

Jane's

INFANTRY WEAPONS

Edited by Terry J Gander

Twenty-second Edition
1996-97

ISBN 0 7106 1354 7

"Jane's" is a registered trade mark

Copyright © 1996 by Jane's Information Group Limited, Sentinel House, 163 Brighton Road, Coulsdon, Surrey CR5 2NH, UK

In the USA and its dependencies

Jane's Information Group Inc, 1340 Braddock Place, Suite 300, Alexandria, VA 22314-1651, USA

All rights reserved. No part of this publication may be reproduced, stored in retrieval systems or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Publishers.

Licences, particularly for use of the data in databases or local area networks are available on application to the Publishers.

Infringements of any of the above rights will be liable to prosecution under UK or US civil or criminal law.

Whilst every care has been taken in the compilation of this publication to ensure its accuracy at the time of going to press, the Publishers cannot be held responsible for any errors or omissions or any loss arising therefrom.

British Library Cataloguing-in-Publication Data.

A catalogue record for this book is available from the British Library.

Printed and bound in Great Britain by Biddles Ltd, Guildford and King's Lynn

Contents

How to use this book	[7]
Foreword	[9]
New entries in this Edition	[13]
Entries deleted from this Edition	[14]
Glossary	[15]
Personal Weapons	1
Pistols	3
Sub-machine guns	74
Rifles	117
Light support weapons	206
Crew-served Weapons	239
Machine guns	241
Cannon	294
Anti-tank weapons	304
Mortars	353
Mortar fire control	412
Ammunition	421
Small arms and cannon ammunition	423
Combat grenades	465
Mortar ammunition	533
Pyrotechnics	595
Sighting Equipment	639
Suppressors	689
Addenda	697
National Inventories	699
Manufacturers Index	711
Alphabetical Index	720

ADMINISTRATION

Publishing Director: Robert Hutchinson

Managing Editor: Peter Howard

Production Database Manager: Ruth Simmance

Editorial Services Manager: Sulann Staniford

Production Editor: Jane Stimson

EDITORIAL OFFICES

Jane's Information Group Limited, Sentinel House,
163 Brighton Road, Coulsdon, Surrey CR5 2NH, UK

Tel: +44 181 700 3700

Telex: 916907 Janes G

Fax: +44 181 700 3900

e-mail: yearbook@janes.co.uk

SALES OFFICES

Send enquiries to International Sales Manager:

Fabiana Angelini (Europe, CIS, Africa, Middle East)

David Eaton-Jones (Scandinavia, Far East, UK)

Jane's Information Group Limited, UK address as above

Tel Enquiries: +44 181 700 3759

Fax Enquiries: +44 181 763 1006

Fax Orders: +44 181 763 1005

Send USA enquiries to:

Joe McHale, Senior Vice-President Product Sales,

Jane's Information Group Inc, 1340 Braddock Place, Suite 300,
Alexandria, VA 22314-1651

Tel: +1 703 683 3700

Telex: 6819193

Fax: +1 703 836 0029

ADVERTISEMENT SALES OFFICES

Advertisement Sales Manager: Richard West

Australia: Brendan Gullifer, Havre & Gullifer (Pty) Ltd, Level 50,
101 Collins Street, Melbourne 3000

Tel: +61 3 9650 1100

Fax: +61 3 9650 6611

Benelux: Richard West, Jane's Information Group (see UK/Rest of
World)

Brazil: L Bilyk, Brazmedia International S/C Ltda, Alameda Gabriel
Monterio da Silva, 366 CEP, 01442 São Paulo

Tel: +55 11 853 4133

Telex: 32836 BMED BR

Fax: +55 11 852 6485

France: Patrice Février, Jane's Information Group – France,
BP 418, 35 avenue MacMahon, F-75824 Paris Cedex

Tel: +33 1 45 72 33 11

Fax: +33 1 45 72 17 95

Germany and Austria: Janet Scott, Jane's Information Group
(see UK/Rest of World)

Hong Kong: Jeremy Miller, Major Media Ltd, Room 1402, 14F
Capitol Centre, 5-19 Jardine's Bazaar, Causeway Bay

Tel: +852 890 3110

Fax: +852 576 3397

Israel: Oreet Ben-Yaacov, Oreet International Media, 15 Kinneret
Street, IL-51201 Bene-Berak

Tel: +972 3 570 6527

Fax: +972 3 570 6526

Italy and Switzerland: Ediconsult Internazionale Srl, Piazza Fontane
Marose 3, I-16123 Genoa, Italy

Tel: +39 10 583684

Telex: 281197 EDINT I

Fax: +39 10 566578

Japan: Intermart/EAC Inc, 1-7 Akasaka 9-chome, Minato-Ku,
Tokyo 107

Tel: +81 3 5474 7835

Fax: +81 3 5474 7837

Korea, South: Young Seoh Chinn, JES Media International, 6th Floor
Donghye Building, 47-16 Myungil-Dong, Kangdong-Gu, Seoul
134-070

Tel: +82 2 481 3411

Fax: +82 2 481 3414

Scandinavia: Gillian Thompson, The Falsten Partnership,
11 Chardmore Road, Stamford Hill, London N16 6JA, UK

Tel: +44 181 806 2301

Fax: +44 181 806 8137

Singapore, Indonesia, Malaysia, Philippines, Taiwan and Thailand:
Hoo Siew Sai, Major Media (Singapore) Pte Ltd, 6th Floor, 52 Chin
Swee Road, Singapore 0316

Tel: +65 738 0122

Telex: RS 43370 AMPLS

Fax: +65 738 2108

South Africa: Janet Scott, Jane's Information Group (see UK/Rest of
World)

Spain: Jesus Moran Iglesias, Varex SA, Modesto Lafuente 4,
E-28010 Madrid

Tel: +34 1 448 7622

Fax: +34 1 446 0198

UK/Rest of World: Janet Scott, Jane's Information Group,
Sentinel House, 163 Brighton Road, Coulsdon,
Surrey CR5 2NH

Tel: +44 181 700 3740

Telex: 916907 Janes G

Fax: +44 181 700 3744

USA

Advertising Production Manager/US & Canada – Maureen Nute
Jane's Information Group Inc, 1340 Braddock Place, Suite 300,
Alexandria, VA 22314 USA

Tel: +1 703 683 3700

Fax: +1 703 836 0029

Eastern United States and Canada

Kimberley S Hanson
Global Media Services Inc, 299 Herndon Parkway, Suite 308,
Herndon, VA 22070 USA

Tel: +1 703 318 5054

Fax: +1 703 318 9728

Southeastern USA

Kristin Schulze
Global Media Services Inc, PO Box 290706, Temple Terrace,
FL 33617 USA

Tel: +1 813 987 2359

Fax: +1 813 980 0187

Western United States and Canada

Anne Marie St. John-Brooks
Global Media Services Inc, 25125 Santa Clara Street, Suite 290,
Hayward, CA 94544 USA

Tel: +1 510 582 7447

Fax: +1 510 582 7448

Administration: UK: Fay Lenham

USA and Canada: Maureen Nute

WHEN YOU CAN'T WAIT FOR DAYLIGHT
MEPROLIGHT
 GIVES YOU THE EDGE

INNOVATIVE SOLUTIONS FOR THE
 21ST CENTURY FROM THE INDUSTRY'S
 MOST EXPERIENCED DESIGN TEAM

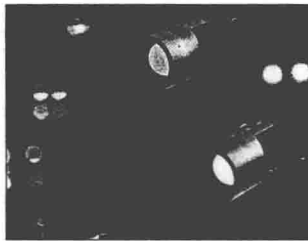
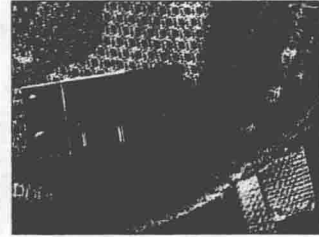
RAPID CUSTOM DESIGNS FOR
 SPECIAL APPLICATIONS

MEPROLIGHT's ever expanding range of
 Tritium Illuminated Products includes:
 Sights for Light & Medium Weapons,
 Personal Identification Markers,
 Map Readers and Aiming Post Lights

Over 1,000,000 Meprolight
 sights in service worldwide.

MEPROLIGHT products are
 designed to withstand
 prolonged immersion
 in common gun cleaning
 solvents.

Quality system meets US, ISO
 and NATO standards



SCOPUS LIGHT (1990) LTD.

Kibbutz Mayan Zvi - 30805 Israel
 Tel: 972-6-390787
 Fax: 972-6-396861
 Tlx: 46204 SCOPUS IL

In the US Contact:

HESCO INC.
 2821 Greenville Rd.
 La Grange, GA 30240 USA
 Tel: 706-884-7967
 Fax: 706-882-4683

Instalaza
S.A.

