the ordnance marks, corps marks and consecutive numbers on the 'upper part of the strap of stock'. The marks can identify some of the most famous regiments in the British Army—e.g., '8.03' over 'D.K.O.S.B.' over '128', on a butt disc, 128th rifle retained by the reserve ('D') battalion of the King's Own Scottish Borderers after being issued in August 1903. Among the more desirable would be those marks applied by the premier line regiments of the British Army, including: 'A. & S.H.' for Princess Louise's Argyll & Sutherland Highlanders; 'C.G.' for the Coldstream Guards; 'G.G.' for the Grenadier Guards; 'GOR.' for the Gordon Highlanders; 'I.G.' for the Irish Guards; 'IN.F.' for the Royal Inniskilling Fusiliers; 'L.G.' for the Life Guards; 'R.B.' for The Rifle Brigade (The Prince Consort's Own); 'R.H.' for The Black Watch (Royal Highlanders); 'S.G.' for the Scots Guards; and 'W.G.' for the Welsh Guards. Yeomanry regiments invariably display the identifier 'Y' above a line separating it from the county abbreviation such as 'DVN. & CLL.' for Devon & Cornwall, 'LCK.' for Limerick, 'M.U.' for Mid Ulster, 'STF.' for Staffordshire or 'Y. & D.' for Yorkshire & Durham. The senior (university) division of the Officers Training Corps applied marks such as 'AYH.' for Aberystwyth and 'OXF.' for Oxford below the 'O.T.C.' legend; the junior (schools) division displayed marks as diverse as 'HBY.' for Haileybury College and 'UPM.' for Uppingham.

British Pioneer [The]. Found on shotgun cartridges loaded for →Harrods of London, probably prior to 1939. See also 'Pioneer'.

British Smokeless A shotgun cartridge made in Britain by →Eley Kynoch Ltd.

British Tabulating Machine Co. Ltd [The]; Letchworth, Hertfordshire, England.

This →Monotype Scheme member made a variety of small parts for the →Bren Gun in 1940–5. These sometimes bore the code 'S 162', though many of the pins were too small to be marked.

Briton Found, usually as 'The Briton', on shotgun cartridges sold by →Grant & Lang of London.

Briton This telescoping barrel .177-calibre spring air pistol was apparently British made. Though the maker has yet to be properly identified, there has been speculation that T.J. →Harrington & Co. were involved. A bulldog trademark is also often present on the gun. See also 'Britannia'.

Britte Théophile Britte (1874–1945), co-founder of Établissements Britte SA

- (below), patented the so-called →Superbrite shotgun in 1931.
- Britte** Établissements Britte SA; Vivegnis-lèz-Liége, Belgium. Renowned for making the →Superbrite shotgun, made in small quantities in the early 1930s, this engineering business was established in 1897 by the brothers Théophile and Lambert Britte. Though small quantities of →Holland & Holland-type double-barrelled shotguns had been made prior to 1914, the Superbrite (which appeared just as the Great Depression struck the Belgian gunmaking industry) represented the company's last foray into gunmaking. Éts. Britte instead concentrated on precision engineering.
- Broadhurst** R. Broadhurst. An ironmongery business trading in Smithford Street, Coventry, Warwickshire, England, Broadhurst also handled sporting guns and ammunition. Shotgun cartridges made prior to 1914 by →Eley Bros. Ltd have been seen with suitable markings.
- Broadwell** Lewis Wells Broadwell, born on 20th July 1820 in Augusta, Kentucky, is best known as a designer of guns and artillery—and for waging a long and unsuccessful campaign of words with Krupp. He was also responsible for a 'breech-loading firearm' protected by U.S. Patent 49583 of 22nd August 1865. Assigned to C.M. Clay, this protected a block that slid vertically through the frame as the trigger-guard was rotated laterally. Relying on two rapid-pitch threads, this was, in essence, little more than a two-part adaptation of ideas that had been tried since the early 1700s. Broadwell was also peripatetic, filing submissions from places as diverse as St Petersburg, Russia (1861), and Hietzing bei Wien (Austria, 1870s); he married Anatolie Henn in Karlsruhe on 24th August 1865, and one of his sons, Albert, was born in Vienna. Most of Broadwell's patents protected improvements in breech-loading ordnance, but U.S. no. 110338 of 20th December 1870 described a 'Feeder for Repeating Fire-arms' and 172382 of 18th January 1876 protected a cartridge applicable to small-arms. Broadwell is also remembered for the 'Broadwell Drum', used with the →Gatling Gun. He died in London on 14th May 1906.
- Broberg** Waldemar Broberg. A U.S. Army colonel, this arms inspector accepted →Colt M1911A1 pistols in 1941. They were marked 'WB'. See also "U.S. arms inspectors' marks".
- Brock's Explosives Ltd**; Hemel Hempstead, Hertfordshire. This well known English manufacturer of explosives and pyrotechnics has also marketed 'Bird Scaring Cartridges' under its own name. The ammunition was made by →Eley Kynoch Ltd.
- Broens** A. von Broens Witwe & Co. ; Zella St Blasii and Zella-Mehlis in Thüringen, Germany Listed in 1900 as a gun and weapon maker. Still trading in 1920, but as a hardware distributor.
- Brompetier** Applied to a small Spanish 6.35mm →Browning-revolver made by →Retolaza Hermanos of Eibar, probably prior to 1920.
- Bronco** A compact pistol of Browning type, made by Echave y Arizmendi of Eibar: (a) 6.35mm, six rounds, hammer fired, (b) 7.65mm, six rounds, hammer fired. Both patterns may be marked 'Model 1918'.

- Brong**, or *'Le Brong'*. This tradename was applied to Spanish →Browning-revolvers made in Eibar by →Crucelegui Hermanos, probably prior to 1920. Undoubtedly chosen for its similarity to 'Brng.' (a popular abbreviation of 'Browning'), Brong-Grand was a large pattern, chambered for 6mm →Type Française rimfire, 6.35mm centrefire or 7.65mm centrefire cartridges; Brong-Petit was a small pattern restricted to 6.35mm.
- Brooklyn Firearms Company**; Brooklyn, New York City. Makers of the five shot .32 rimfire revolver patented in 1863 by Frank →Slocum. These had detachable sliding sleeves or tubes in each cylinder, which were pushed forward to allow rim fire cartridges to be inserted. Though a slot was cut through the chamber wall to accept the hammer nose, the cylinders were not bored through.
- Brooks & Son**; 28 Russell Street, Birmingham, Warwickshire, England. This gunmaker exhibited 'Four barrel Revolving Guns' and 'Six barrel Revolving Pistols' at the Great Exhibition in London in 1851.
- Brooks** Edward Brooks & Son. A gunsmithing business trading from 1 Fenchurch Street, London E.C., in 1853–4. Its marks have been reported on sporting guns, self cocking →pepperboxes and cap lock revolvers.
- Brooks** Henry M. Brooks. This U.S. government inspector accepted →Colt revolvers in 1902-6, marking them 'HMB'.
- Brooks** John A. Brooks, Jr. A lieutenant colonel in the U.S. Army, Brooks accepted .45 →Colt M1911A1 pistols in 1940, marking them with 'JAB'.
- Brooks** P.H.M. Brooks. A U.S. Government arms inspector, working in 1909, Brooks accepted →Colt revolvers marked 'PHMB'. See also "U.S. arms inspectors' marks" for the last three entries.
- Brooks** R. Brooks; Rockport, Massachusetts, U.S.A. Designer of an air pistol protected by U.S. Patent no. 99,754 of 1870.
- Brooks** William F. Brooks; New York City. Promoter of the →Gibbs breech loading carbines during the American Civil War.
- Broughton** S.H. Broughton. Working in 1899–1912, this arms inspector accepted small arms marked 'SHB'. See also "U.S. arms inspectors' marks".
- Brow** A tradename found on →Browning-revolvers made in Eibar, Spain, by →Ojanguren y Marcaido, probably prior to 1920. It was undoubtedly chosen for its similarity to a popular abbreviation of 'Browning'.
- Brown** Albert Arthur Brown. Senior partner in A.A. →Brown & Sons, and co-patentee of the →Abas Major pistol with his sons Albert and Sidney. See British Patent 604,411, sought in January 1946 and accepted on 2nd July 1948.
- Brown** Albert Henry Brown. Son of Albert Arthur Brown (above), and co patentee with his father and younger brother Sidney of the →Abas Major pistol.
- Brown** Alexander T. Brown; Syracuse, New York. Apparently L.C. →Smith's works superintendent, Brown was granted several patents to protect 'breech loading firearms'—U.S. 261,663 of 25th July 1882 (half assigned to H.H. Lincoln of Syracuse); 274,435 of 20th March 1883, for a rotary self compensating locking bolt for shotguns; 291,288 of 1st January 1884 (half

assigned to L.C. →Smith); and 367,089 of 26th July 1887. He was also granted three U.S. patents for gun locks: 234,749 of 23rd November 1880; 289,062 of 27th November 1883 for an improved trigger mechanism; and 345,362 of 13th July 1886, for a 'concealed hammer' pattern. U.S. Patent 350,109 of 5th October was obtained jointly with W.L. →Smith to protect a safety mechanism, and 381,109 of 17th April 1888 protected an airgun. Brown subsequently became better known for the typewriter designs that formed the basis for L.C. Smith's later success.

Brown Charles L. Brown; New York City. The co-patentee with William H. Morris of a 'repeating firearm', protected by U.S. Patent 26,919 of January 1860. The .41-calibre gun had a multi-chamber cylinder communicating with a series of separate throats radiating diagonally from the bore, but only a few examples were made shortly before the American Civil War by →Morris & Brown.

Brown Edward J. Brown & Company. Trading in Rotherham, Yorkshire, England, this gunsmithing and ironmongery business also sold sporting guns and ammunition. Pre 1914 →Kynoch made shotgun cartridges have been reported with Brown's markings.

Brown John Brown [Sharps]: see under 'J'.

Brown Lucius C. Brown. This U.S. government arms inspector marked small arms accepted in the mid 1870s with 'LCB'. See also "U.S. arms inspectors' marks".

