from a cavity which can then be inspected adequately and any recurrence can be
dealt with in its earliest stages.

Equipment

The consensus of opinion is that the equipment provided for our Ear, Nose,
and Throat Departments in peace and war scales is adequate for any recognised
procedure. Modern methods of auditory testing by pure-tone audiometry are
available at several military hospitals in the United Kingdom and special sound-
proof testing booths have been constructed. Overseas, the chief difficulty to be
overcome is the adequate servicing of these instruments and this has so far
precluded their installation.

ANÆSTHESIA, 1948-1958

BY


Royal Army Medical Corps

Adviser in Anaesthetics

It has been a momentous decade for the speciality of Anaesthetics. The introduc-
tion and elaboration of the muscle-relaxant group of drugs has resulted in a
revolutionary change in the conception of the basic principles governing the
management of general anaesthesia. The development of new anaesthetic agents
and techniques and improvements in the design of anaesthetic equipment have
made anaesthesia safer, have improved operating conditions, and have enhanced
post-operative recovery. Specialised techniques such as controlled hypotension
and induced hypothermia have made surgery possible for conditions previously
considered inoperable. Techniques for local analgesia have become safer and
more effective with the introduction of the new synthetic drug lignocaine,
which has now largely replaced procaine in clinical practice. The Army has
been by no means slow in conforming with these modern trends.

General anaesthesia

Today deep anaesthesia is found to be neither necessary nor desirable. The
use of toxic doses of the more potent anaesthetic agents is now avoided, and in-
stead, by means of the precise administration of selective doses of the appropriate
drugs, both by inhalation and by intravenous injection, it has become possible
to control accurately the degree of narcosis, analgesia, muscular activity, reflex
action and respiratory movement, as may be most suited to the requirement of
the operative procedure, with minimal disturbance of the subject's normal
physiological processes. This principle has found universal favour and accept-
ance among anaesthetists, and the improved results obtained are acclaimed by
both patient and surgeon. All this is dependent upon the availability of com-
plicated apparatus, a liberal supply of medical gases and a multitude of intravenous
agents, all or part of which may be denied to the anaesthetist working under
improvised conditions in a forward area. The Army anaesthetist therefore must also remain adept today in the administration of chloroform and ether by such simple time-honoured methods as the open mask, which in such an emergency can of course still provide the forward surgeon with adequate operating conditions for many of his life-saving and limb-saving procedures.

Local analgesia

In general it is true that in anaesthetic practice in the United Kingdom the advances in modern general anaesthesia during the past ten years have resulted in considerable reduction in the popularity of local analgesia for general surgery. Spinal analgesia, for example, is now exceptional, although by no means obsolete. Techniques for epidural analgesia and for regional, field or infiltration blocks have been improved and all have their place and their exponents, although their application to military surgery is limited. The inclusion in the Army’s list of drugs of lignocaine, in appropriate dilutions and packaging for both topical application and parenteral injection, has made this invaluable agent readily available for the safer and more effective production of local analgesia for oral and general surgery.

Specialised anaesthetic techniques

The anaesthetist can now play a prominent part in the control of haemorrhage during surgery, and the intravenous use of ganglion-blocking agents to produce controlled hypotension for this purpose is a practice which has become widely adopted. The overall safety of this technique is still in dispute, but the advantages gained by its employment in extensive plastic surgery of the head and neck and in the surgical treatment of vascular tumours are undeniable.

Cooling for the purpose of analgesia of the extremities, first described by Baron Larrey, Napoleon’s Army surgeon, during the retreat from Moscow in 1812, has in recent years been extended into the modern practice of induced generalised hypothermia. This technique, in which the patient’s body temperature is reduced to approximately 30°C, enables the cells of the brain, parenchymatous organs and myocardium to withstand relatively long periods of hypoxia and has proved of immense benefit in neuro- and cardio-vascular surgery. Techniques such as these however add appreciably to the hazards of anaesthesia and in the Army their practice is limited to special centres.

Equipment

In the light of modern developments the Army anaesthetist has been equipped with a full range of up-to-date anaesthetic apparatus, instruments and drugs, giving him facilities for the employment of all established anaesthetic procedures. The military hospital central sterile supply department provides him with pre-sterilised syringes and needles, and with sterile packs for local and spinal techniques and for the emergency treatment of cardiac arrest. Each Army hospital has recently been equipped with a positive pressure respiratory pump
The E.M.O. Anaesthetic Outfit, assembled for use on its self-contained emergency stand, comprises a thermo-controlled ether-air inhaler and an inflating bellows unit with uni-directional valves connected in series to a standard expiratory valve mount and facepiece.