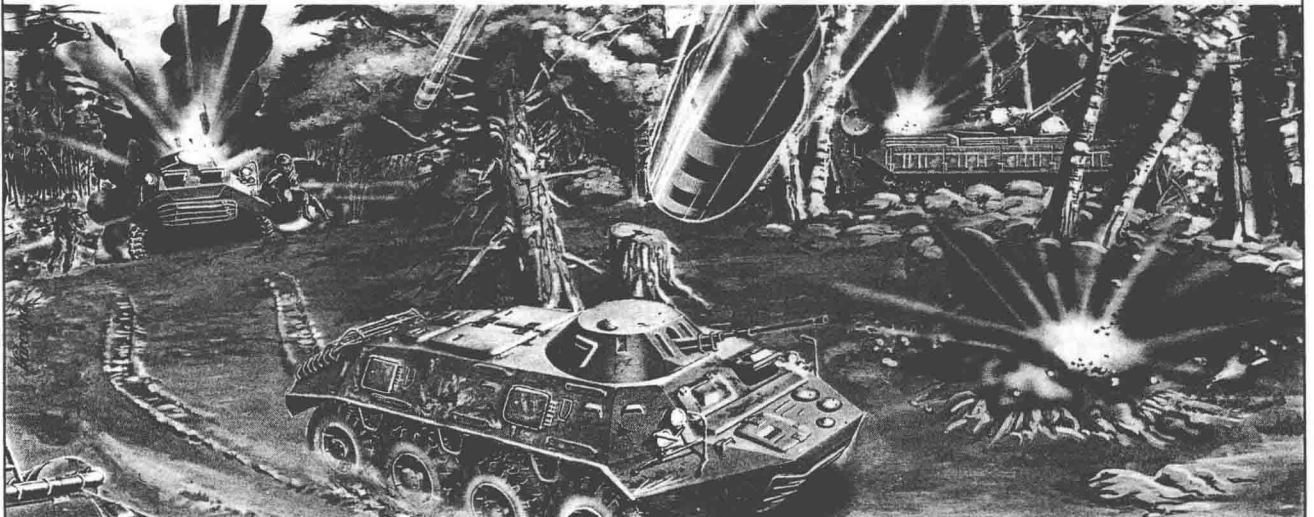
MAT-120 Mortar Ammunition

- Fired from 120 mm calibre, smooth bore mortars
- No stored energy
- Maintenance free
- Covered area up to 3,500 m²
- Anti-armour capability

INSTALAZA, S.A.

Commercial Department:
 Nuñez de Balboa, 103. 1ª Planta
 28006 MADRID (España)
 Tels.: 34-1-561 88 35
 34-1-562 63 50
 Telefax 34-1-562 63 50

Factory:
 Monreal, 27
 50002 ZARAGOZA (España)
 Tel. 34-76-29 34 23
 Telefax 34-76-29 93 31
 Télex 58952 INTZ E



How to use this book

The book is laid out in a series of main sections, each of which relates to a particular weapon type, for example, Pistols, Rifles, and so on. Within each section details are provided of Development, giving the outline history of the weapon, Description, providing the technical details, and Data, the hard facts relating to each weapon as far as can be determined. Then follows Status and Manufacturer. The details provided for the Manufacturer are the outline address only (where positively identified) — telephone and fax information is

provided in the Manufacturers Index at the rear of the book.

Within each weapon type the section is laid out in country order. Within each national section the newest models are placed first. If only a weapon designation is available it may be found using the main Index.

A National Inventories section contains a nation-by-nation list of the known types of weapons in service. It cannot be fully comprehensive so additional or corrective information would be welcomed by the Editor.

To help users of this title evaluate the published data, Jane's Information Group has divided entries into three categories:-

● **VERIFIED** The editor has made a detailed examination of the entry's content and checked its relevancy and accuracy for publication in the new edition to the best of his ability.

● **UPDATED** During the verification process, significant changes to content have been made to reflect the latest position known to Jane's at the time of publication.

● **NEW ENTRY** Information on new equipment and/or systems appearing for the first time in the title.

In future all new pictures will be dated with the year of publication. New pictures this year are dated 1996.

SIG Small arms: high firepower, with integrated safety, superior and reliable



SIG small arms are **safe and highly accurate.** Internationally tested, even under extreme conditions. Functionally dependable, powerful and precise,

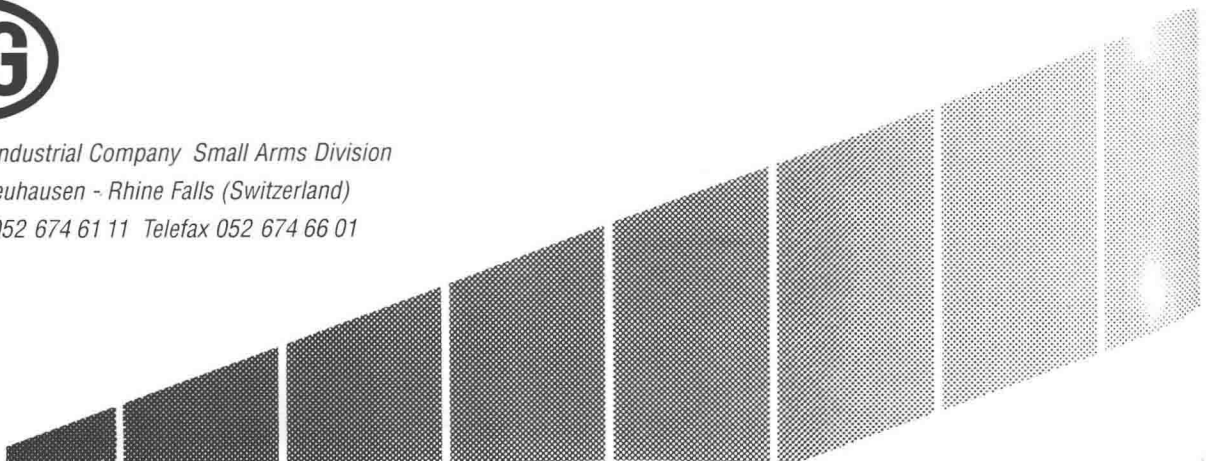
technically superior. SIG SAUER double-action pistols with advanced safety concept. **High rate of fire** and large magazine capacity for army and police. Compact weapons with maximum firepower for concealed carrying.

SIG assault rifles and precision rifles: for **optimum shooting**

accuracy and varied missions. Tested under rigorous army conditions. SIG small arms: employed worldwide with armies, police forces and special units.



SIG Swiss Industrial Company Small Arms Division
CH-8212 Neuhausen - Rhine Falls (Switzerland)
Telephone 052 674 61 11 Telefax 052 674 66 01



Foreword

Too few people are paying attention to the current huge toll of death and destruction being inflicted by infantry weapons — which are killing more people every year than any other type of weapon or weapon system. They are not always in the hands of the soldiers for whom they were intended.

That this has been so for some considerable time takes on extra importance when considering the funds which have been spent on weapons and weapon systems of every other kind. Wealth on a lavish scale has been expended on missile systems, warships, all manner of aircraft platforms, and armoured vehicles by the thousand, yet relatively few of them have ever been used in anger for they were not designed and manufactured for the type of low-intensity conflict now prevalent. Infantry weapons outnumber all others. The United Nations Secretary General, Boutros Boutros Ghali, has stated that infantry weapons account for some 90 per cent of the deaths and injuries in armed conflicts.

As with all other weapons, rifles and hand guns are made with the expectation that they will be used. However, the main reason that infantry weapons are having such an effect on the human race at present is the scale of their proliferation.

All around the world, recent years have witnessed a massive increase in the quantities of infantry weapons in all manner of hands with irregular or unlawful purposes. The result is a rising tally of death and injury in locations where once such escalations were low scale or almost unknown. Locations such as Central and West Africa, the Indian subcontinent and parts of the former Soviet Union come readily to mind, while there are many others. In South African townships, where conflict is no stranger, the current most common cause of death among males aged between 20 and 30 years is gunshot wounds.

There appears to be one main reason why this proliferation has taken place. Given that the world has become a very violent place, and that the aftermath of major conflicts and political confrontations has resulted in infantry weapons being distributed to allies of one side or other of the major power blocs during the last 50 years, it has to be accepted that in parts of the world the abject failure of some states to govern has led to the current enormous demand for infantry weapons. As fragile governments and regimes crumble under the pressures of corruption, incompetence or old unsettled quarrels, populations tend to lose whatever affiliations they might have had to the state and revert to other loyalties such as religious, ethnic or tribal groupings. As states lose control, crime flourishes and adds further tensions. Weapons are obtained from whatever sources are convenient for protection against supposed or real enemies. Local disputes once settled with clubs, edged weapons or, at best, sporting firearms, are instead conducted using more lethal weapons. The demand for more and more weapons grows. Being relatively compact and light items, they can almost always be supplied at a profit by established smuggling and criminal routes. The ratchet of misery is thereby nudged a further notch.

There is no shortage of weapons to be obtained. A United Nations Institute for Disarmament Research paper (no 34) lists nearly 300 manufacturers in over 50 countries manufacturing small arms, associated equipment and accessories. This represents a 25 per cent increase in companies over a 10-year period when the end of the Cold War resulted in a glut of weapons anyway.

That glut has produced some bizarre results. The United Nations paper already quoted estimates that in Mozambique alone there are 1.5 million Kalashnikov series weapons unaccounted for. In the Northwest region of the Indian subcontinent stockpiles of rifles numbering some two to three million have been reported. The latter have been appearing as far away as Mumbai (Bombay) and Sri Lanka. Some of the Mozambique weapons changed hands in Rwanda for as little as a bag of maize.

Something needs to be done. After the understandable efforts to establish treaties relating to nuclear stockpiles, chemical weapons and land mines, the proliferation of infantry weapons must be accorded a higher priority than the subject has received to date. It may be impossible to control fully the movement of light weapons but the efforts of the

agencies attempting to do so would be considerably aided if a central pool of information could be established relating to batch numbers, quantities, end users, stocks held, and so on. It would also be of considerable importance to the cause of peace if some nations and concerns currently manufacturing and marketing relatively low-tech weaponry would take a more responsible view of their activities.

At present there is no centralised method of supporting data-gathering organisations or ways of placing sanctions on rogue supplier nations. The United Nations has no effective means of dealing with the proliferation of infantry weapons. The UN Charter even restrains the body's authority to intervene in the internal affairs of member states. Perhaps a start could be made by UN member nations giving their organisation more 'teeth'.