Brown O.H. Brown; Davenport, Iowa, U.S.A. This inventor was responsible for a gas powered pistol developed in the 1930s. Limited production of this gun, long and clumsy though it was, was undertaken in 1940-1 until stopped by the American entry into the Second World War. The gun received lavish praise in Leslie Wesley's *Air Rifles & Air Pistols* (1955), but the difficulties of providing solidified carbon dioxide propellant charges could not be overcome.

Brown Sidney Charles Brown. Son of Albert Arthur Brown (above), and co patentee with his father and elder brother Albert of the →Abas Major pistol.

Brown William Brown. This Federal government inspector accepted small arms marked 'WB' in the early part of the American Civil War. See also "U.S. arms inspectors' marks".

Brown A.A. Brown & Sons Ltd; Abas Works, 4 Sand Street, Birmingham, Warwickshire, England. This metalworking company acquired small quantities of →Star air pistols from Curry & Keen, who had purchased the stock that had once belonged to Edwin →Anson. Ready sales encouraged Brown to produce the →Abas Major, designed by A.A., A.H. and S.C. Brown in 1946. The Birmingham directories list Albert Arthur Brown as a gunsmith, trading from 272 Whittall Street in 1930-5, and at 352 Whittall Street in 1940. By 1945, however, the trading style 'A.A. Brown & Sons' had been adopted (not 'A. & A. Brown & Sons' as sometimes claimed), and lasted until the final directory entries were made in 1960.

Brown & Brothers; 80 & 82 Chambers Street, New York City. Identified with the production of rimfire ammunition in the U.S.A. in the 1870s, though it

seems that some of this may have been imported from Europe. An encircled 'G' →headstamp may betray the source as →Gevelot. Brown also marketed cartridges under the tradename 'Victor'. One of the participants may have been the patentee Charles L. →Brown.

Brown Manufacturing Company [The]; Newburyport, Massachusetts, U.S.A. Makers of the →Southerner cartridge derringer in 1869B73, succeeding the →Merrimack Arms & Mfg Co.

Brown Precision Company; Los Molinos, California, U.S.A. This manufacturer was responsible for the 'High Country' sporting rifle, c. 1975–83. Offered with a fibreglass stock, the rifle had a Model 700 Remington action and an internal magazine; chambering options included .243 Winchester, .25–06, .270 Winchester, 7mm Remington Magnum or .30–06.

Brown Shoe Company ["The"]; St Louis, Missouri, U.S.A. This footwear manufacturer distributed →Warrior BB Guns as 'premiums'—incentives to encourage young and often gullible 'sales agents' to reach their targets. When the goals were reached, the 'Buster Brown' guns were simply handed over by the shoe company representatives.

Brown Standard Fire Arms Company This gunmaking business, based in New York, made self cocking dropping-block rifles with a partially enclosed spurless hammer. Resembling the British enclosed-hammer Henry rifles of the early 1870s, the gun was patented in 1883 by John H. Brown. A few were sold commercially, but the venture seems to have failed by 1886.

Brown & Mannett A partnership with gunsmithing interests of some type, listed at 26 New City Chambers, London, England, from 1867 until 1874.

Browning Son of the gunsmith Jonathan Browning (1805–79), John Moses Browning was born in Ogden, Utah, on 21st January 1855. He made his first gun in 1868, from parts discarded by his father, and (with his half-brother Mathew S. Browning) succeeded to his father's business on the latter's death. A 'Browning Brothers Hardware Company' had been founded in 1875, the first of several retail outlets operating in Utah State.

¶ John Browning was destined to become one of the greatest firearms inventor of all time, developing guns that ranged from single-shot rimfires to highly efficient machine-guns. Some of Browning's best-known designs (the BAR, his machine-guns and handguns) are listed separately, but he was an exceptionally prolific patentee in an era when patents still tended to be all-embracing instead of fragmented into separate applications. There are far too many patents to list individually (Robert E. Gardner, *Small Arms Makers*, lists some), and attention is drawn here only some of the best known. The total of U.S. Patents alone is sometimes said to have exceeded 950, though Ned Schwing, in his magisterial *The Browning Superposed: John M. Browning's Last Legacy* puts the total at merely 128. However, it is not clear whether this includes the many patents granted outside the U.S.A.

¶ U.S. Patent no. 220271 was granted on 7th October 1879 to protect what became the single-shot →Winchester M1885 dropping-block rifle; 306577 of

14th October 1884, assigned to the Winchester Repeating Arms Company, protected the 1884-pattern lever-action rifle. Patent 336287 of 16th February 1886, another of the many assigned to Winchester, protected the M1887 lever-action shotgun; 441390—granted in the U.S.A. on 25th November 1890—depicted the M1893 Winchester pump-action shotgun, whereas no. 499005 of 6th June 1893 and 524702 of 21st August 1894 protected the Winchester M1892 and M1894 lever-action rifles respectively. Protection for a .22 rimfire single-shot bolt-action junior rifle (which became the Winchester M1900) was conferred by 632094 of 29th August 1900.

¶ Browning's sporting guns were exceptionally successful, but he is better known for his automatic weapons. The first relevant patent (U.S. 471782) dated from 29th March 1892, protecting a gas-operated machine-gun, was the precursor of a number that led ultimately to U.S. Patents 544657–544659 of 20th August 1895: the M1895 or 'Potato Digger' (q.v.), made in quantity by →Colt's Patent Fire Arms Mfg Co., and ultimately, by →Marlin during the First World War.

¶ Browning is also renowned for his semi-automatic pistols, the first patents (580923–580926) being granted in the U.S.A. on 20th April 1897. These protected a variety of designs, including a large-calibre military-type gun locked by tilting the barrel down at the breech (580924) and a small-calibre →blowback (580926). The former was soon exploited by →Colt's Patent Fire Arms Mfg Co., but the blowback was developed in Belgium by →Fabrique Nationale d'Armes de Guerre after Colt's management had failed to appreciate its commercial potential.

¶ The semi-experimental 1899 pistol became the FN-Browning Mle 1900, the first of a series that incorporated the models of 1903 (9mm Browning), 1906 (6.35mm Auto, the first successful pocket semi-automatic) and 1910 (7.65mm Auto or 9mm Short)—not to mention a legion of Spanish-made 'Eibar' (q.v.) copies. Colt's locked-breech guns culminated in the U.S. Army .45 M1911 or →Government Model, which embodied a perfected barrel-lock protected by U.S. Patent 984519 of 14th February 1911.

¶ Among the auto-loading sporting guns introduced prior to the First World War were a shotgun protected by U.S. Patent 659507 of 9th October 1900 and a rifle by 659786 of 16th October 1900. The latter provided the basis for a Carabine Automatique produced by Fabrique Nationale and the Model 8 made by Remington Arms–UMC.

¶ The First World War saw the introduction of both the M1917 Browning machine-gun and the Browning Automatic Rifle ('BAR'). The former was protected by a series of patents ranging from 768934 of 23rd June 1901 ('Recoil-operated Machine Gun') to 1293021 of 4th February 1919; the latter was protected by U.S. 1293022. Another well-known product of this era was the Colt →Woodsman .22 rimfire pistol, the subject of U.S. Patent 1276716 of 27th August 1918.

¶ Browning continued to refine his guns after the end of the First World War,

patenting a 37mm cannon in February 1925 (U.S. Patents 1525065–1525067), and the first protection for the efficient double-barrelled over/under or Superposed shotgun followed in March 1926 (1578638/9).

¶ Unfortunately, the inventor had a heart attack on a visit to Fabrique Nationale, and died in Herstal on 26th November 1926. Two of his best-known designs, the →High Power pistol and the .50-calibre machine-gun, were patented posthumously on 22nd February and 10th May 1927 respectively (U.S. Patents 1618510 and 1628226).

¶ There is no doubting John M. Browning's claims to fame. It may be argued that some of his ideas were perfected by others—e.g, Fabrique Nationale's Bureau d'Études or Colt's technicians in Hartford—but no-one has ever matched the diversity of Browning's designs. It is strange that, excepting *John M. Browning, American Gunmaker* (1964) by John Browning and Curt Gentry, no comprehensive biography of Browning exists. Books such as Ned Schwing's study of the Superposed shotgun have been devoted to individual guns, but there is as yet no central source of information. See also →Colt, →Fabrique Nationale d'Armes de Guerre.

Browning Arms Company; St Louis, Missouri, and then Ogden, Utah, U.S.A. Browning has offered or made a variety of pistols, sporting guns and rifles, including some built on FN Mauser bolt actions from 1959 onward. These had a distinctive tang mounted safety catch, and were offered in →Medallion Grade, →Olympian Grade and →Safari Grade chambering cartridges ranging from .243 Winchester to .458 Winchester Magnum. Work stopped in 1974.

Browning Automatic Carbine. See 'Carabine Automatique Browning'.

Browning Automatic Rifle [or simply 'BAR']. Designed by John M. →Browning, a prototype of this squad automatic weapon was successfully demonstrated to the U.S. Army Machine Gun Board in February 1917 and adopted as the 'Browning Machine Rifle, Caliber .30, Model of 1918'. Production was entrusted to →Colt's Patent Fire Arms Manufacturing Company, initially with technical assistance supplied by the →Winchester Repeating Arms Company; when work finished in 1919, more than a hundred thousand rifles had been made by Colt, Winchester, Marlin Rockwell and their sub contractors.

¶ Developed by the Cavalry Board on the basis of combat experience gained in the First World War, the M1922 had a finned barrel and an optional tripod mount allowing the a greater volume fire of fire to be sustained before overheating. Only a few hundred guns were made before the M1918A1 was substituted. This was an adaptation of the M1918 with an improved gas system, a bipod, and a shoulder rest. Converted from 'A1' Brownings, the M1918A2 had a better bipod, a monopod beneath the butt, and an adjustable buffer in the action to change the rate of fire. In addition, Colt sold guns commercially as the 'Colt Automatic Machine Rifle' or Monitor.