PLATE I

The carrying case of the E.M.O. Anaesthetic Outfit designed to give maximum protection and portability.

PLATE II
of the latest pattern and every dental department is supplied with an apparatus of modern design for the administration of nasal nitrous-oxide-oxygen anaesthesia.

Field equipment

The choice of equipment for the Army anaesthetist working under battle conditions presents special problems. The mobilisation medical equipment of a Field Surgical Team for example contains a full-scale modern anaesthetic apparatus designed especially for transportability, but it is obvious that such complex and necessarily delicate equipment may easily become unserviceable under adverse conditions, apart from the unpredictability of the supply of medical gas cylinders in the field (a problem in peace time in some overseas stations). Provision has therefore been made in these scales of equipment for the inclusion of a thermo-controlled ether-air inhaler for general anaesthesia. This apparatus (depicted in Plates I and II) is a modification of the Oxford Vapouriser, which was so widely used in field medical units during World War II, and in its modern form is known as the “Epstein-Macintosh-Oxford Ether Inhaler.” An inflating bellows has been incorporated with the inhaler and the whole packs neatly into a light-weight carrying case, which in turn is readily convertible into a portable stand. The virtue of this item of equipment is that it can be used for modern anaesthetic techniques independently of the supply of medical gases. It provides, in fact, a simple but vital reserve apparatus for the Army anaesthetist working under improvised or isolated conditions, as for example in an independent brigade group.

Research

There is ample and varied opportunity for original clinical research in anaesthetics in the Army both at home and overseas. In recent years an ingenious battery-operated respiratory pump was designed and produced from local resources in the Far East, through the skill and initiative of a senior anaesthetist, for the transport of cases of poliomyelitis with respiratory paralysis. In the Middle East a controlled investigation of the value of amiphenazole as a morphine antagonist in the treatment of Army casualties has just been completed. At home a new field service pattern transportable Boyle’s anaesthetic apparatus has been developed and is now in the production stage. Very recently a final clinical trial was undertaken at The Queen Alexandra Military Hospital of a manual portable resuscitator designed at the Chemical Defence Experimental Establishment, Porton, for the treatment of nerve-gas and other casualties.

New anaesthetic agents are constantly under review with particular regard to their application to battle casualties. A notable example is the new inhalation anaesthetic, halothane. This potent drug, a stable volatile liquid at normal temperatures, provides a non-irritant, non-inflammable vapour capable of producing rapid induction of anaesthesia and allowing equally rapid recovery, with minimum toxicity to the patient, all obviously attractive features in an agent suitable for military anaesthesia in war time.
New anaesthetic techniques are being investigated. The production of "ataralgesia" as described by Hayward-Butt, by the administration in heavy dosage of analgesic (pethidine), tranquilliser (pacatal) and respiratory stimulant (daptazole), which is characterised by complete generalised analgesia with retention of consciousness, is of particular interest in the management of mass casualties. This technique, it is claimed, provides a co-operative, carefree and painfree patient, who can be subjected to surgical operation without further anaesthesia. Such a method clearly deserves the most extensive investigation.

**Conclusion**

From this brief review of progress in the speciality of Anaesthetics during the past ten years, and of its impact on the Army anaesthetist, it is apparent that the Royal Army Medical Corps is moving with the times and playing its part in applying all the benefits of modern anaesthesia to the military patient.

It can be justly claimed for instance that the excellence of the results of the surgical treatment of casualties in Korea was attributable in no small way to modern anaesthesia.

The training of the Army anaesthetist must enable him to achieve the academic distinction, experience and practical competence of the consultant specialist, but, unlike his civilian colleague, he must also be skilled in the use of simple "rag and bottle" methods of anaesthesia, if he is to be capable of operating under improvised conditions in the field.

The opportunities for specialising in the Army in this branch of medicine are greater than ever before, and it can be confidently asserted that the general standard of anaesthetic equipment provided for the Royal Army Medical Corps compares favourably with that of any other medical service in the world.

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**RADIOLOGY, 1948-1958**

**BY**

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Royal Army Medical Corps

Adviser in Radiology

During the past ten years the general trend towards an increased resort to radiological examination has reflected the practice in civil hospitals. Thus in 1950, the total number of radiographic examinations in the Army was 168,000, including almost 70,000 chest cases; by 1954 the total had increased to almost 216,000 with 84,500 chest examinations.

**Personnel**

The senior radiographers are Regulars of fairly long service whose standards of knowledge and skill have risen sharply and it has now become the rule for senior radiographers to hold the Membership or Fellowship of the Society of Radiographers.