Seen in this light the contents of this Yearbook take on an even greater importance.

Ammunition

Having stated the above, consideration of the past year's infantry weapon developments has to relate to the official aspects of small arms. There have been several recent highlights but most come under the headings of ammunition and systems rather than the usual categories of new pistols, rifles and so on. As a short perusal of the New Entries pages of this Yearbook will soon reveal, most of the completely new material relates to ammunition types.

The Ammunition section has been completely revised this year to provide a more in-depth study of what, after all, are the real weapons delivered by firearms, namely the bullets and other projectiles. It should be borne in mind that the coverage provided relates to military cartridges only as a Yearbook of this nature cannot attempt to cover the many and various commercial and sporting cartridges produced today.

Yet the term ammunition does not include just cartridges. For our purposes it also includes mortar bombs and it is here that the past year has witnessed some significant developments in the so-called smart munition field normally associated with artillery but now extending to infantry mortars. Although these have been around for a while, this past year has seen some programmes come to full technical fruition.

During 1995 the Bofors/Saab 120 mm Strix was the first smart mortar munition to reach full production status and is now being issued to the Swedish Army, thereby becoming the first of its kind to enter service anywhere in the world. Strix will not be the last. The Diehl Bussard guided 120 mm mortar bomb is involved in the Precision Guided Mortar Munition (PGMM) programme for possible US Army service in association with Lockheed Martin, while the 120 mm Gran (Facet) laser-guided mortar bomb has been offered to the world's export markets by the Russians. The UK self-homing 81 mm Merlin is also well advanced along its path to production, although a firm order has yet to emerge. In the USA development work on fibre optic guidance methods for mortar munitions are reported to be progressing well.

Other significant ammunition developments which have come closer to production during the last year relate to fuze systems. Advanced projects such as the US Objective Individual Combat Weapon (OICW) and Objective Crew Served Weapon (OCSW) have to involve highly accurate time fuzes which are set by the respective fire control systems only an instant before firing to ensure that their airburst projectiles function exactly when required. The airburst function is, after all, the main reason why the OICW and OCSW are being developed and the latest available information relating to these weapons will be found in their relevant sections. However, the technology involved has passed from the developmental to the hardware stage over the last few months and a new era will soon be upon us. The electronics and other associated techniques employed with the OICW and OCSW will eventually find many other applications in other areas of the infantry weapons field. Armourers will soon have to add oscilloscopes to their tool boxes.

To revert to less technically advanced topics, new ammunition types continue to appear on the scene. One, mentioned in these pages for the first time, is the 0.357 SIG, a combination of the 0.357 Magnum bullet

MANROY MACHINE GUNS

Manroy Ltd, Beckley, E. Sussex TN31 6TS, UK. Tel 01797 260553 Fax 01797 260374

• 50" M2HB
7.62mm GPMG



and the necked case and loading from the 0.40 S & W. SIG have already produced pistols to fire this potent round so we can now await the course of ready acceptance or relegation as yet another byway of ammunition development, the latter being something which has happened to many other cartridges which seemed promising but failed to find sufficient takers.

One well established cartridge which will take some effort to topple from its position as the most widely used pistol and sub-machine gun cartridge is the 9 × 19 mm Parabellum. This venerable design has been around since the turn of the century, with various forecasts that it would fade away proving wrong.

There seem to be many sound reasons for the 9 mm Parabellum's replacement. Among others, in modern terms it is relatively low powered, has an indifferent armour penetration performance (an important consideration in these times of the increasing use of body armour by military, police and paramilitary forces), while retaining a high level of potentially lethal energy capable of harming non participants for some distance in excess of the ranges at which it is normally employed operationally. Yet the 9 mm Parabellum soldiers on apparently heedless of such considerations.

It now seems that at least one concern is determined to make inroads into the 9 mm Parabellum's predominance. The ever-innovative Fabrique Nationale Herstal (FN) has launched a major long-term programme relating to its 5.7 × 28 mm SS190 cartridge. Once again, this cartridge is nothing new as it has received coverage within this Yearbook for some years. Until now only one weapon was available to fire it, FN's futuristic P90 Personal Defence Weapon. That will change during 1996 with the introduction by FN of its Five-seveN pistol, also firing the SS190. (See the entry in the Pistols section for available details on the Five-seveN.)

FN is expending considerable resources to market what it already refers to as a weapon system firing the 5.7 × 28 mm SS190 which, it claims, is the true replacement for the 9 mm Parabellum. FN outlines numerous reasons, covering headings such as logistics and low recoil to ballistic and on-target performance. The seeming advantages of the new round over the 9 mm Parabellum veteran are indeed many and we wish FN well with its endeavours. The company is obviously aware of the long and difficult path it will have to traverse if it is to achieve even a partial replacement of the 9 mm Parabellum but the potential rewards are substantial and likely to be very long-lasting. We await results, although it may be some years before they are forthcoming. Apparently FN is willing to wait 10 to 15 years before assessing the degree of market penetration success. We look forward to charting the progress.

Innovations

While the past year cannot be said to have been a vintage one regarding infantry weapon designs (other than the first views of the OICW and OCSW), there have been some items of note. Included in this edition are some entirely new products on the market although several are already familiar in other guises.

For instance the GLOCK compact pistols are exactly as stated, compact versions of already well established and successful models. The Czech CZ Model 100 and Polish MAG 95 are indications that designers from the former Eastern Bloc have taken note of safety and other design trends in the West to ensure their products have at least a chance in the market place. Both pistols fire the 9 mm Parabellum cartridge. In this area the Russians are being somewhat subdued and no doubt have something in the pipeline more advanced than their PMM, an update of their PM Makarov pistol, which can now fire a more powerful 9 × 18 mm cartridge which merely places it in the run-of-the-mill 9 mm Parabellum category. What that something is we will have to wait and see. Their 9 mm Gyurza, fearsome in body armour-piercing performance as it might be, is definitely in the special forces category and is unlikely to find acceptance on any wide scale as a standard service pistol. We await developments from that quarter.

On the rifle front, there have been relatively few innovations this year, other than the little 5.56 mm Galil Micro, unless one contemplates the specialised sniper rifles. The French PGM series makes its appearance for the first time while mention of a missing link in the Russian armoury can be made at last. This is the 12.7 mm V-94 sniper rifle.

As with its counterparts in the West, the V-94 is not really a sniper rifle but an anti-materiel rifle, capable of taking out critical items of equipment and light vehicles up to ranges of about 1,500 m. The usual limitations of the 12.7 mm cartridges, from both East and West, preclude employment against anything smaller than communications shelters, trucks and aircraft at such ranges but the economic single shot from an anti-materiel rifle can wreak havoc and makes the development of such weapons worthy of increasing consideration.

However, it seems that designers are unwilling to place limits on the calibre of such weapons. The inclusion this year of the extraordinary

20 mm RT-20 produced in Croatia is an indication of what could well be an avenue for further development. The designers of the RT-20 seem to have deduced that if a 12.7 mm round can be usefully employed in the anti-materiel role, why not go one step further? That step has led to the RT-20 firing 20 mm cannon ammunition. No doubt the on-target effects are worthy of the designers' efforts but the introduction of such a cartridge creates all manner of user problems. Quite apart from the weights involved, the recoil produced on firing the RT-20 cannot be comfortable or bearable for any prolonged use. One is reminded of the First World War 12.7 mm Mauser anti-tank rifle which created damaged collar bones when fired but once by any particular individual. If the result was a damaged tank this was apparently considered acceptable but such deployments are unlikely to be considered economic in personnel management terms these days. Hence the recoilless arrangements and large muzzle brake of the RT-20. No doubt these palliatives do work to a certain extent but the sight of generous amounts of foam rubber padding on shoulder/butt interfaces does not inspire confidence. Neither does the prospect of the rearwards-facing venturi kicking up debris to indicate the firer's position. Yet for all this the RT-20 is a formidable addition to the soldier's array of potential weaponry.

The RT-20 already has a stable mate. As this Foreword was being prepared news arrived of the South African AEROTEK NTW 20 anti-materiel rifle firing 20 × 82 mm ammunition. This, as with the RT-20, appears to be a formidable piece of kit which, it is claimed, has a very low recoil for its calibre, no doubt because of the large muzzle brake and combined hydraulic/pneumatic damping and buffer systems. Available details regarding the NTW 20 appear in the *Addenda*.

Future anti-materiel rifles might well utilise the Eastern Bloc 14.5 × 114 mm round. One of the Hungarian anti-materiel rifles, the Gepard M3, already employs this cartridge. As we go to press (and unfortunately too late for inclusion elsewhere in this edition) news has arrived of a Czech design foray utilising the 14.5 × 114 mm cartridge. This is not a rifle but a heavy machine gun, a project employing the KPV 14.5 mm machine gun on a ground tripod as a heavy fire support weapon; the new combination has been named the Pirat. Until now KPVs have either been deployed on air defence carriages or armoured vehicles. Utilising the KPV on a ground tripod makes some sort of sense until one contemplates the total weight involved with the Pirat, namely 202 kg. In action the Pirat requires a crew of three (one gunner and two ammunition handlers) and a heavy softmount arrangement has to be included to reduce the considerable recoil and judder produced on firing. From the little information on hand regarding the Pirat it seems that the end result will be something of a handful for any infantry unit to contemplate. As yet the Pirat is in the prototype stage. An earlier Russian development along similar lines, the 14.5 mm PKP dating from the 1950s, found only limited acceptance and soon faded from the scene.