¶ In addition to the guns made by Colt, many others were made in Europe by →Fabrique Nationale d'Armes de Guerre. FN accepted a ten thousand-gun contract placed by Poland in December 1927, then made alterations to

the basic design by incorporating a rate-reducer (1930) and adding a readily-detachable barrel (1931). The work was undertaken by the company's Bureau d'Études, headed by Dieudonné →Saive.

Browning Automatic Sporting Rifle, or 'BAR'. Made by FN Herstal SA from 1967 to date, this gas-operated rifle is locked by rotating seven lugs on the bolt head into the receiver. It is usually credited to Val Browning, son of John. Among its features are a patented hinged floor plate/detachable box magazine unit. The standard rifle has an open back sight, and extensive chequering on the walnut pistol grip butt and fore end. The earliest deluxe examples had scroll engraving on the greyed receiver sides, gold plated triggers and woodwork chosen for its figuring. Post-1985 guns were known as BAR Affût. Chamberings have ranged from .243 Winchester to .30-06. The Battue (introduced in 1988) had a small folding leaf back sight let into a quarter rib. Six hundred of the .30-06 Big Game Special Edition were made in 1987-8, with gold plated triggers and engraved silver grey receivers. The first BAR Magnums were introduced in 1969 in .300 Winchester Magnum chambering, .338 Winchester option being added in 1988.

Browning High Power Semi Automatic Rifle. This was made by Fabrique Nationale d'Armes de Guerre in accordance with a patent granted to John Browning in October 1900, which was also licensed to Remington. Consequently, the FN rifle was essentially similar to the Remington Model 8 (q.v.). The principal external differences lay in the solid matted rib above the barrel, and in the two leaf back sight. Only about 4910 guns were made in 1910-14 and 1921-31, all chambering the .35 Remington cartridge.

Browning machine-gun Adopted by the U.S. Army after a sensational demonstration, the Model 1917 this recoil-operated water cooled gun was created by John M. →Browning on the basis of patents dating back to 1901. The Browning was much simpler than the →Vickers or →Hotchkiss equivalents, and a 15,000 gun contract was immediately passed to the →Remington Arms Company while →Colt prepared the master drawings. By November 1918, more than 40,000 guns had been made by Colt, Remington and the →New England Westinghouse Company. When work ceased in 1919, production totalled 68,839. Combat experience had shown that there was a weakness in the bottom of the receiver, and a reinforcing plate was added in the 1920s.

¶ The air cooled M1918 Browning aircraft gun, an unsuccessful transformation of the water cooled M1917 ground gun, failed to reach service during the First World War. The M1917A1 (1936) was an improved M1917, earlier guns being upgraded appropriately. The receiver was stronger, the feed mechanism was improved, and the sights were changed. M1917A1 production continued throughout the Second World War, a steel water jacket replacing the original bronze version in 1942.

¶ Arriving too late to serve in the First World War, the M1918A1 aircraft gun had changes in the trigger and the mounting system compared with the

M1917, but was soon replaced by the purpose built M1919 aircraft gun. A variant developed for use in the Mark VIII battle-tank had a short barrel, a slotted barrel casing, an optical sight and a ball mount. Most M1919 tank guns were converted from water cooled M1917 Brownings, but were subsequently altered to M1919A4 standards.

¶ Limitations placed on funding persuaded the authorities to permit →Colt's Patent Fire Arms Manufacturing Company to continue development of the Browning on a commercial basis from 1922 onward. The first result was the adoption of the .30 Aircraft Machine Gun, M2 (1931), made in large numbers but ultimately more popular in Britain than in U.S.A.F service, where the .50-calibre version was preferred. The air-cooled M1919A1 (1931) was the first purpose built ground gun since the M1917, with a front sight mounted on the trunnion block, a new tubular back sight, and the removal of the ball mount. It was superseded by the M1919A2, an adaptation for vehicle or dismounted use with the front sight on the barrel casing, but virtually all M1919A2 guns had been altered to 'A4' standards by 1941. The M1919A3 (or 'E3') was a trial gun, similar to the M1919A2 but with the front sight on the trunnion block. The perfected M1919A4 had a short barrel, reducing the cyclic rate but improving reliability.

¶ The .50-calibre →Browning owed its origins to the unexpected appearance of the 13mm German Mauser anti tank rifle or →T-Gewehr. →Frankford Arsenal produced a cartridge simply by scaling up the .30Bo6 pattern, but this was too powerful for an experimental enlargement of the M1917 to handle until a hydraulic buffer had been developed. Lack of funds prevented the perfected water-cooled .50 M1921 being acquired until 1925. The M1921A1 (1930) had a compound charging handle, which was eventually fitted to virtually all original 1921-type guns.

¶ An M2 ground gun (1931) had a water jacket extending past the muzzle to cure the burn out tendency of the M1921A1, but most were converted to air-cooled form during the Second World War. The .50 M1921 aircraft gun, which fed belts only from the left, was replaced by the convertible-feed M1923 and then, in 1933, by the Caliber .50 Browning Machine Gun, Heavy Barrel, M2. Barrel length was increased from 36in to 45in in 1938, slowing the cyclic rate and improving accuracy; older guns were modified when they returned for repair. The .50 Browning was very successful, nearly 1.5 million .50 M2 aircraft guns being made by 1945. The original slotted barrel casings gave way during the Second World War to simple circular holes.

¶ Mounts included the Tripods M1921 and M2; the Anti aircraft Tripods M2, M3 and M43 (or navy Mk 21); the elevator Cradle M1; and the Anti aircraft Mount M63 in addition to vehicle mounts. The M3 (1944) was superficially similar to the M2, but changes made internally raised its cyclic rate from 800 to 1200 rounds per minute. The newest guns of this type have Stellite barrel liners to increase bore life.

¶ With the abandonment of the unimpressive →Auto-Ordnance T10

machine-gun, efforts concentrated on lightened M1919A4 projects, but the decrease in weight was matched by a reduction in strength. The .30 M1919A6 Browning C the M1919A5 was a tank gun derived from the M1919A4 C of 1943 had a shoulder stock and a bipod at the muzzle. Later examples had tripod adaptors, rotary carrying handles and synthetic furniture.

¶ Many other countries used the Browning, particularly in its aircraft and vehicle applications. Indeed, guns of this general pattern were made in quantity in Belgium, Britain and Japan. The British Army was still using .30 M1919A4 Brownings in the 1980s. The L3A3 variant was mounted in the Saladin and Saracen armoured cars, while the L3A4 was a tripod mounted ground gun. The British also purchased small quantities of the .50 M2 HB Browning in the 1970s, as Guns, Machine, Browning, 12.7mm L1A1 and placed them in store; 24 were sent to the Falklands in 1982 where, together with U.S. M63 anti aircraft mounts, they were used for local defence. See also 'Colt machine gun'.

Browning pistol The first handgun, with a top-mounted gas-operated flap lock, was demonstrated to representatives of →Colt's Patent Fire Arms Mfg Co. in the summer of 1895. The most important series of patents, however, were granted on 20th April 1897: U.S. no. 580923 protected the →gas-operated flap-lock gun; 580924 protected a →recoil-operated gun with its barrel depressed by a double-link mechanism; 580925 protected a recoil-operated gun with a rotating-barrel lock; and 580926 protected the first →blowback design.

¶ The locked-breech patents were licensed to →Colt's Patent Fire Arms Mfg Co., though the first guns to be exploited in quantity were blowbacks protected by U.S. Patent no. 621747 of 21st March 1899 and made in Belgium by →Fabrique Nationale d'Armes de Guerre. Substantial quantities of a 'pre-production' series of 7.65mm guns, now customarily known as the 'Mle 1899', were followed by the hugely successful Mle 1900. Production was rapid; the 100,000th gun was assembled on 4th August 1904.

¶ Adopted by the Belgian army and extremely popular commercially, the Mle 1900 gave way to the 9mm Mle 1903, with the barrel-return spring concentric with the barrel, and then the 6.35mm 'M1906' pocket pistol that effectively laid the basis for the Spanish pistol-making industry in →Eibar. Mle 1903 pistols sold in quantity in Paraguay, Russia and Turkey, and were made in Sweden by →Husqvarna as the 'M/07'. The introduction of the streamlined Mle 1910 pocket pistol, available in 7.65mm and 9mm Short, ensured that FN-Browning handgun sales reached a million on 31st January 1914.

¶ Work began again in the early 1920s, with the advent of the Mle 10/22, developed for the army of the Kingdom of Croats, Serbs and Slovenes ('Yugoslavia'); popular also in the Netherlands, the Mle 10/22 was really little more than a long-barrelled Mle 1910. The standard slide was extended by means of a light sheet-steel shroud, and the grip was elongated to hold a large-capacity magazine.

¶ The first of the recoil-operated Colt-Brownings appeared in 1900, being

made in sporting and military guise. Though cumbersome, the .38 Model 1900 soon attracted the attention of the U.S. Army and the U.S. Navy alike and small quantities were purchased for trials. Links at the muzzle and the breech pivoted the barrel downward as it recoiled, keeping its axis parallel to its locked position. Protected by additional patents granted on 9th September 1902 (708794) and 19th December 1905 (808003), protecting the slide hold-open stop and changes to the trigger system respectively, the .38 Model 1902 and .45 Model 1905 were essentially similar, but refined and more compact.

¶ The Model 1909, developed to satisfy the U.S. Army, had an improved single-link depressor system—John Browning's U.S. Patent 984519 of 14th February 1911—that simply tipped the barrel downward at the breech to disengage circumferential locking lugs from the inside of the slide. Once a few alterations had been made to the M1909, it was adopted by the U.S. Army as the Pistol, Semi-Automatic, Colt, Caliber .45, Model of 1911: better known as the →Government Model. Markings on the slide acknowledged additional patents granted on 14th February 1911 and 19th August 1913. Most guns were made by →Colt's Patent Fire Arms Mfg Co., but some were made in →Springfield Armory prior to the First World War. The principal contractors active in 1917-18 were Colt and the →Remington Arms-UMC Company; several other participants were recruited, but only the →North American Arms Company ever assembled pistols (and then only about a hundred in 1919).

¶ An improved U.S. service pistol, the M1911A1, followed in the early 1920s and laid the groundwork for innumerable variations on the same theme. Guns of this type were also made by a variety of contractors during the Second World War, including the →Ithaca Gun Company, →Remington-Rand, the →Singer Mfg Company and the →Union Switch & Signal Company.

¶ The principle was copied by, among others, Fedor →Tokarev in the USSR; Charles Petter in Switzerland; and Wilniewiczyc and Skryzpinski in Poland (see 'VIS'). Others adapted U.S. Patent 1618510, granted posthumously to John Browning in February 1927 (though sought in June 1923) which became the Fabrique Nationale GP-35 or →High Power pistol. See also 'Glock', 'HAFDASA', 'Heckler & Koch', 'John →Inglis', 'Llama-Gabilondo', 'SACM', 'SIG', 'Star' and 'Walther'.

Browning repeating carbine. See 'Carabine à Répétition Browning'.

Browning-revolver A term associated with a short-lived series of revolvers designed to capitalise on the success of the 1900-model →Browning semi-automatic pistol introduced in Belgium by →Fabrique Nationale d'Armes de Guerre. The revolvers had their hammers enclosed in flat high-back frames, often overhanging a straight handgrip; many had folding triggers, and radial safety levers on the left side of the frame. The smallest versions often lacked rammers, enabling the frame-front to be shaped much more like a small pistol. The first guns were made in Belgium by Auguste →Francotte et Cie (mark: a crowned 'A.F.'), →Henrion Dassé et Heuschen ('HDH'), J.B. Rongé

- fils, Établissements →Lebeaux, →Manufacture Liégeoise d'Armes a Feu (crowned 'ML'), and →Lepage et Cie; production ceased in 1914, though guns were available from wholesalers' stocks for many years. Others were made in Spain, where production started prior to the First World War and probably continued into the early 1920s; participants included the Eibar gunsmiths Francisco →Arizmendi, →Crucelegui Hermanos, →Ojanguren y Marcaido and →Retolaza Hermanos. A few guns were made in Germany by Friedrich →Pickert of Zella St Blasii, and the 'U.O.S.' (q.v.) bears Italian markings. Many guns will be marked BROWNING, partly to indicate that they chamber the 6.35mm Browning pistol cartridge (or occasionally the 7.65mm version) but also, no doubt, to capitalise on the value of the designer's name. Spanish guns also often bear names such as →Brompetier, →Brong, →Brow or →Le Brong.
- Bruce** Edward W. Bruce. This U.S. government inspector, working in 1875, accepted small arms marked 'EWB'. See also "U.S. arms inspectors' marks".
- Bruce** Lucien F. Bruce; Springfield, Massachusetts. Best known as the designer of the 'Bruce Feed', applied successfully to the →Gatling Gun, this engineer received several U.S. patents for 'Cartridge Feeders for Machine Guns': 247158 of 14th June 1881, 273249 of 6th March 1883, 343532 of 8th June 1886 and 351960 of 2nd November 1886, all assigned to →Colt's Patent Fire Arms Mfg Co. Bruce also developed a cartridge-charger for his feeders, U.S. Patent 341371 of 4th May 1886, and a series of magazines for breech-loading firearms (439833, 462298 and 708311 of 4th November 1890, 3rd November 1891 and 2nd September 1902 respectively). A 'breech-loading magazine rifle' protected by U.S. Patent 432507 of 22nd July 1890 was entered unsuccessfully in the trials that led to the adoption of the →Krag-Jørgensen in the U.S.A.
- Bruff, Brother & Seaver**; New York City. These merchants sold 225 →Freeman-made →Joslyn revolvers to the Federal authorities in the winter of 1861.
- Brühl** Wilhelm Brühl & Co.; Suhl in Thüringen. A small-scale gunmaking business (*Büchsenmacherei*), active in Germany prior to 1945.
- Bruie** Henry Bruie, an English gunmaker sometimes listed as either 'Bruce' or 'Brucie', had a workshop at 13 Clayton Street, Caledonian Road, London, in 1855.
- Brull** José Brull y Seoane: see 'Remington Rider'.
- Brundett** W.H. Brundett. This U.S. government inspector, working in 1898–1900, accepted Colt revolvers and other small arms marked 'WHB'. See also "U.S. arms inspectors' marks".
- Brun Latrige**; cours Fauriel 7, Saint Étienne, France. Listed in 1892 as a gunmaker.
- Brünn** Waffnenwerk Brünn AG: see 'Ceskoslovenská Zbrojovka'.
- Bruno** A.E. Bruno was co-designer with Walter →Scott of a rifle sight, protected by British Patent 3079/73 of 1873.
- Brunon et Cie**; place Mi-Carême 1, Saint Étienne, France. Working as early as 1838, as 'Brunon fils', making →Lefauchaux-style pinfire breech loaders. Listed in 1879 as a distributor of and agent for arms and ammunition.

Brutus A →Suicide Special revolver made in the U.S.A. by the →Hood Firearms Company of Norwich, Connecticut, in the late nineteenth century.

BRW: see 'B.R. Whitcomb'.

Bryce James Bryce. A gunmaker working in Edinburgh, Scotland, from 1851 until 1874.

BS, on German sporting guns: see 'Bergstutzen'.

BS, on U.S. military firearms: see 'Benjamin Syrett'.

BSA, B.S.A. A trademark associated with the →Birmingham Small Arms Co. Ltd and its several successors. It was usually accompanied by a 'Piled Arms' mark of three stacked →Martini Henry rifles, which was registered by the company in 1881. It will also be found in the headstamps of belted case sporting rifle and handgun cartridges developed by →BSA Guns Ltd in the 1920s, and also encountered on shotgun ammunition made for BSA by →Eley Kynoch Ltd.

BSA Break Action This was associated with the company's first barrel cocking air rifle, about fifteen thousand being made in 1932–9 in .177 and .22.

B.S.A. Co. or BSA Co. Used by the →Birmingham Small Arms Co. Ltd C in various guises, 1861–73 and 1897–1919.

BSA Guns Ltd; Armoury Road, Small Heath, Birmingham, Warwickshire, England. The formation of this company from what had been →Birmingham Small Arms Co. Ltd coincided with a slump in the munitions business. Improved forms of the →Jeffries Pattern underlever cocking airguns were made, production totalling about 109,000 in 1919–40 together with fifteen thousand simpler break barrel guns (1932–9), experiments with →Thompson submachine guns and automatic rifles proved to be fruitless. In the 1930s, however, BSA became a major participant in the production of the →Browning aircraft machine-gun whilst continuing to fulfil small orders for the .303 Rifle No. 1 (→Lee-Enfield).

¶ Production of airguns was suspended in 1940 to allow the factory facilities to concentrate on war work, which included reconditioning of 1580 .303 →Hotchkiss Mk I and Mk I→ machine-guns pressed into emergency service as a result of the huge losses of arms and equipment at Dunkirk. No. 1 Mk III →Lee-Enfield rifles were made in Small Heath until 1943; about 1.5 million No. 4 type rifles were made in 1941–5 in Small Heath and Studley Road, Redditch, as well as in a newly-built factory in Shirley; and 81,330 No. 5 Mk 1 'Jungle Carbines' were made in Shirley in 1945–6. Output of automatic weapons included 468,100 .303 →Browning Guns Mk I, Mk II and Mk II, made in the Small Heath factory from 1937 until, in 1942, after air-raid damage, much of the work was dispersed to sub-contractors (including →Vickers-Armstrongs Ltd). More than 404,000 Mk II →Sten submachine-guns were made in the Tyseley factory from 1941 onward. The 7.92mm →Besa Guns Mk I, Mk II, Mk III and Mk III→ were made in Redditch, and, after 1941, in supplementary factories in Leicester; production in 1939–45, according to BSA figures, amounted to more than 59,300. There were also 3200 15mm Besa Guns (1938–43).

¶ BSA Guns was the sole manufacturer of the .55 →Boys Mk I and Mk I→ anti-tank rifles, 68,850 being made in 1936–43: initially in Small Heath and then dispersed to factories in Mansfield. Butts, bipods, cocking handle, magazine and other parts were made for the →Bren Gun during the Second World War, together with tripod mounts. BSA also made the ill-starred .303 →Besal machine-gun and the experimental 9mm →Vesely submachine-guns, eight of the latter being delivered in September 1944.

¶ BSA Guns Ltd was allotted a variety of manufacturing codes: Small Heath used 'M 47A'; Redditch used 'M 47B'; Shirley used 'M 47C'; Leicester had 'M 615'; and Mansfield was given 'M 616'. By the end of the Second World War, more than sixty BSA-run factories were employing nearly 28,000 people.

¶ Commercial operation were rebuilt in the post war period thanks to the introduction of airguns such as the 'Airsporter', 'Cadet', 'Cadet Major' and 'Club' (qq.v.), together with some efficient sporting guns built around a modified →Mauser bolt action and refinements of the pre-war Martini action .22 target rifles. Though new designs continued to appear, including the →Meteor air rifle and some improved sporting firearms, the fortunes of BSA Guns Ltd declined until, in 1973, the remaining assets were acquired by Manganese Bronze Holdings. This enabled production to continue until, finally, in the 1980s, the original BSA Guns Ltd was liquidated. The assets were sold to 'BSA Guns (1984) Ltd', the sporting-rifle machinery was sold to Pakistan, and production of airguns continued in a new Armoury Road factory on a much smaller scale. In the early 1990s, what remained of BSA was acquired by the group controlling →El Gamo.

¶ Individual guns are considered separately, or under the names of their patentees: Robert P. Cranston, Harold C. Jones, Claude A. Perry, Victor J. Stohanzl, Josef Vesely and Roger D. Wackrow.

BSA Improved Model. Made only in 1905–7, this was the first BSA-made version of the underlever-cocking air rifle designed by Lincoln →Jeffries. The 'Model B' differs from its predecessor principally in the design of the loading tap and the tap-retainer plate. The 'Improved Model D' of 1907 had the perfected loading tap, and generally bore the full patent number instead of just 'P.PAT'. Both the Improved Models were known by the generic term 'Standard Pattern'.