One other machine gun innovation worthy of note is the 12.7 mm technology demonstrator produced by CTA International, a joint concern formed by Giat Industries of France and Royal Ordnance of the UK. The prime purpose of CTA International is to develop and produce a 45 mm vehicle cannon firing Case Telescoped Ammunition (CTA) but their 12.7 mm Gatling-type machine gun is another possible application for such ammunition.

At this stage the CTA International 12.7 mm machine gun remains as stated, a technology demonstrator, but the advantages of CTA are such that it has numerous logistic, ammunition handling and economic attractions (among others). The CTA concept is no novelty as anyone with any knowledge of small arms history will already be well aware, but until now it has failed to achieve the acceptance level that mass production requires. That now seems certain to change and it could well be that this time the CTA International 12.7 mm machine gun and its experimental rounds mark a significant landmark in infantry weapon development. That is something for the longer term.

Sights

The section on Sighting Equipment has some interesting innovations this year. Once again all manner of remarkable but expensive vision and sighting devices are included, yet there are also some other significant innovations covered for the first time. One is the Bushnell HOLOSight, which introduces holography to the firearms user's selection of available technology, while on a more down to earth level there is the Trijicon self-luminous series which is used with both eyes open.

The latter is but one example of a now widespread 'red dot' type, although the Trijicon ACOG series has understandably gained widespread acceptance. It is one of the options available for another innovation mentioned in these pages for the first time, namely the Modular Weapon System (MWS) produced by the Knight Armament Company and intended for use by US Special Forces. The MWS is basically an M16A2 with its forestock and sight table configured to accept a wide range of sighting and other accessories to meet specific

mission requirements. This latter point has to be stressed for some publicity shots issued to illustrate the MWS resemble gun enthusiasts' Christmas trees, with every possible accessory in place. Such cluttered combinations are most unlikely to see operational use. Instead the MWS will carry only whatever accessory or sight is needed for each particular mission. The rest of the MWS options will stay secure in their packing cases until needed.

Suppressors

This edition contains a new section on Suppressors. It has to be acknowledged that it is incomplete and very much a first attempt but it is hoped that inclusion of this section will prompt the information to make it more encyclopaedic. This new section is deemed necessary as the suppressor has already moved out of the category of an attachment for a special purposes weapon into more general use, although many potential users will not have noticed this as yet.

The suppressor, or silencer as it is commonly known, does two things to the firing signature of a weapon. It reduces the sound of a shot considerably, to a level where it is difficult for it to be identified as a weapon discharge, and it virtually eliminates muzzle flash. The tactical utility of these two properties is that a target can have no idea from where an unexpected burst of fire is originating, even in general terms. Taking cover from fire or some form of reaction such as return fire is thus made difficult. This alone makes the widespread use of suppressors an attractive proposition. Some armed forces in Northern Europe have already made provisions for the general issue of suppressors but have no intention of breaking into their stockpiles until they are really needed, thus enhancing tactical surprise.

Most current suppressors still come within the special weapons category. Even so, their utility is certain to expand into other areas. Once again, we await developments. In the meantime, any extra information that could expand this section will be much appreciated.

Acknowledgements

This edition marks the Editor's first solo foray, an exercise which has been greatly assisted by many. A top priority when acknowledging such assistance must be accorded to Ian Hogg who has continued to be a fount of advice, assistance and guidance during what has been a very busy period. Also from within the Jane's network, Christopher F Foss and Ian Kemp have been sources of information and help of all kinds. My thanks go to them all. Thanks are also due to many other individuals and organisations, too many to mention by name here although I hope they will recognise their input. Information supplied by many within the industry has, as always, been invaluable and the editor's gratitude is proffered to all concerned.

The production of a Yearbook of this nature and coverage cannot be accomplished without professional help. It is here that the considerable efforts of the Jane's production team comes to the fore and I can only repeat my admiration and thanks to all concerned for yet another job well done. The teams headed by Ruth Simmance and Sulann Staniford have been more than helpful while remaining cheerfully tolerant of the many hitches a book of this nature experiences during preparation. A special mention of thanks is more than due to Jane Stimson who has acted as the main contact point between the editor and the production teams. Her competence has been of the greatest assistance on many occasions. My repeated thanks to all.

Terry J Gander

The Editor would welcome any extra information, corrections or comments regarding the contents of this Yearbook for he is well aware of how isolated an individual can become in the defence market place without such inputs. Please direct all correspondence to the Editor at *Jane's Infantry Weapons*, Jane's Information Group, Sentinel House, 163 Brighton Road, Coulsdon, Surrey CR5 2NH, United Kingdom.

GERMAN WEAPON TECHNOLOGY FOR THE MOST DEMANDING CUSTOMER



HK 40 mm x 53 Grenade Machine Gun, designed for maximum safety and superior performance.

A company of British Aerospace Defence Royal Ordnance.

Infantry weapon systems from Heckler & Koch are world-renowned for their outstanding reliability and performance.

Our products range from pistols to submachine guns, automatic rifles, machine guns, grenade launchers, grenade machine guns and mounts.

Quality made by HK

HECKLER & KOCH GMBH
78727 Oberndorf/Neckar
Telefon 0 74 23/79-0
Telefax 0 74 23/79-24 06

HK HECKLER & KOCH
DEFENCE

Discover the latest surface-to-air missile developments in...

Jane's Land-Based Air Defence 1996-97

Are you interested to learn that the indigenous surface-to-air missiles currently being developed by Columbia have a reported range of up to 20km? Would you like to know more about the short-range Igla SAM systems which Hungary have recently begun putting into place?

If you are interested in these and other recent developments in the field of air defence, then you will need to purchase the new, improved edition of **Jane's Land-Based Air Defence 1996-97**, due to be published in April 1996. Why spend valuable funds and waste critical time on independent research when all your answers can be found in this one-stop information source?

Jane's Land-Based Air Defence 1996-97, allows you to research more than 350 anti-aircraft gun and missile systems both in service and under development, from nearly 100 manufacturers. System-by-system you get details of development programmes, and descriptions of how the weapon and its associated systems work – plus more than 500 photographs. You'll also find key specifications, like dimensions, range, speed, rate of fire, warhead, propulsion and more.

Jane's Land-Based Air Defence 1996-97 allows you to research almost every anti-aircraft gun and missile system in service with the world's armies and air forces – plus many leading-edge systems still at development stage. There is a unique Inventory section which gives you an accurate listing of the



systems and equipment in service with 126 armies and air forces, from the USA to Qatar, sometimes with quantities and often with details of recent and planned acquisitions. Also, since last year's edition, we have added a new section on fibre-optic guided missiles and you can now read about anti-aircraft control systems as well as container-based SAM systems.

Order **Jane's Land-Based Air Defence 1996-97**, and arm yourself with the most accurate information on the market.

To place your order or for more information please contact our sales department—

Customers in Europe, Africa, Asia and Australasia:
Jane's Information Group, Sentinel House,
163 Brighton Road, Coulsdon, Surrey, CR5 2NH, UK
Tel: +44(0)181 700 3700 Fax: +44(0)181 763 1006
e-mail: info@janes.co.uk

Customers in the Americas and the Caribbean only:
Jane's Information Group, 1340 Braddock Place,
Suite 300, Alexandria, VA 22314-1651, USA
Tel: (703) 683 3700 Fax: (703) 836 0297
e-mail: info@janes.com