BSA Juvenile Pattern or 'Junior Pattern'. A diminutive version of the →BSA Standard Pattern air rifle, introduced in 1909 but made only until the beginning of the First World War in .177 only.

BSA Light Pattern. A short-barrel .177 calibre derivation of the →BSA Standard Pattern air rifle, introduced in 1907 and made (as the 'No. 1 Light Model') until 1939.

B.S.A. Ltd, BSA Ltd Marks used by BSA Guns Ltd from 1919 onward, usually accompanied by the →Piled Arms trademark.

BSA Military Model Patented by Edwin →Parsons and Leslie Bown →Taylor of →Westley Richards in 1906, this airgun duplicated the configuration of either

the Territorial Long Lee-Enfield or the SMLE. It combined the action of the →BSA Standard Pattern with a dummy bolt handle, a military style butt and a short wooden fore end. The guns are rarely encountered in Britain, as most seem to have been sent to overseas colonies.

B.S.A. & M. Co. Used by the →Birmingham Small Arms & Munitions Company from 1873 until 1897, when the company reverted to its original name.

BSA Standard Pattern This generic term covers the original derivatives of the Lincoln →Jeffries air rifle, including the →Improved Models B and D. The series contained guns in .177, .22 and .25 calibre (No. 1, No. 2 and No. 3 Bore respectively), and a variety of detail differences explained in great detail in John Knibbs' book *The Lincoln Jeffries Pattern BSAs*. The Standard Pattern was replaced after 1919 by the .177-calibre No. 1 or 'Club' Model and the .22-calibre No. 2.

BSA submachine-guns These were tested in Britain in 1945–6, but were rejected as needlessly complicated and expensive to make.

BSF A mark associated with the products of →Bayerische Sportwaffenfabrik of Erlangen. See also 'Bavaria' and 'Wischo'.

BSW: see 'Berlin–Suhler Werke'.

Buccaneer A barrel cocking .177- or .22-calibre air rifle, based loosely on the →Scorpion pistol, introduced by BSA Guns Ltd in 1979. It was easily distinguishable by its synthetic thumb hole stock.

Bucleuch [The]. Named after a Selkirkshire (Scotland) place-name, and also possibly to honour the Duke of Bucleuch, this mark reportedly found on a shotgun cartridge made by →Eley-Kynoch for George →Richardson of Dumfries.

Büchel Albin Büchel; Zella Mehlis in Thüringen, Germany. Listed in 1939 as a master gunsmith.

Büchel Cuno Büchel: see 'Ernst Friedrich Büchel'.

Büchel The gunmaking business of Ernst Friedrich Büchel of Mehlis and later Zella Mehlis in Thüringen, Germany, was founded some time prior to 1887. It was still listed as a gunmaker in the *Deutsches Reichs Adressbücher* for 1900–30, trading by 1930 as 'Ernst Friedr. Büchel GmbH'. The business is best known for a series of target rifles and Free Pistols made under the →Luna brand name.

Büchel Ernst & Karl Büchel; Zella Mehlis in Thüringen, Germany. Listed in 1930 as a master gunsmith.

Büchner O. & A. Büchner; Zella Mehlis in Thüringen, Germany. Listed in 1920 as a weapon maker.

Büchsfinten A gun with one smooth and one rifled barrel, side by side. See 'Combination weapons'.

Buckeye A →Suicide Special revolver made in the U.S.A. by the →Hopkins & Allen Arms Company of Norwich, Connecticut, in the late nineteenth century.

Buckham George T. Buckham, an employee of →Vickers, Sons & Maxim, was co-recipient, usually with A.T. →Dawson, of patent-protection for improvements

in the →Maxim and Vickers-Maxim machine-guns.

Buckhorn: see 'Sights'.

Buck Jones Special This sixty-shot pump-action BB Gun was made by →Daisy in 1934–41, complete with a compass and a sundial let into the left side of the butt. It was adapted from the No. 105 Daisy Junior Pump Gun and the Sears →Ranger, named after a popular film star cowboy, and occasionally known as the 'No. 107'.

Buckland Cyrus E. Buckland of Springfield, Massachusetts, was a gunmaker/engineer and factory superintendent of →Smith & Wesson. He was involved in the formation of both →Smith, Hall & Buckland and the →Wesson Firearms Company.

Buckley Hart Company This short lived successor to the →Hart Mfg Co. and →Hart & Company may have continued to sell the →Matchless BB Guns. Trading seems to have been confined to 1903–4.

Buckmaster & Wood Reportedly a gunsmithing and sporting goods business trading in Wokingham, Berkshire, England.

Buckminster A. Buckminster. This government inspector marked carbines with 'AB' in the years immediately prior to the American Civil War. See also "U.S. arms inspectors' marks".

Buco This 'telescope' pistol consists of a short large-diameter sheet-metal tube containing a coil spring, the firing mechanism, and a small-diameter barrel. The knurled cap is rotated until two orange or red marks align, then removed to gain access to the breech. A special 10.6mm cartridge is inserted into the chamber, the barrel pulled forward until the sear engages, and the end cap is replaced. The Buco can be fired merely by pressing the button protruding through the casing, which pivots the sear to release the barrel. The barrel then flies backward under the influence of the spring, until the primer of the cartridge is slammed against a pin fixed on the inside of the end cap. The telescope guns, marked BUCO/D.R.G.M., are suspected to have been by Richard Bornmüller & Co. of Suhl. The special ammunition has not yet been conclusively identified, but was probably loaded with a gas charge; lightweight construction suggests that the Buco could not have withstood the pressures developed by ball cartridges.

Budischowsky Edgar Budischowsky. A German handgun designer. See 'Korriphila-Präzisionsmechanik GmbH'.

Bufalo A pocket pistol made by Gregorio →Bolumburu, Eibar: (a) 6.35mm, six rounds, hammer fired, (b) 7.65mm, seven rounds, striker fired. Based on the 1910-type FN Browning.

Bufalo A range of blowback semi-automatic pistols made by →Gabilondo y Cia of Elgoibar for Armeria →Beristain y Cia of Barcelona prior to 1925. The smallest gun is a 6.35mm Auto variant of the →FN-Browning of 1906, embodying a grip safety patented by Beristain c. 1919. The slides usually bear the patent numbers 62004 and 67577, one referring to the safety mechanism and the other, apparently, to the registry of the tradename. The larger pistols,

chambered for the 7.65mm Auto or 9mm Short cartridges, were based on the 1910-pattern →FN-Browning and had the return spring concentric with the barrel. See also 'Danton'.

Buffalo or Buffalo This interesting bolt-action rifle, patented in France in 1897 by Pierre Blachon of →Manufacture Française d'Armes et Cycles, combined a bolt action with a travelling block. A reciprocating breech piece or *Culasse mobile* embodied a cylindrical collar containing the locking recesses; the locking lugs were formed in the periphery of the barrel. The mechanism proved to be simple, sturdy and durable, though the position of the extractor-operating extension prevented magazines being used. Shotguns have been made in 12- or 14-bore, and rifles were still being made in the 1970s. Deluxe versions of all the subvariants will be found with scalloped-edge woodwork and fluted or octagon barrels.

Buffalo Bill. A →Suicide Special revolver made in the U.S.A. by →Johnson, Bye & Company and/or →Iver Johnson of Worcester and Fitchburg, Massachusetts, in the late nineteenth century.

Buffalo Bill or 'Buffalo Bill Model': a variant of the →Daisy M1894 Spittin' Image lever action BB Gun, modelled on the →Winchester cartridge rifle of the same numerical designation. It displays a facsimile signature of William F. 'Buffalo Bill' →Cody on the receiver, a medallion let into the butt, and a saddle ring on the barrel band. The first guns were made in 1969.

Buffalo-Carabine Made by →Manufacture Française d'Armes et Cycles and then Manufacture SA of Saint Étienne, c. 1900–77, this metre-long gun weighed merely 2kg. Often fitted with a smooth-bore barrel, suited equally to ball or shot cartridges, it had a two piece stock with a straight butt wrist.

Buffalo Champion About 1200mm long and weighing 5.5kg, this had an adjustable trigger and micro adjustable sights. The butt plate was customarily spurred and a spherical palm rest was fitted beneath the receiver ahead of the trigger. Champion rifles could be obtained in virtually any .22 chambering from Extra Short to Long Rifle.

Buffalo Concours This target rifle had a heavy barrel, a pistol grip butt with a cheek piece, a spurred butt plate, and an adjustable tangent leaf back sight.

Buffalo Eurêka This usually combined a 9mm smooth-bore and a rifled 6mm rimfire pattern within a 'barrel' taking the form of a flattened oval. The guns measured about 1000mm overall and weighed 2.4kg empty. Their sights were fixed.

Buffalo-Mitraille, or 'Canadière Buffalo-Mitraille'. This .22 ('5.5mm') rimfire rifle, made by Manufacture Française d'Armes et Cycles, had three bores within a single large-diameter barrel. The cartridges were fired simultaneously to give a volley! The three-leaf back sight was used in conjunction with a bead on a band around the muzzle.

Buffalo Newton Rifle Company; Buffalo, New York State, U.S.A. See 'Newton'.

Buffalo-Pistolet, or 'Buffalo-Pistolet Stand'. The handgun version of the basic action had a saw-handle grip, a spurred trigger guard and a tangent back sight.

Offered only in .22 Long Rifle or 6mm 'Type Française' rimfire chamberings, the pistols weighed 1.3kg and were 42cm long. Engraving could be applied to order.

Buffalo Rifle Made from 1874 until c. 1890, this was chambered for cartridges ranging from .40–50 Sharps to .50–70. Open 'Rocky Mountain' sights were popular, but some guns had a sophisticated vernier sight mounted on the receiver tang behind the hammer. See also 'Remington rifles, rolling-block action'.

Buffalo-Scolaire or 'Buffalo Junior'. A junior cadet rifle, offered only in .22 Long Rifle or 6mm rimfire chamberings, this had a fore end that extended almost to the muzzle. A nose-cap and an intermediate barrel band were fitted, and a grasping groove was cut in the fore-end beneath the adjustable back sight.

Buffalo Slave Offered as the 'Modèle A' (8mm rimmed French Mle 92 revolver cartridges) or 'Modèle B' (.32–20 WCF). These guns had half length fore ends with grasping grooves and a three leaf →Express-pattern back sight. They were 1060mm overall and weighed about 2.6kg.

Buffalo Sport This half-stocked gun chambered .22 cartridges ranging from Extra Short to Long Rifle interchangeably. The back sight was usually a spring leaf elevated by a slider.

Buffalo Stand Distinguished by chequering on the woodwork, a crescent shape butt plate, and an adjustable tangent leaf back sight, this target rifle was offered only in .22 rimfire chamberings ranging from Extra Short to Long Rifle.

Buffalo Super Champion The finest of the Buffalo range, this target rifle chambered .22 rimfire cartridges from .22 Short to the No. 7 or Extra Long pattern favoured in Switzerland. Most examples have a double trigger mechanism with a setting lever, a separate palm rest beneath the receiver, and an aperture sight attached to the left side of the receiver.

Bufferne: see 'Cannonier Bufferne'.

Buffington sight. This, designed c. 1900 by Brigadier-General A.R. Buffington (U.S. Chief of Ordnance by 1910), was fitted to some →Krag-Jørgensen rifles.

Bugbee Samuel F. Bugbee, a government inspector working in 1900–10, accepted small arms marked 'SFB'. Probably the son of Samuel T. Bugbee, below.

Bugbee Samuel T. Bugbee. This inspector, working in 1861, accepted →Starr cap lock revolvers for the Federal Army. They were marked 'STB'. He was probably the father of Samuel F. Bugbee, above. See also "U.S. arms inspectors' marks".

Bügelspanner A German-language term applied to airguns, generally taking →Gallery Gun form, which are cocked by pulling the trigger guard, combined with a lever, downward around a pivot in the butt-toe (cf., →Kurbelspanner). Popular in central Europe prior to 1914, they were still being made in small numbers in 1939 and one pattern was still being made in the 1950s under the →Falke brand name.

Buglers, Ltd The marks of this sporting goods retailer trading in Ashford, Kent, have been reported on shotgun cartridges.

Bugnard; rue de Parvis Notre Dame 10, Saint Étienne, France. Listed in 1892 as a distributor of and agent for arms and ammunition.

Bugnant fils; rue Villeboeuf 3, Saint Étienne, France. Listed in 1879 as a maker of gun parts and accessories.

Buisson; rue Gambetta 21, Saint Étienne, France. Listed in 1892 as a distributor of and agent for arms and ammunition.

Bul Dog Encountered on compact six-shot double-action .320 and .380 revolvers, based on the Webley →Bulldog but customarily made in Belgium prior to 1914. Most have rounded or bird's-head butts, lanyard rings being optional. Some bear either the crowned 'R' or the name of J.B. →Rongé fils.

Bulfighter: see 'Bull Fighter'.

Bulkley William H. Bulkley, a U.S. Federal government inspector working in 1862, accepted small arms marked 'WHB'. See also "U.S. arms inspectors' marks".

Bull: see also 'John Bull'.

Bull Freeman R. Bull, a civilian employee of the U.S. National Armory, →Springfield, was listed as a 'toolmaker' in 1863 and as an 'inspector for experimental arms' in 1865. His 'FRB' identifier will be found on →Laidley-Emery and other firearms, and he has also been credited with the adjustable sights fitted to the →Springfield-Allin Marksman's Rifle. Freeman Bull retired from service in 1899. See also "U.S. arms inspectors' marks".

Bull John Bull. A gunmaker trading in the High Street, Bedford, Bedfordshire, England, from 1846 until succeeded in 1868 by 'John Bull & Son'. Bull was known as a maker of sporting guns and butt reservoir airguns.

Bull William Bull: see 'Filser Hopper'.

Bullard James H. Bullard of Springfield, Massachusetts, was co-designer with Daniel →Wesson of an improved retainer for revolver cylinders, protected by U.S. Patent 187269 of 20th February 1877. Bullard and Wesson also patented a rebounding hammer: 198228 of 18th December 1877. An additional patent for a 'revolving firearm', protecting the Smith & Wesson →Double Action pattern, U.S. no. 227481, followed on 11th May 1880. After leaving Smith & Wesson, Bullard founded the Bullard Repeating Arms Company (below) to exploit protection accorded to a lever-action rifle by the U.S. Patent Office on 16th August 1881 (no. 245700). This design had been improved by 287229 of 23rd October 1883 before series production began.

Bullard Repeating Arms Company [The]; Springfield, Massachusetts, U.S.A.

Active 1885–9, this made the distinctive lever-action rifles in accordance with patents granted to James Bullard (above). However, despite excellent qualities, the Bullards were unable to withstand the challenge of Winchester, Marlin and others.

Bulldog, Bull Dog A generic term for a small, large-calibre pocket revolver of a pattern originally introduced in the 1860s by Philip →Webley.

Bulldog A diaboló type .177 or .22 airgun pellet made by →Lane Brothers from 1939 until the 1980s.

Bulldog A typically →Diana-type telescoping barrel spring-and-piston air pistol

of unknown provenance, probably dating from the 1920s. It is suspected to have been distributed by Bertram →Webster & Co., trading as The Southern Armoury.

Bull Dog A .38 calibre five shot single action revolver, with a solid frame and a sheath trigger, made by →Forehand & Wadsworth in c. 1877–85 and also known as the →British Bull Dog, →Swamp Angel or →Terror. The design was based on patents granted to Ethan Allen in October 1861 and and Forehand & Wadsworth in April 1875.

Bull Dog Often marked by →Hopkins & Allen, this .44 calibre five shot →Forehand & Wadsworth revolver had a double-action lock and a conventional hammer. It superseded the earlier single-action .38 F&W 'Bull Dog', apparently in the mid 1880s.

Bulldog, *also known as* 'Bulldozer'. An angular cartridge derringer patented by Henry →Hammond in 1866 and made by the →Connecticut Arms Co. until 1868 in chamberings ranging from .22 Short rimfire to .50. The barrel was released by a catch on the breech top and pivoted to the left to expose the chamber.

Bulldog A five-shot double-action swing-cylinder revolver designed by Douglas McClenahan, and made in the U.S.A. by the →Charter Arms Corporation in .357 Magnum or .44 Special. Barrels may be 2.5 or 3 inches long, the latter being discontinued in 1988. Finish may be blue or stainless steel, and some guns (usually with 'P' suffix catalogue numbers) may be obtained with the snubbed 'Pocket Hammer'. They also have wraparound neoprene grips instead of wood. See also 'Police Bulldog', 'Target Bulldog'.

Bulldog Pug Introduced by →Charter Arms in 1986, this is a variant of the Bulldog with a 2.5in barrel, fixed sights, a shrouded ejector and a broad hammer spur.

Bulldog Tracker Another variant of the →Charter Arms Bulldog, dating from c. 1982–6 and 1989 to date, this .357 Magnum revolver has adjustable sights, hand-filling wooden grips and barrels of 2.5–6 inches.

Bulldozer A cartridge derringer patented in the U.S.A. by Henry →Hammond, better known as the 'Bulldog' (q.v.).

Bull Dozer or 'Bulldozer' Associated with four different nineteenth-century →Suicide Special revolvers made in the U.S.A. by the →Crescent Arms Company of Norwich, Connecticut; the →Forehand & Wadsworth Arms Company of Worcester, Massachusetts; →Johnson, Bye & Company and/or →Iver Johnson of Worcester and Fitchburg, Massachusetts; and the →Norwich Arms Company and/or the →Norwich Falls Pistol Company of Norwich, Connecticut. Most of them have sheath triggers.

Bull Fighter or 'Bulfighter'. Associated with small .440 double-action five-shot revolvers made in Liège, c. 1890–1910; manufacturer unknown.

Bullock Hanson B. Bullock, a Federal government arms inspector active in 1862, during the Civil War, applied initials 'HBB'. See also "U.S. arms inspectors' marks".

- Bullseye, Bull's Eye** A Langenhan made →Millita rifle sold by the →Midland Gun Co., Birmingham, Warwickshire, England, prior to 1914.
- Bullseye** An English spring-and-piston barrel-cocking air rifle made by or for the →Midland Gun Company of Birmingham, little more than a copy of the Langenhan made →Millita.
- Bullseye** Otherwise known as the →Gun Toys RO72, this Italian 4.5mm calibre barrel cocking spring-and-piston air pistol has been sold in Britain under brand names such as →Panther.
- Bullseye** Applied to a →Suicide Special revolver made by Otis →Smith of Middlefield and Rock Fall, Connecticut, U.S.A., in the late nineteenth century.
- Bullseye** A lever-action BB Gun, cocked by a rack-and-pinion system designed by Elbert →Searle, made by the Bull's Eye Rifle Company of Chicago, Illinois, U.S.A., in 1907–17.
- Bullseye** A break-open BB Gun, using the butt as a cocking lever, made by the Bull's Eye Rifle Company of Chicago, U.S.A., c. 1907–15.
- Bullseye** A double-barrel spring(-air?) gun made by the →Savage Arms Company in the 1930s, but really little more than a toy.
- Bullseye National Match** A variant of the →Gold Cup National Match Mark IV Series 80, introduced by →Colt's Manufacturing Co., Inc., in 1991. Specially hand-finished, it has Bomar sights.
- Bull's Eye Rifle Company;** Chicago, Illinois, U.S.A. This airgun manufacturer was founded c. 1906 to make a lever-action BB Gun designed by Elbert →Searle, better known for the Savage automatic pistol. The airgun was the subject of U.S. Patent 959889 of 1910. A break-action version was also made, but trading had ceased by 1919.
- Bully Bullets:** see 'Lane Brothers'.
- Bulwark** A small →FN Browning type automatic pistol made by →Beistegui Hermanos in Eibar: 6.35mm, six rounds, striker fired. The guns were often marked by Fabrique d'Armes de →Grande Précision.
- Bunge** Charles Bunge of Geneva, New York State, U.S.A., made repeating spring-and-piston →Gallery Guns in the 1870s. Bunge obtained a U.S. Patent in 1869 to protect a 'Revolving Spring Toy Gun'. He had been listed in the local directories since 1862/3 as a model builder, but from 1870 was described as a machinist or gunsmith. The last entries were made in 1894. Bunge also obtained U.S. Patent 433323 in 1890, for a gun sight, and made pill-lock revolver rifles before firearms chambering better cartridges overtook them.
- Bunker** C.R. Bunker, a government inspector working in 1875, accepted small-arms marked 'CRB'. See also "U.S. arms inspectors' marks".
- Bunn** William Bunn was a gunsmith listed at 22 Chester Street, Kensington Cross, London, England, in 1857.
- Buntline Scout** Made by →Colt's Patent Fire Arms Mfg Co. (1959–64) and the Firearms Division of →Colt Industries (1964 onward), this was a variant of the →Frontier Scout with a 9.5-inch barrel instead of the standard 4.75-inch version. The original pattern, factory model 'Q-2', chambered .22 Long Rifle

rimfire ammunition; the 'F-2' pattern (introduced in 1960) was strengthened for .22 WRM; the 'K-2' pattern (1960) was a Q-2 with an alloy frame; and the 'P-2' was a blued K-2 with simulated staghorn grips.