9603:179

Visit the Jane's World Wide Web site: <http://www.janes.com/janes.html>

Jane's

New entries in this Edition

Entry	Country	Entry	Country
9 mm/0.380 GLOCK 25 pistol	Austria	POF 75 mm P-2 Mk 1 HEAT rifle grenade	Pakistan
9 mm GLOCK 26 subcompact pistol	Austria	POF WP P-1 smoke grenade	Pakistan
0.40 GLOCK 27 subcompact pistol	Austria	POF target indication grenades	Pakistan
5.7 mm FN Five-seveN personal defence weapon	Belgium	Dezamet rifle grenades	Poland
9 mm P-9 Gurza Pistol	CIS	Swartklip 40 mm grenades	South Africa
9 mm PMM self-loading pistol	CIS	Swartklip 40 mm high-velocity grenades	South Africa
9 mm HS 95 pistol	Croatia	MFA HG 85 defensive hand grenade	Switzerland
CZ Model 100 and 101 pistols	Czech Republic	MFA OHG 92 offensive hand grenade	Switzerland
9 mm Minimax 9 pistol	Hungary	MFA SIM HG 93 training hand grenade	Switzerland
Revolver 0.32 Mark 1	India	MKEK hand grenades	Turkey
9 mm Beretta Model 92 Brigadier FS	Italy	Haley and Weller N110 screening smoke grenade	UK
Beretta Model 92, 96 and 98 Stock	Italy	FAMAE 60 mm 60-M-61-A HE bomb	Chile
Beretta Model 92, 96 and 98 Combat	Italy	FAMAE 81 mm 81-M-57-DA HE bomb	Chile
9 mm P-93 pistol	Poland	FAMAE 120 mm 120-44/66 HE bomb	PRC
9 mm MAG 95 pistol	Poland	60 mm Type 63-1 fragmentation projectile	PRC
Romtehnica 9 mm self-loading pistol	Romania	82 mm Type 53 smoke bomb	PRC
SIG-Sauer P239 pistols	Switzerland	82 mm Type 53 illuminating mortar bomb	PRC
Kel-Tec 9 mm P-11 pistol	USA	NORINCO ammunition for 100 mm Type 71 mortar	PRC
9 mm Smith & Wesson Model 410 pistol	USA	NORINCO ammunition for 120 mm Type 55 mortar	PRC
9 mm Smith & Wesson Model 909 and 910 pistols	USA	120 mm Gran laser-guided mortar projectile	CIS
Ciener 0.22 LR Beretta 92/96 Conversion Kit	USA	Thomson-Brandt ammunition for 81 mm mortars	France
9 mm 9A-91 sub-machine gun	CIS	82 mm dual purpose mortar bomb	Hungary
Kiparis 9 mm sub-machine gun	CIS	IOF 81 mm Illuminating mortar bomb	India
9 mm sub-machine gun	Croatia	IOF 120 mm Illuminating mortar bomb	India
9 mm sub-machine gun	Romania	120 mm Precision Guided Mortar Munition (PGMM)	International
Ruger 9 mm MP-9 sub-machine gun	USA	TAAS 120 mm CL3144 ICM mortar bomb	Israel
12.7 mm V-94 sniper rifle	CIS	EPD M797 electronic point detonating mortar fuze	Israel
RT-20 20 mm heavy sniper rifle	Croatia	CIS 60 mm mortar bombs	Singapore
MACS 12.7 mm sniper rifle	Croatia	CIS 81 mm mortar bombs	Singapore
PGM UR Intervention 7.62 mm sniping rifle	France	CIS 81 mm Extended Range mortar bombs	Singapore
PGM UR Commando 7.62 mm sniping rifles	France	CIS 120 mm mortar bombs	Singapore
PGM Hecate II 12.7 mm sniping rifle	France	CIS 120 mm Extended Range mortar bombs	Singapore
5.56 mm Galil MAR Micro assault rifle	Israel	60 mm Long Range mortar bombs	South Africa
KAC 5.56 mm Modular Weapon System	USA	81 mm Long Range mortar bombs	South Africa
Ruger M77 Mark II rifle	USA	MKEK 81 mm mortar bombs	Turkey
Ciener 0.22 LR Conversion Kits	USA	MKEK 107 mm mortar bombs	Turkey
Ciener AR-15/M16 belt feed mechanism	USA	MKEK 120 mm mortar bombs	Turkey
Maaadi 40 mm grenade launcher	Egypt	HE Ammunition for the 81 mm Mortar M252	USA
Objective Crew Served Weapon (OCSW)	USA	81 mm Smoke RP M819	USA
MPIM/SRAW	USA	81 mm Illuminating M853A1	USA
CTA International 12.7 mm rotary machine gun	International	NORINCO 11 mm pyrotechnic pistol	PRC
Nag anti-tank missile system	India	POF flare tripwire Mark 2/2	Pakistan
Type 87 Chu-MAT anti-tank missile system	Japan	Singapore Technologies alarm flare	Singapore
PG-7M 110 anti-tank projectile	Slovakia	M49A1 surface trip flare	USA
MACAM anti-tank weapon system	Spain	Zeiss NSV 80 II night sight attachment	Germany
Predator Short Range Assault Weapon	USA	Passive Night Sight	India
PIMA 82 mm Mortar M82	Bulgaria	El-Op INTIM thermal binocular	Israel
Lockheed Martin Lightweight 120 mm Mortar	USA	Simrad IS2000 eye-safe laser gun sight	Norway
Leica SG12 Digital Goniometer	Switzerland	Leica VECTOR 1500 DAES range finding binocular	Switzerland
0.22 in Long Rifle	USA	Maxi-Bino-Kite night vision binocular	UK
7.62 x 42 mm SP-4	CIS	Contraves SACMFCS II	USA
9 x 21 mm Gyurza	CIS	Magnavox MAG-600 Individual Weapon Thermal Sight	USA
9 x 39 mm SP-5 and SP-6	CIS	Magnavox AN/PAS-19 Multipurpose Thermal Sight	USA
0.357 SIG	USA	BUSHNELL HOLOsight	USA
FM rifle grenades	Argentina	ITT Integrated Day/Night Scope F7111	USA
MECAR HE-AP-RFL-35, BTS M235 CLAW	Belgium	Trijicon Advanced Combat Optical Gunsights (ACOG)	USA
FAMAE GM 78-F7 offensive/defensive hand grenade	Chile	Trijicon ACOG Reflex Sight	USA
RGO-78 defensive hand grenade	CIS	Trijicon Night Sights	USA
RGN-86 hand grenade	CIS	Insight M30 Boresighting Equipment	USA
RG-42 offensive hand grenade	CIS	PBS-1 Silencer for Assault Rifles	CIS
ZDP incendiary smoke hand grenade	CIS	Valme Silencers	Finland
Kaha No 1 defensive hand grenade	Egypt	BRÜGGER + THOMET IMPULS-II Pistol Silencer	Switzerland
Kaha No 1 offensive hand grenade	Egypt	BRÜGGER + THOMET IMPULS-III Pistol Silencer	Switzerland
Giat 40 mm AP/AV rifle grenade	France	BRÜGGER + THOMET SUC Pistol Silencer	Switzerland
Ruggieri Type 0052 and Type 0052A hand grenades	France	BRÜGGER + THOMET Silencers for Sub-machine Guns	Switzerland
ALSETEX SAE 210 offensive grenade	France	BRÜGGER + THOMET Detachable Silencer for MP5	Switzerland
ALSETEX SAE 310 controlled fragmentation grenade	France	BRÜGGER + THOMET Silencers for Assault Rifles	Switzerland
ALSETEX screening smoke grenades	France	BRÜGGER + THOMET Integrated Silencer Systems	Switzerland
ALSETEX coloured smoke grenades	France	Ciener Sound Suppressors	USA
Nico 40 mm training grenade cartridges	Germany	Gemtech SOS Suppressor for Pistols	USA
Elviemek EM 03 practice hand grenade	Greece	Gemtech Vortex-9 Suppressor for Pistols	USA
IOF 36M hand and rifle grenades	India	Gemtech MK-9K Suppressor for MP5	USA
GT-SPE A2 hand grenade	Indonesia	Gemtech MINI-TAC Suppressor for MP5	USA
POF plastic hand grenade	Pakistan	Gemtech COMMANDO Suppressor for 5.56 mm Carbines	USA
POF metal hand grenade	Pakistan	Gemtech SPEC-OP 2 and 3 Suppressors	USA

Entries deleted from this Edition

(Page entries are from the 1995-96 edition)

Entry	Country	Entry	Country
9 mm Mauser Models 80 and 90 pistols	Germany	82 mm HE/fragmentation bomb Type 20	PRC
9 mm Model P88 pistol	Germany	RDG-1 smoke hand grenade	CIS
9 mm Model 92FC	Italy	Losfeld fragmentation grenade	France
9 mm Beretta Model 92FCM	Italy	Losfeld multipurpose anti-personnel grenade	France
9 mm Models 92FS Inox and 98FS Inox	Italy	ETSQ electronic mortar fuze	Germany
9 mm Model 2000	USA	Elviemek EM10 rifle grenade	Greece
Colt Offensive Hand gun Weapon System	USA	Elviemek EM14 rifle grenade	Greece
10 mm Smith & Wesson Model 1000 series pistol	USA	Elviemek EM12 screening smoke rifle grenade	Greece
Ruger KP89 Convertible pistol	USA	Borletti FB 282 mortar point detonating fuze	Italy
9 mm Calico M950 pistol	USA	Round, 40 mm, HE M848A1	South Africa
Calico 9 mm M-900 carbine	USA	M545 Universal fragmentation grenade	USA
5.56 mm Colt M231 firing port weapon	USA	M560 series anti-personnel fragmentation grenades	USA
7.62 mm SAR-8 rifle	USA	Ring Airfoil Grenade (RAG)	USA
M2A1-7 portable flame-thrower	USA	82 mm shrapnel bomb Model 81	Vietnam
M9E1-7 portable flame-thrower	USA	Alsetex audio-visual chemical alarm	France
66 mm M202A2 multishot portable flame weapon	USA	Model 56 hand smoke grenade	France
Marquardt MultiPurpose Individual Munition (MPIM)	USA	1 in Beretta signal pistol	Italy
7.62 mm Uirapuru Mekanika machine gun	Brazil	71 mm Lyran illuminating system	Sweden
SIG 7.62 mm 710-3 general purpose machine gun	Switzerland	Federal Laboratories coloured smoke grenades	USA
20 mm M40 anti-aircraft cannon	Sweden	Federal Laboratories Parachute and Meteor flares	USA
2K8 Falanga anti-tank guided missile system	CIS	Contraves SACMFCS integrated sight	USA
82 mm M59 and M59A recoilless guns	Czech Republic and Slovakia	Magnavox Short-Range Thermal Sight (SRTS)	USA
		M921 submersible night vision sight	USA
Aries anti-tank missile system	Spain	M937/M938 individual weapon sights	USA
Saber multipurpose missile system	USA	Litton AIM-1D/DLR laser aiming light	USA
81 mm fragmentation projectiles	PRC	ITT F4961 day/night combat rifle sight	USA
82 mm M30 HE/fragmentation bomb	PRC	ITT F4960 Stinger Night Sight	USA
		F4965 rifle night sight	USA

Glossary

AAT	Arme Automatique Transformable. French equivalent of general purpose machine gun	Barrel	That part of a gun through which the projectile is launched and given direction.	Buffer	A resilient unit at the rear of a machine gun body, against which the recoiling bolt impacts, absorbing recoil energy. Resilience may be caused by springs, rubber, oil or pneumatic force.
Accelerator	Component of a recoil-operated weapon intended to give extra velocity to the bolt or breech block during recoil. Best known application is the Browning machine gun.	Barrel extension	A frame attached to the barrel of a recoil-operated automatic weapon and carrying the breech block or bolt, and usually carrying some means of locking the bolt to the extension and so to the barrel.	Bullet	Projectile fired from a small arm.
ACLOS	Automated Command to Line Of Sight. Advanced anti-tank missile guidance system in which the missile identifies the target and steers to it without operator intervention. Also called third generation and fire-and-forget.	Baton round	Cartridge for large calibre riot control weapons using a low-velocity, non-lethal plastic or rubber projectile intended to stun or bruise.	Bullethead blank	Blank ammunition using a light wooden, paper or plastic bullet which disintegrates at the muzzle.
ACP	Automatic Colt Pistol. Differentiates certain pistol cartridges from others of similar calibre but different dimensions. Applied to cartridges originally developed for Colt automatic pistols.	Bayonet	Knife-like weapon with a short blade attached to the rifle muzzle for close combat.	Bullpup	A rifle in which the breech mechanism is set back in the stock so that the end of the receiver is against the firer's shoulder. It permits the use of a full-length barrel in a weapon which is, overall, shorter than a conventionally stocked weapon of the same barrel length.
ACR	Advanced Combat Rifle	Belted	A cartridge case with a raised belt near the base which positively locates the case in the gun chamber and reinforces the base for use with high pressure propellant charges.	Butt	That part of a small arm which is held against the shoulder and which transfers recoil force to the firer's body.
Advanced primer ignition	System of operation common in sub-machine guns in which the primer is struck and the cartridge fired whilst the bolt is still moving forward. The explosion force must arrest the bolt before causing it to return, introducing a fractional delay between firing and breech opening, permitting the bullet to leave the barrel. Also absorbs some recoil energy, allowing the bolt to be lighter.	Belt feed	System of supplying ammunition to automatic weapons by means of a flexible canvas or metal belt into which cartridges are fixed. May retain its form when empty or be of the disintegrating link type with the belt falling into individual links when the cartridges are removed.	Calibre	The nominal diameter of a weapon's bore, measured across the lands (qv). Also used as a measure of length, example 26 calibre length and applied to barrels and bullets.
AGL	Automatic Grenade Launcher	Bent	A notch cut into the weapon's bolt or breech block, striker or hammer, into which the sear engages to hold the component ready to fire.	Cannelure	A groove in a bullet enabling the metal of the cartridge case mouth to be pressed in to secure the bullet and case together or to contain lubricant to ease the passage of the bullet up the bore. Also a groove pressed into a cartridge case to facilitate location into a feed belt.
AIFV	Armoured Infantry Fighting Vehicle	BFA	Blank Firing Attachment. Device fitted to the muzzle of an automatic weapon to restrict the exit of gas from the barrel when firing blank cartridges and thus provide sufficient pressure to actuate the weapon's self-loading cycle.	Carbine	A short rifle. Traditionally the self-defence arm of cavalry, engineers and artillery whose primary task was not using a shoulder arm.
AK	Avtomat Kalashnikova (CIS); Automatische Karabiner (Switzerland); Automat Karbin (Sweden)	Blank	Small arms ammunition with a charge of powder and no bullet, so as to provide noise on firing. Used for training, to simulate weapons firing.	Cartridge	(Small arms) A unit of ammunition sufficient to fire one shot, comprising cap, case, propellant and bullet; also called a round (qv).
AKM	Avtomat Kalashnikova	Blowback	System of operation of self-loading and automatic weapons in which breech pressure overcomes inertia of breech closure. Used principally in low-powered weapons such as pistols and some sub-machine guns.	Cartridge case	Brass or steel metal container holding propellant and supporting bullet and primer cap.
AKS	Avtomat Kalashnikova	Blow-forward	System of operation in self-loading weapons analogous to blowback, but in which the breech block is firmly anchored to the weapon frame and the barrel moves away from it, returning to chamber the next round. Rarely encountered.	Cartridge headspace	The distance between the face of the bolt or breech block and the base of the cartridge case when the weapon is loaded. A critical dimension in a weapon's assembly; if insufficient, the bolt or breech block will not close or lock; if excessive, the case can move back on firing and burst or split.
Annulus	Recessed ring around the cartridge primer, formed when securing cap to case. Frequently coloured to provide identification of cartridge type.	BMS	Battalion Mortar System (USA)	Caseless	A cartridge with no metal case and with the propellant formed into a block, into which the bullet and cap are embedded.
AP	Armour-Piercing. Signifies a solid projectile for kinetic energy attack of armour.	Boat-tailed	A bullet in which the base diameter is less than the maximum diameter and the base is tapered, permitting airflow over the bullet to converge rapidly behind the base and thus reduce drag.	Centre fire	That class of small arms ammunition which has the primer cap located centrally in the base of the cartridge case.
APC	(1) Armoured Personnel Carrier. (2) Armour-Piercing, Capped. An AP projectile with a penetrating cap over its point.	Bolt	Part of a small arm which closes the breech. Generally indicates some rotary motion. Where no rotary motion is involved, the component is usually called a breech block.	Chamber	That portion of the barrel into which the cartridge is positioned for firing.
APCBC	Armour-Piercing, Capped, Ballistic Capped. An APC projectile with a light ballistically shaped nose cap to improve flight characteristics.	Bolt action	Breech closure by means of a hand-operated bolt moving in prolongation of the barrel axis. May be a turnbolt in which the bolt is pushed forward and given a partial turn to lock in; or a straight-pull bolt in which the manual action is a simple reciprocating movement and the bolt is rotated by cams.	Change lever	A lever or switch which allows the firer to select single shots or automatic fire in some weapons. Also called selector, and may be incorporated with the safety catch.
APDS	Armour-Piercing, Discarding Sabot. A kinetic energy attack projectile with a heavy core, supported in the gun by a light metal or plastic sabot which is discarded at the muzzle.	Bore	The interior of a weapon's barrel, from the rear face of the chamber to the muzzle.	Charger	A metal frame holding a number of cartridges. The loaded charger is placed at the mouth of the weapon magazine and the cartridges pressed down into the magazine with the thumb, after which the empty charger is discarded. Popular with bolt-action rifles and occasionally used with automatic pistols.
APFSDS	Armour-Piercing, Fin-Stabilised, Discarding Sabot. Kinetic energy projectile using a heavy, dart-like subprojectile supported in the gun bore by a light sabot. Used generally with smoothbore anti-tank weapons but also found with rifled weapons, in which case the driving band merely seals and is free to rotate, so as to impart minimum spin to the subprojectile.	Bottle-necked	A cartridge case in which the diameter is reduced at the mouth to accommodate the bullet, which is smaller in diameter than the body of the case. Provides a greater volume in a given length of cartridge.	Clip	A metal frame holding a number of cartridges. The loaded clip is inserted into the weapons' magazine and becomes an integral part of the feed system. As the last cartridge is loaded the clip is ejected from the magazine. Used with rifles, notably the bolt-action Mannlicher and the self-loading Garand. The principal defect is that the magazine can only be loaded with a full clip; it cannot be topped-up when partly emptied.
APS	Avtomateskiy Pistolet Stechkina	Box magazine	Ammunition supply in the form of a metallic box, either integral with the weapon or detachable from it. May be mounted above, below or to one side of the weapon.		
ATGW	Anti-Tank Guided Weapon. A missile guided to its target and intended for the attack of armoured vehicles.	Breech	Rear end of the weapon barrel, into which the ammunition is loaded.		
AUG	Armee Universal Gewehr (Loosely) Any self-loading pistol				
Automatic pistol					
Ball ammunition	Ammunition using a solid, inert bullet				
Ballistic coefficient	Measure of a projectile's carrying power. A function of the projectile mass, shape, diameter and coefficient of steadiness.				
Ballistite	Obsolete propellant principally used for launching rifle grenades. By extension, any cartridge used for launching rifle grenades, even though the propellant is no longer Ballistite.				