Buntline Special Now associated with virtually any long-barrelled Colt →Single Action Army revolver, the term was coined by association with Edward Z.C. →Judson, who wrote western fiction as 'Ned Buntline'. Judson claimed to have presented five such guns to leading lawmen, including Bat Masterson and Wyatt Earp. Though no trace of this order has ever been found, the myth is now far too well established for the truth to have much effect. Colt's Patent Fire Arms Mfg Co. made about four thousand of .45 'Buntline Special' →Single Action Army revolvers in 1957–75, distinguished by their 12-inch barrels.

Burbank James K. Burbank, using a 'JKB', accepted U.S. small-arms in 1900–10. See also "U.S. arms inspectors' marks".

Burgess Andrew Burgess, one of the least-known of leading firearms inventors, despite filing nearly 900 patents, was born on 16th January 1837 near Lake George (now Dresden) in New York State. He was apprenticed to the photographer Mathew Brady in 1855, became Brady's partner in 1863 and visited Europe on a photographic mission in 1870. There he first became obsessed with firearms, receiving his first patents (U.S. 119115 and 119218) in September 1871. These protected a variety of swinging-block rifles, and auxiliary magazines for the →Peabody and →Werndl rifles.

¶ Andrew Burgess is best remembered for his lever-action rifles. The first was patented in the U.S.A. on 16th July 1872 (129523), with a one-piece actuating lever and breech-locking piece which had the merit of exceptional simplicity. An improved design followed in October 1875 (U.S. no. 168966), and guns were displayed at the Centennial Exposition held in Philadelphia in 1876.

¶ Rights to a stock-magazine were sold to Winchester, to avoid possible infringements in the →Hotchkiss rifle, but Burgess was also approached by Eli Whitney. The result of this collaboration was the .45–70 Whitney-Burgess rifle (1879–84), and a modified short-action derivative embodying a carrier patented by Samuel Kennedy (U.S. no. 215227). A series of bolt-action rifles followed, including magazine transformations of the German →Mauser and Russian →Berdan patterns. However, to claim that Burgess 'was the first inventor to successfully combine the tube magazine and the bolt-action into a usable arm', as some enthusiasts have done, is misguided: see Vetterli!

¶ An improved Whitney-Burgess rifle was introduced in 1886, chambered for the .32–40 (sporting) or .38–40 (military) cartridges, but Whitney was purchased by the →Winchester Repeating Arms Company in 1888 and work ceased. This gun was the first to use the radial 'drop lock' used in the Burgess shotgun, the Colt Lightning rifle, and the Austrian M1886 →Mannlicher. The Austrians paid royalties on the Burgess patents 235204 (7th December 1880) and 209393 (18th December 1883). In addition, Josef →Schulhof bought Burgess's U.S. Patent 210182, which protected a mechanised butt-magazine system.

¶ Burgess's association with →Marlin began in 1880, when he had been asked to design a new lever-action rifle. Burgess and Marlin jointly patented an improved carrier in 1881, and the basic action is still being used in lever-action Marlin rifles. A liaison with →Colt's Patent Fire Arms Mfg Co. led to the Colt-Burgess lever-action rifle, introduced in 1883 but abandoned two years later (under threat from Winchester) after only 6403 had been made. The Colt featured a solid top link, instead of the split-link of earlier Burgess designs. Winchester had also purchased Patent 290848 (25th December 1883), which protected an improvement to the otherwise weakly constructed Winchester M1873.

¶ The most interesting of Andrew Burgess's firearms was the →Haveness, a slide-action semi-automatic that bought patent-infringement conflicts with first Sylvester →Roper and then also Christopher →Spencer. Made in the form of shotguns (from 1893), rifles (1896) and 'take-down' or folding rifles (1897), the action was initially cycled with a reciprocating pistol grip; after the first shot had been fired, however, the breech opened and automatically ejected the spent cartridge, leaving the firer with nothing to do but close the breech again.

¶ Burgess and his partner Charles Loomis also built 12-bore side-by-side shotguns, fitted with damascus barrels imported from Liège, but the business was sold to Winchester in 1899. Burgess's health was deteriorating and, though his last years were focused on automatic weapons, little had been achieved when he died in Florida on 19th December 1908. His last patent, U.S. no. 822851, had been granted on 5th June 1906 to protect a gas-operated pistol.

Burgess Gun Company Incorporated in 1892 in Buffalo, New York State, this manufacturer was responsible for 12-bore shotguns made in accordance with patents granted to Andrew →Burgess in 1878–9. The guns were loaded by sliding the pistol grip down the underside of the butt, then returning it to chamber a fresh cartridge and close the bolt. The bolt opened automatically when the gun fired to eject the empty case. A few .30 and .44 slide-action rifles were made from 1896 onward, but production ceased when the business was sold to →Winchester in 1899.

Burgsmüller The gunmaking business of H. Burgsmüller & Söhne, of Kreiensen in the Harz mountains made two-barrel combination guns prior to 1914. These were based on Oberndorf →Mauser actions, but had a separate shotgun barrel beneath the rifled pattern. The breech of the shotgun, locked by a lever running forward beneath the fore end, swung outward to the left for loading.

Burkardt Franz Burkardt of Suhl in Thüringen, Germany, was listed in directories as a gunsmith, 1930.

Burlington [The] Usually found as 'Burlington Cartridge' or 'Burlington Express': a tradename associated with H. →Robinson of Bridlington, found on shotgun cartridges made by →Eley Kynoch.

Burns The 'JSB' mark of U.S. government arms inspector John S. Burns will be

found on small-arms accepted in 1898–1911. See also “U.S. arms inspectors’ marks”.

Burnside Ambrose Everett Burnside, born in 1824 in Liberty, Indiana, rose to become an unexceptional general during the American Civil War, a State Governor, and the first President of the →National Rifle Association. He is also remembered as the designer of a breech-loading carbine, protected by U.S. Patent 14491 of 23rd March 1856. The gun fired a unique conical cartridge inserted in the front of the breech-block before the action was closed. A small hole in the base of the cartridge case allowed a side hammer cap lock to be used. Burnside died in Bristol, Rhode Island, in 1881.

Burnside carbine The earliest or ‘First Pattern’ guns, made by the →Bristol Firearms Company, lacked fore-ends and had a separate breech-lock lever curving beneath the hammer. The ‘Second Pattern’, usually credited to George Foster (foreman machinist in the Burnside Rifle Company factory in Providence factory), had an improved breech-block protected by U.S. Patent 27874 of 10th April 1860. The auxiliary locking lever and the →Maynard Tape Primer were discarded. ‘Third Pattern’ guns were similar, but had short wooden fore-ends and stronger hammers. The ‘Fourth Pattern’ Burnside was distinguished by an articulated breech-block patented in 1863 by Isaac →Hartshorn, Burnside’s sales agent. The ‘Fifth Pattern’, based on the Hartshorn breech, had an additional pin-and-track system, designed by George →Bacon, to open the breech automatically; Hartshorn guns required two manual actions to be performed in the correct order, otherwise the breech-block would jam. Later guns also benefited from improved ‘bell mouth’ cartridges which had been designed by Foster. These were made in a single piece, with a circumferential groove inside the case mouth containing lubricating wax. The Burnside system, largely because it relied on an external cap-lock, was popular with the military authorities. Total Federal purchases amounted to 55,567 between 1st January 1861 and 30th June 1866.

Burnside Rifle Company; Providence, Rhode Island, U.S.A. This business was formed in 1859, by proprietors headed by Charles Jackson, to continue the work on the →Burnside carbine. Tooling began in a new factory. Once again, the Civil War proved a boon: in July 1861, the U.S. Chief of Ordnance, Brigadier General James Ripley, passed Jackson a request for eight hundred Burnside carbines from Governor William Sprague of Rhode Island. These ‘Second pattern carbines’ were finally delivered in March 1862.

Burpee Horace Burpee, a Federal government inspector active during the American Civil War, accepted rifle-muskets marked ‘HB’. See also “U.S. arms inspectors’ marks”.

Burroughs Adding Machine Company Formed in 1905 in Detroit, Michigan, succeeding the Arithmometer Company. A contract for 250,000 .45 M1911 →Colt-Browning pistols was placed during the First World War, but no guns were ever made.

Burrow, Burrows: see also ‘Burroughs’.

- Burrow** James Burrow or 'Burrows', a gunsmith and crossbow maker, traded from 26 Friargate and then 116 Fishergate, Preston, Lancashire, England, from 1817 until 1870/1. He is believed to have been succeeded by a similarly named son (trading from 46 Fishgate, Preston, and Lowther Street in Carlisle), who loaded, or perhaps simply sold shotgun cartridges marked 'The Economic' prior to 1914.
- Burrows** Edwin Burrows. A gunmaker listed by H.J. →Blanch at 110 Cannon Street, London, England, in 1878.
- Burrows** William J. Burrows designed the first lever-action →Daisy BB Gun, protected by U.S. Patent 765270 of 19th July 1904. The specification records his residence in Plymouth, Michigan.
- Burt** Addison M. Burt of New York City made →Springfield rifle-muskets, delivering 11,495 against orders for fifty thousand placed on 26th December 1861. Some surviving guns were converted to →Allin-system breechloaders in the late 1860s.
- Burton**, usually as 'The Burton'. Associated with shotgun cartridges loaded by →Coltman of Burton upon Trent, Nottinghamshire, England.
- Burton** Firearms designer Bethel Burton of Brooklyn, New York, active from the 1850s until his death in 1904, was granted a variety of U.S. Patents. Beginning with no. 26475 of 20th December 1859, granted to protect a 'breech-loading firearm' with an early form of segmental 'straight-pull' bolt, they included 81059 of 11th August 1868 for a bolt-action 'breech-loading firearm' with interrupted-screw locking threads at the rear; 92013 of 29th June 1869 for a similar bolt-action gun with a tube magazine beneath the barrel; 143614 of 14th October 1873, jointly with W.G. Burton, for an improved form of the 1869-patent magazine rifle; and 232880 of 5th October 1880 for a 'magazine firearm'. U.S. Patent 390114 of 25th September 1888 was granted, while Burton was living in Britain, for an 'Automatic Machine Gun', whereas 622443 of 4th April 1899, 640627 of 2nd January 1900 and 656807 of 28th August 1900 were all granted to protect bolt-action magazine rifles. Burton's last effort, 785085 of 21st March 1905, for an 'automatic firearm' was granted posthumously to the Administrator of his estate, his son Henry C. Burton. Bethel Burton also designed waterproof percussion caps, self-contained cartridges, gun sights, and a combined bayonet and gun rest (U.S. Patent 613241 of November 1898). See 'Lee-Burton' and 'Ward-Burton'.
- Burton's Patent Double Magazine Rifle.** Developed by Bethel Burton in the mid 1880s, this attracted sufficient attention to be included in the British *Treatise on Military Small Arms and Ammunition* in 1888, but was too heavy and unnecessarily complicated to succeed.
- Burwood** [The]. A brand name found on shotgun cartridges handled by Charles →Hellis & Sons of London, England.
- Bush & Field:** see 'Sportsman Bush & Field'.
- Bushman.** A brand name associated with a revolver made in Belgium prior to 1914 by A. →Bertrand.

- Bushmaster** A variant of the →Galway Fieldmaster pneumatic rifle, announced in 1984 and made in small numbers until 1988.
- Bushmaster** Associated with a bolt-action rifle made by the →Winslow Arms Company, distinguished by the design of the stock. See also →Plainsmaster.
- Business Rifle:** see also ‘New Model Hammerless Business Rifle’.
- Business Rifle**, or “Sharps’ Business Rifle”, 1874 pattern. This plain looking gun appeared in the summer of 1876, with an octagonal barrel, a double set trigger, open sights, and an oil finished straight-wrist butt. Chamberings were restricted to .45–70 or .45–100.
- Business Rifle** Made by E. →Remington & Sons in 1875–c. 1882, this was a minor variant of the No. 1 Sporting Rifle with a round barrel invariably chambering the .45–70 cartridge. See also ‘Remington rifles, rolling-block action’.
- Bussey** George Gibson Bussey. Designer of an airgun protected by British Patent 526/76 of 1876, and proprietor of G.G. Bussey & Co. (below).
- Bussey** G.G. Bussey & Company of Museum Works, Rye Lane, Peckham, London S.E., made sporting goods. The business was advertising “Bussey’s Patent Gyro Pigeon and Trap” and “Bussey’s Improved Hawk Kites” (‘by the judicious use of which many a good Bag of Game may be secured...’) in 1871. Bussey also owned the Museum of Firearms, Peckham, where his wares were customarily exhibited. Remembered only as an airgun patentee, his factory in Peckham operated from 1870 until 1914 or later; the trading style changed from ‘& Co.’ to ‘& Co. Ltd’ in 1884. An advertisement in the 1910 edition of W.W. Greener’s *The Gun and Its Development* indicates that Bussey was then making ‘world famed cricket, golf, tennis, bowls, croquet [equipment]’. The trademark comprised ‘GGB’ pierced by a horizontal arrow.
- Buster Brown Model** This was a minor variant of the →Warrior BB Gun, with a shot cup replacing the barrel housing lug, made for the →Brown Shoe Company as a ‘premium’ item between 1909 and c. 1912.
- Butler** Arthur Henry Butler, a ‘clerk’ of 51 Witton Road, Birmingham, Warwickshire, England, was co-patentee with Frederick George →Clark of an airgun with a revolving cylindrical magazine: British Patent 4622/06 of 1906.
- Butler** The ‘JGB’ marks of arms inspector John G. Butler, a captain in the U.S. Army, were applied to →Colt revolvers accepted in 1886. See also “U.S. arms inspectors’ marks”.
- Butt** The part of the stock extending backward against the firer’s shoulder. It may be integral with the →fore-end, forming a one-piece stock, or a separate component. The upper edge of the butt is known as the →comb, which terminates at the shoulder in the *heel*. The *toe* is the lower tip of the butt, and the →grip, *small* or *wrist* is the narrow portion immediately behind the action facilitating an effectual hand grip.
- Butt** Zadock Butt, a government arms inspector working in 1862, accepted small-arms marked ‘ZB’. See also “U.S. arms inspectors’ marks”.
- Butt or shoulder plate.** A fixture on the end of the butt, either to protect the wood or to ease the shock of firing on the firer’s shoulder. The traditional

metal pattern generally has a concave surface, known variously as *rifle type* or *crescentic*. Many sporting guns have been fitted with a straight or *shotgun type* plate, while others, especially recent ones, have had plates of rubber or injection moulded plastic. The most powerful sporting guns have compressible butt plates, often of ventilated pattern. Target rifles may have hooked or adjustable butt plates.

Butterfield Gunsmith Jesse Butterfield of Philadelphia, Pennsylvania, U.S.A., first achieved notoriety by copying the →Deringer (though his guns had a patented priming tube mounted vertically ahead of the hammer). Butterfield also developed a cap-lock revolver with a detachable tube of disc primers ahead of the trigger guard, protected by U.S. Patent 12124 of 1855, but only about seven hundred of these five-shot single action 'Army' patterns were completed by →Krider & Co. in 1861–2.

Butterfield & Marshall; Philadelphia, Pennsylvania. This partnership of Jesse Butterfield and Simeon Marshall traded c. 1856–60. It was succeeded by Butterfield & Company.

Büttner A. Büttner; Zella St Blasii in Thüringen, Germany. Listed in 1900 as a gunmaker.

Büttner Albert Büttner; Suhl in Thüringen, Germany. Listed as a gunmaker, 1930.

Büttner Alf. Büttner; Suhl in Thüringen, Germany. Listed in the 1920 edition of the *Deutsches Adressbuch* as a gunsmith, and in 1939 as '& Söhne'.

Büttner Gebr. Büttner. Owned in the 1920s by Ernst, Wilhelm & Max Büttner, this gunmaking business in Suhl-Neundorf may have succeeded to the operations of Ernst Büttner (above).

Büttner Otto Büttner; Schmalkalden in Thüringen. A retailer of sporting guns and ammunition active in Germany in 1941.

Butts William Mathews Butts was a wholesale merchant and partner with Austin →Wheeler in the →Grand Rapids Rifle Company. Wheeler and Butts were co-patentees with their employees Caulkins and Lindberg of the first →Rapid BB Gun.

Buzz Barton Special Otherwise known as the →Daisy No. 103, which had taken the →Markham/King No. 55 as its basis, production of this thousand-shot BB Gun was made confined to 1934–6. The 'Buzz Barton Super Special Model', made by →Daisy only in 1934, used the frame design of the obsolescent No. 3 Model B. It had a prominent sighting tube above the receiver.

BV and a crown, sometimes encircled. The view mark used by the Guardians of the Proof House in Birmingham, 1904–54.

bye Found on small-arms ammunition components made during the Second World War by 'Hanomag'–Hannover'sche Maschinenbau AG vorm. Georg →Egestorff of Hannover-Linden, Germany.

Bye Martin Bye was co-patentee of an air pistol protected by U.S. Patents 176003 and 176004 of 1876, and a partner of Iver →Johnson in →Johnson, Bye & Company of Worcester, Massachusetts. Both men were of Norwegian origin.

- byf** Used by →Mauser Werke KG of Oberndorf am Neckar, Württemberg, Germany, on machine-guns, pistols, rifles and components, this code was granted in February 1941 and used until the end of the Second World War.
- Bylandt** Le Comte A. de Bylandt was the patentee of a repeating firearm with a cylindrical magazine containing 'false cartridges' (detachable chambers) loaded with powder and ball. The magazine was rotated by pulling upward on the top-lever, which pivoted around the rear of the action and cocked the hammer. Guns of this type were made in Liège in the late 1850s by the gunsmith →Decortis.
- bym** Found on small-arms components made for the German armed forces during the Second World War by Genossenschafts Maschinenhaus der Büchsenmacher of →Ferlach/Kärnten.
- bys** Found on Kar. 98k barrels and other small arms components made during the Second World War by →Ruhrstal AG of Witten an der Ruhr, Germany.
- byw** Associated with small-arms components made in 1941–5 by Stettiner Schraubenwerk Johannes →Schäfer of Stettin, Germany.
- bzt** Found on butts, pistol grips and other German small arms components made in 1941–5 by Fritz →Wolf, Rob. Sohn, of Zella Mehlis.
- bzz** Found on telescope sights and associated components made in 1941–5 by the camera- and camera-lens factory of IG →Farbenindustrie in München, Germany.

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