GLOSSARY

Closed bolt	A weapon in which the breech is closed, though not necessarily locked, before the trigger is pulled.				
CN	Chloracetophenone. A chemical irritant agent used in riot control munitions.				
Coaxial	Machine gun on an armoured vehicle mounted with the main armament so as to traverse and elevate with it. In some designs the gun can be unlocked and elevated independently of the main gun, but not traversed independently.	Double pull	Trigger mechanism on certain selective fire weapons in which the first pressure on the trigger fires single shots, and further pressure, overcoming a check spring, provides automatic fire.	GPMG	General Purpose Machine Gun. A machine gun capable of operating as a squad light automatic, on a bipod and fired from the shoulder, or, tripod mounted, as a company support weapon.
Commence-ment of rifling	The point in a gun bore at which the rifling grooves first reach maximum depth.	Double trigger	A firing mechanism on some selective fire weapons in which one trigger provides single shot fire and another automatic fire.	Grip safety	A lever or plunger let into the grip of a pistol or sub-machine gun so as to lock positively the firing mechanism or bolt unless the weapon is correctly held and the grip compressed. Acts as an automatic safety device to prevent discharge if the weapon is dropped.
Compensator	A device attached to a weapon barrel (usually an automatic weapon) to divert some of the muzzle blast upward and thus counteract the tendency for the muzzle to rise during automatic fire.	Drag	Resistance to motion of the projectile through the air, caused by a region of low pressure behind the base.	Grooves	Spiral cuts in the interior of the barrel which firm the rifling (qv) and thus impart spin to the projectile. Number, contour and dimensions vary according to the weapon and designer.
Composition B	RDX/TNT mixture, commonly 60 per cent TNT and 40 per cent RDX, but proportions vary between manufacturers.	Drift	Lateral deviation of the bullet in flight resulting from the spin imparted by the rifling.	Hangfire	Ammunition malfunction in which cartridge ignition takes place between a fraction of a second and several seconds after the cap has been struck. In British military specifications the delay greater than 0.1 second.
Compound bullet	Small arms bullet made of different substances, for example a partly lead and partly steel core held within a steel jacket and coated with a gilding metal envelope. Such construction gives the mass advantage of lead in the core but allows the steel jacket to engrave into the rifling without leaving deposits.	Drum magazine	A circular magazine in which rounds are loaded axially and driven to the feed lips by a spring.	HB	Heavy Barrel. Nomenclature used with a particular model of 0.50 Browning machine gun (the M2)
Cook-off	(Colloquial) Premature ignition of a cartridge caused by heat induced after loading into a gun chamber made hot by previous firing.	Ejector	Component which throws the empty cartridge case clear of the weapon after firing.	HC	Hexachloroethane/zinc screening smoke mixture used in smoke grenades and mortar bombs. Also called Berger Composition after its inventor.
CS	O-chlorobenzalmonitrile. Chemical irritant agent used in riot control munitions. CS, adopted as a code designation, from the names of the inventors, Carson and Stoughton.	Extractor	Component which pulls the empty cartridge case from the chamber after firing.	HE	High Explosive. A chemical substance which, suitably initiated, undergoes molecular disruption accompanied by evolution of heat and gas.
Cycle of operation	The successive processes involved in firing a round: feeding, chambering, firing, extraction, ejection, cocking and storing energy in a return spring.	FAL	Fusil Automatique Légère	Headstamp	Markings on a cartridge case base, usually indicating manufacturer, calibre, date of manufacture or batch number.
Cyclic	The theoretical rate of fire of a weapon operated continuously and with an infinite supply of ammunition, that is, ignoring the need to change magazines or belts.	FA-MAS	Fusil Automatique de Manufacture d'Armes de St Etienne	HEAT	High Explosive, Anti-Tank. An anti-armour munition using the hollow or shaped charge principle.
Cylinder	Component of a revolver in which chambers are bored; held behind the barrel on an arbor or axis pin, so that it can be rotated by a mechanism coupled to the trigger or hammer so as to present each chamber to the barrel in succession.	FEBA	Forward Edge of Battle Area	Hinged frame	A revolver in which the barrel and cylinder form a movable unit hinged to the butt frame by a pivot pin. In firing condition, the two units are locked together; when the barrel is tipped down about the hinge, the rear of the cylinder is exposed for loading.
DA	(Of fuzes) Direct Action	Feed	That portion of the firing cycle during which a fresh cartridge is removed from the ammunition supply and aligned before loading into the chamber.	HITP	High Ignition Temperature Propellant
Defensive grenade	A hand grenade producing heavy lethal fragments over a radius greater than the distance it can be thrown. The thrower must therefore be able to take cover, and this type of grenade is usually classed as being for use in defensive positions.	Feedway	Area of weapon mechanism in which a cartridge is aligned with the chamber after being removed from the ammunition supply.	HMG	Heavy Machine Gun; an imprecise term but usually implying a calibre of 12.7 mm or more.
Delayed blowback	An automatic arm in which the bolt or breech block is not positively locked to the barrel for the entire period of the bullet's passage through the bore. Basically a blowback weapon in which the opening of the breech is artificially slowed.	FIBUA	Fighting In Built-Up Areas	Hold-open device	A mechanism actuated by the magazine platform and which holds the bolt or breech block to the rear after the last round in the magazine has been fired. Indicates that reloading is necessary, retains the mechanism in readiness for reloading and when a fresh magazine has been inserted releases the bolt to run forward and chamber a fresh round ready for firing.
Direct fire	Fire in which the weapon has a direct line of sight to the target. Cf indirect fire.	Flash eliminator	A device fitted to the muzzle to cool emergent gases, preventing the formation of flash or flame.	II	Image Intensifier or Intensifying. An electro-optical sight incorporating electronic amplification of ambient light to present an enhanced view of the target area. Completely passive and undetectable, though some early units emitted a high-pitched noise which alarmed animals.
Disconnecter	Part of the firing mechanism of a self-loading weapon which disconnects the trigger from the remainder of the firing mechanism as soon as the shot is fired and does not reconnect it until the firer positively releases the trigger and renews pressure for the next shot, thus preventing the weapon firing more than one shot for each trigger pressure. In a selective fire weapon the disconnecter can be disengaged by the change lever or selector.	Flash hider	Conical attachment to the muzzle for concealing muzzle flash from an observer. Also acts as a flash eliminator, though it is less efficient than a properly designed eliminator.	Indirect fire	Fire in which the weapon and the target are not within sight of each other.
DM	Diphenylaminochloroarsine. Irritant chemical agent used in some riot control munitions. More powerful than CN or CS. Called Adamsite in the USA after its discoverer.	Flechette	Thin, subcalibre, fin-stabilised projectile resembling a small arrow. Has been tried as a discrete projectile for rifles with indifferent success; more successful as a cluster weapon fired from major calibre arms.	IR	Infra-Red. System of night viewing relying on the infra-red portion of the spectrum. May be passive, relying on emission of heat by the target, or active in which an infra-red light source is used to illuminate the target. The passive version is now generally called thermal imaging.
Double-action	Pistol firing mechanism allowing two methods of discharging a shot. The	Flip rearsight	A double backsight consisting of two notches or apertures mounted at right-angles, either of which may be rotated into position, providing two alternative range settings.	IS	Internal Security. Generally describes the use of troops to aid the civil power.
		Fluted chamber	Chamber of a firearm with thin grooves cut longitudinally through most of its length and beyond the mouth of the cartridge case when loaded. On firing, some propellant gas flows down these flutes, equalising the pressure inside and outside the case, thus floating the case on a layer of gas and easing extraction in blowback weapons, particularly when using bottle-necked cases. The grooves do not extend to the mouth of the chamber, so obturation is not affected.	Lands	Those portions of the barrel of a rifled weapon between the grooves, and between which the calibre is measured.
		FM	Code designation for titanium tetrachloride smoke mixture, used in mortar bombs.		
		Follower	The spring-driven platform in a magazine, upon which the cartridges rest.		
		FS	Code designation for a sulphur trioxide/chlorosulphonic acid mixture used as a screening smoke composition in mortar bombs.		
		Furniture	Parts of a weapon solely for facilitating handling, example pistol grip, stock, fore-end, butt.		
		Fuze	Initiating device for an explosive charge or projectile. May function on		

LAW	Light Anti-armour Weapon. Any light, shoulder-fired, unguided rocket weapon for the attack of armoured targets.		gas to the sides and rear, to the discomfort of the firer and his companions.		variously known as Hexagon or Cyclonite. Too sensitive to be used alone, and generally denatured by admixture with TNT or wax.
Lead	(Pronounced lead) The conical progression of the bore of a firearm from the chamber into the rifling.	NDI NV	Non-Developmental Item (US) Night Vision	Rebated rimless	A type of cartridge case in which the extraction rim is smaller than the base of the case. Found in some 20 mm and small arms cases in military use.
LMG	Light Machine Gun; a machine gun capable of being carried and operated by one man.	Obturation	Sealing against the unwanted escape of gas to the rear of a firearm. In small arms almost always performed by the expansion of the cartridge case against the chamber walls; in caseless ammunition it is a function of the breech block.	Receiver	The body of a weapon. The housing for the bolt or breech block.
Lock time	The interval between pressing the trigger and ejection of the bullet from the muzzle. Shortest in closed bolt weapons, where only the firing pin or hammer has to move, longest in open bolt weapons where the entire bolt unit has to run forward and chamber a round before firing.	Offensive grenade	A hand grenade producing small fragments over a limited radius and which can be thrown further than its danger radius, permitting it to be thrown by advancing troops who need not take cover, and thus considered suitable for use in offensive operations.	Recoil intensifier	Attachment to the muzzle of a recoil-operated machine gun to impede the muzzle blast and cause the barrel to recoil with greater force, making automatic action more positive and providing a reserve of energy to overcome friction caused by dust and dirt.
Long recoil	Operating system for automatic weapons in which barrel and locked breech recoil for a distance greater than the length of a cartridge. The breech is then unlocked and held, while the barrel runs back into the firing position, after which the breech is released to run forward and chamber the next round. Presently only encountered in some 40 mm grenade launchers.	Open bolt	A weapon in which the bolt or working parts are held to the rear when the weapon is cocked and there is no cartridge in the chamber. Used on automatic weapons so as to permit a flow of air through the barrel when not firing, allowing the barrel to cool. On pressing the trigger the bolt must run forward and chamber a round before actuating the firing mechanism. This movement tends to throw the weapon off the aim, and thus open bolt weapons are considered to be less accurate than closed bolt weapons for the first shot.	Regulator	A device on gas-operated automatic weapons through which gas is channelled from the barrel to the operating piston. Generally with various sizes of port for selection of the amount of gas delivered to the piston, so that more gas can be admitted when the gun's action slows because of dirt or fouling and there is no opportunity to strip and clean it. Regulators often allow the gas system to be shut off completely so that the weapon can be used for launching grenades.
LR	Long Rifle; a particular type of 0.22 calibre cartridge			Return spring	Spring in an automatic or self-loading weapon which is loaded by the recoiling bolt and which then forces the bolt forward again to recommence the cycle of operation.
Machine gun	An automatic firearm capable of delivering continuous fire so long as ammunition is provided and the trigger pressed.	Parabellum	Designs of cartridge and weapons originating with the Deutsche Waffen und Munitionsfabrik of Berlin; from their telegraphic address and trademark.	Revolver	(1) A pistol in which a rotating cylinder presents successive chambers to the rear of the barrel for discharge. (2) A machine gun or cannon in which a revolving mechanism strips ammunition from a belt and presents it to the chamber. (3) A machine gun or cannon in which a group of barrels rotate, each barrel being loaded and fired at specific points in the rotation.
Machine pistol	Ambiguous term which can mean either a sub-machine gun or a pistol adapted so as to be capable of automatic fire.	Partridge sight	A pistol sight in which the foresight is a rectangular blade with vertical rear face and the rearsight is a plate with a rectangular notch. Named after E E Partridge, the inventor.	RF	Rimfire. A small arm cartridge in which the initiating composition is packed into the hollow rim of the cartridge case, instead of being held in a central cap. Cheap and effective, but not generally considered for high pressure ammunition used in military weapons.
Machine rifle	An automatic rifle used as a light machine gun; generally a rifle with a heavy barrel and a bipod. Differs from a true LMG by usually not having a quick-change barrel and being directly derived from a rifle design rather than designed as a machine gun.	Pentolite	A denatured form of PETN used as an explosive filling in cannon projectiles.	Ricochet	Rebound of a bullet from a struck surface. The angle of ricochet and the distance to which the bullet may fly are totally unpredictable.
Magazine	Ammunition feed system in which cartridges are held in a detachable or integral container. Detachable magazines may be of box or drum form, and are usually of metal, though plastic is becoming more common. Disposable magazines have yet to find military employment.	PETN	Pentaerythritol tetranitrate. A high explosive used in cannon projectiles.	Rifling	Spiral grooves cut into a gun barrel in order to impart spin to the projectile so that it becomes gyroscopically stabilised and flies point-first.
Magazine safety	A safety device on pistols which prevents firing once the magazine has been removed. Prevents accidental discharge of the cartridge left in the chamber after removal of the magazine.	Ph PIBD	Point Initiating, Base Detonating. A type of fuze used with shaped charge projectiles and which is located at the tip of the projectile in order to strike the target first, but which initiates the shaped charge from the rear end.	Rimless	A cartridge case with a deep groove in the rear end, so providing an extraction rim of the same diameter as the body.
Magnum	Commercial cartridge or weapon with greater power and velocity than is usual from that particular calibre.	Pk PM Primer	Percussion or electrically initiated cap in the base of a cartridge case.	Rimmed	A cartridge case with a prominently raised rim at its rear end, which positively locates the case in the chamber and affords purchase for the extractor.
Match ammunition	Small arms ammunition carefully manufactured and graded for very consistent performance for competition and sniping purposes.	Propellant	Low explosive used to propel a projectile from a firearm. Usually a nitro-cellulose compound, though nitro-glycerine and nitro-guanidine are often found as additives. Made in a wide variety of shapes and sizes designed to control the burning so as to provide the required propulsive force.	ROC Round	Required Operational Characteristics. A complete item of ammunition, containing all those components - cap, propellant, case and bullet - required to fire one shot.
MCLOS	Manual Command to Line Of Sight. Anti-tank missile guidance system in which the missile is steered to the target by the operator, using hand controls. Also called first generation guidance.	PSG Pump action	Präzisions Schutzen Gewehr. A mechanism used in rifles and shotguns in which reciprocating movement is given to a grip beneath the barrel. Pulling it back and pushing it forward again causes the breech to be opened, a cartridge loaded, the breech closed and the action cocked. Also called slide or trombone action.	RPD RPK	Ruchnoi Pulemyot Degtyarova Ruchnoi Pulemyot Kalashnikova
MFC	Mortar Fire Controller	Pyrotechnic	An explosive store which burns to provide flame, smoke, illumination or other effects.	SACLOS	Semi-Automatic Command to Line Of Sight. Anti-tank missile guidance system in which the firer maintains his sight on the point of aim and the missile is automatically guided into the sightline by sensors and electronic circuits in the firing post. Also called second generation system.
MICV	Mechanised Infantry Combat Vehicle.	RAW	Rifleman's Assault Weapon	SAWS	Squad Automatic Weapon System
MMG	Medium Machine Gun. A machine gun firing rifle-calibre ammunition but capable of sustained long-range fire for long periods. Generally water-cooled; example Vickers, Maxim, Browning M1917.	RCL	Recoilless. A weapon which eliminates the recoil force by balancing the momentum of the projectile's forward movement by the momentum of a body of gas or solid material ejected rearwards from the breech. Adopted so as to save the weight of a conventional recoil system and carriage or mounting.	Sear	Part of the firing mechanism, linked to the trigger, which engages with the hammer, firing pin, striker or bolt and when pulled clear by trigger action releases the component and thus allows the weapon to fire.
MOUT	Military Operations in Urban Terrain	RDT&E	Research, Development, Test and Evaluation	Selective fire	A firearm which can be used as a single shot or automatic weapon.
MPI	Mean Point of Impact. The centre point of a group of shots fired at the same line and elevation.	RDX	Research Department formula X. British designation for the explosive		
MRTF	Mean Rounds To Failure				
MTBF	Mean Time Between Failures				
MTBR	Mean Time Between Repairs				
Muzzle brake	Attachment to the muzzle of a weapon designed to deflect some of the emergent gases and direct them against surfaces so as to generate a thrust on the muzzle countering the recoil force. Widely used on artillery but less popular in small arms since an efficient brake will divert too much				

GLOSSARY

Selector	A device on a selective fire weapon which allows a choice of single shots or automatic fire. Also called change lever.	SLR	Self-Loading Rifle	
Self-cocking	A firing mechanism on some automatic pistols in which pressure on the trigger first cocks the firing pin or striker and then releases it, preventing the pistol being fired if accidentally dropped. Also called double action only.	SLUFAE	Surface-Launched Unit, Fuel-Air Explosive	
Set trigger	Trigger, or stud or lever, on some target and sniping rifles in addition to the normal trigger which is operated first to cock the weapon and set the firing trigger so that very light pressure on it will fire the weapon.	SMAW	Shoulder-launched Multipurpose Assault Weapon	
SG	(1) Schutzen Gewehr (Germany) (2) Stankoviy Goryunova (CIS)	SMG	Sub-Machine Gun	
Shell	A hollow projectile, filled with explosive or other agent, fired by cannon and artillery.	SSKP	Single Shot Kill Probability	
ShKAS	Shpitalny, Komaritsky, Aviatсионnyi, Skorostrelyni	STANAG	(NATO) Standardisation Agreement	
Shot	Solid projectile fired by cannon or artillery	Stgw	Sturmgewehr (Switzerland)	
Silencer	A device attached to the muzzle or surrounding the barrel and intended to reduce the noise of discharge. Generally a Maxim silencer in which a number of internal baffles causes emergent gas to swirl round and lose velocity before escaping. If gas escapes elsewhere with sufficient velocity to cause noise, the effectiveness of the silencer is reduced; thus it is impractical to silence revolvers, since there is sufficient gas escaping from the cylinder/barrel junction to override the silencer's effect. Absolute silence is rarely attained, so it is now more common to refer to these devices as sound moderators or suppressors.	Stock	Traditionally the wooden support into which the rifle's mechanism is fitted. Now more generally that part of the furniture which supports the weapon against the shoulder.	
SK	Selbstlader Karabiner (Switzerland)	StuG	Sturmgewehr (Germany)	
SKS	Samozaryadnaya Karabin Simonova	Stun grenade	A hand grenade producing a very loud report and bright flash, intended to disorient and unnerve terrorists and rioters without injuring them.	Velocity
SLAP	Saboted Light Armor Penetrator	Sub-machine gun	A lightweight, one-man weapon usually firing a pistol cartridge and with limited range and accuracy.	Measure of the bullet's speed. V_0 or Muzzle Velocity (MV) refers to the speed as the bullet leaves the gun; Observed Velocity (OV) to the speed at any particular point in flight; and Remaining Velocity (RV) to the speed at the end of flight. Modern usage often specified the precise distance at which OV is measured, example, V_{25} , V_{50} , in which the figures indicate the distance in metres from the muzzle. The highest point of the bullet's trajectory.
SLAW	Shoulder-Launched Assault Weapon	SVD	Snayperskaya Vintovka Dragunova	Vz
		Thermal imaging	Night vision system relying upon the emanation of heat from the target; previously known as passive infrared.	WP
		TNT	Tri-Nitro-Toluene. High explosive used as a filling for various munitions.	Wz
		Toggle lock	A breech locking system for recoil-operated weapons, notably the Maxim and Vickers machine guns and the Parabellum (Luger) pistol.	Yaw
		TOP	Total Obscuring Power. A measure of the effectiveness of a smoke screen.	Zero
		TOW	Tube-launched, Optically tracked, Wire-guided. US anti-tank missile system.	The adjustment of sights so that the bullet will strike the point of aim at some specific range. From this zero adjustment, the sight's adjusting mechanism will provide the necessary compensation to the sightline so that bullet and sightline will coincide at other ranges.
		Tracer	Ammunition carrying a small flare in the base of the bullet to mark out the trajectory in flight and so permit corrections to be made.	
		Trajectory	The flight path of a projectile from gun to target	
		Twist of rifling	The degree of rotation of the rifling grooves in a barrel. Can be constant or progressive, that is, increasing in	
				pitch as it nears the muzzle. The degree of twist can be defined; by specifying the distance required for the groove to make one complete revolution - example, one turn in 250 mm; by specifying the number of calibres required for the groove to make one complete revolution - example, one turn in 30 calibres; or by specifying the angle between the line of the groove and the axis of the bore - example, 3.5°.
				Sense of twist - right-hand or left-hand, as seen from the breech, should also be specified, though very few weapons use a left-hand twist.