Australian Military Medicine Association

Statement of Objectives

The Australian Military Medicine Association is an independent, professional scientific organisation of health professionals with the objectives of:

- promoting the study of military medicine
- bringing together those with an interest in military medicine
- disseminating knowledge of military medicine
- publishing and distributing a journal in military medicine
- promoting research in military medicine

Membership of the Association is open to doctors, dentists, nurses, pharmacists, paramedics and anyone with a professional interest in any of the disciplines of military medicine.

The Association is totally independent of the Australian Defence Force.
Editorial

Whither the Journal?

Russ Schedlich

As I think I've stated once before, one of the great benefits of being Journal Editor is the right of last reply. However, in this instance, I write with some humility.

Council of the Association commissioned the Secretariat to undertake a survey of members this year, and the full results are published in this issue. I was gratified that the vast majority of respondents rated the journal as 'average' to excellent. I was, however, disappointed (at myself, I would hasten to add) in the fact that about 10 per cent rated the journal as below 'average'. There were a number of specific comments that were made, and I want to take this opportunity to respond to some of them, either directly or generally.

A general theme that ran through the comments was a desire for more papers - and would that I could, but, as some pointed out, to achieve this means the members (or others) must be more prolific. While there are several papers in the pipeline, more are needed. If I could publish five original papers per issue, I would be very happy.

Photos are included where available.

A number of people suggested reprinting copy from other publications. I have deliberately tended to avoid this, except where I have felt that the article is particularly relevant and worthy, and the original publication was unlikely to have been seen by the bulk of our members.

There were suggestions regarding the use of specific topic areas - such as aviation and underwater medicine. This is a laudable aim, but unless a steady stream of articles on these areas can be generated, the longevity of this concept is limited. I have tried to follow this concept at least in a limited fashion, by having each article come under some kind of Section heading. Of course, one can go out to people and solicit contributions, and this is one option that we may more actively pursue (I do have the names of those who have made the suggestions!). I would add that I did attempt to solicit copy from SGADF's Consultants, with only one positive response.

The gentleman who asked for larger print is, perhaps, giving something away; on a more practical note, larger print means a bigger, heavier journal and higher paper and postage charges. I have chosen what I think is the clearest small typeface (and comparing to journals such as the BMJ and Lancet, I think it is probably OK).

The need for refereeing of articles was also suggested by several people. Again, this is a laudable aim, however, until such time as we have a large number of papers being submitted that would allow us to review and cull those papers not felt to be up to a particular standard, probably impractical. Having said this, I do not wish to decry the papers that have been submitted so far; they have been of a very high standard and have, at least, passed the test of my readership.

There were suggestions to increase the publishing of papers from AMMA Conferences and also those of the Directors of Health Services. I guess it is fair to say that I have tended to avoid this in the past, because I am not sure that I see the Journal best fulfilling its aim by publishing papers previously presented. I have also found that requests of presenters of papers for the copy have not been very successful. I will, however, give some more thought to this idea.

While members appear generally satisfied with the Journal, there is obvious room for improvement. I will endeavour to achieve this over the next year.

Deputy Surgeon General Appointment Announced

The appointment of the new Deputy Surgeon General was announced publicly by the Surgeon General on 27 November.

Brigadier Paul Buckley, RAAMC, will take up the position probably in February 1998, at which time the other two one-star officers, Commodore Mike Flynn RN and Air Commodore Warren Harex RAAF, will retire.

Brigadier Buckley will head a Defence Health Service Executive somewhat reduced in size from the previous Office of the Surgeon General, and certainly lacking the military authority obtained through rank. The position of Surgeon General will change to a Reserve position probably also in February. The appointee to this position is as yet unknown.

The Defence Health Services are a component of the Defence Personnel Executive and are responsible for the provision of all health services to the ADF.
President’s Message

Nader Abou-Seif

As we near the end of another year, I take the opportunity to pause and reflect on the nature of change. This year continues to bring change in the structure of the ADF Health Services. There has been much talk, rumour and conjecture as to what is to happen as a result of the most recent restructuring. With any major change, there is a degree of trepidation as well as anticipation. To be able to adapt requires a willingness, common purpose and commitment to overcome undoubted concerns. The greater the efforts and contributions of all involved, the more likely change will be constructive.

The AMMA council, too, must regularly review its organisation and activities in order to develop and meet the needs of a growing membership. Elsewhere in this issue are included the results of our membership survey which have suggested changes and, hopefully, improvements in a number of areas of council activity. The dissemination of information needs to be enhanced and member involvement further encouraged. As an organisation, we have a large amount of experience and human resource available. The survey suggests that we need to make better use of what we have.

The journal will be reviewed along the lines suggested. Many of the suggestions as to layout, content and additional features will be incorporated in future issues. Our valiant editor does need your assistance, however, in order to achieve the greater range and depth of papers we would like to see published. Once again I ask for your contributions for the journal, your advice as to upcoming events so that a newsletter or diary of upcoming events can be maintained. With the more widespread use of electronic communication, the development and enhancement of an AMMA presence on the ‘Web’ is needed. Hopefully all of these will be able to be addressed in the near future.

It is our aim to continue to respond to the growth and development of AMMA in a way that the membership feels will enhance its value as an association.

AMMA will continue to promote study, and research into various areas of Military Medicine. The AMMA Research Grant, the Weary Dunlop Award and the course prizes given on behalf of the association are hoped to both encourage the profile of our specialty within the health community.

The ability of an organisation to meet the changes and challenges it faces will determine its success in the future. I have faith that, with your help, the AMMA Council will be able to continue to develop the association into an important and relevant one.

I hope the coming season will be a joyful and safe one for you and that next year will be a happy and productive one for all of you.
The neurophysiologic aspects of G-induced loss of consciousness (G-LOC)\(^1\)

David G. Newman\(^2,3,4\)

Introduction
The principal problem faced by the human cardiovascular system when exposed to a force environment greater than +1 Gz in magnitude is that the hydrostatic effects of the applied acceleration may overwhelm the system's ability to maintain the required level of cerebral perfusion. When this occurs, G-induced loss of consciousness (G-LOC) results. G-LOC has been formally defined as "a state of altered perception wherein (one's) awareness of reality is absent as a result of sudden, critical reduction of cerebral blood circulation caused by increased G force.\(^1\)" G-LOC is perhaps the most significant consequence of exposure to accelerations greater than +1 Gz.

This paper briefly reviews the historical aspects and general physiology of G-LOC, and then examines the neurophysiologic aspects of a typical episode of G-LOC. These neurophysiologic aspects are the result of a significant amount of research into the nature, duration and characteristics of the unconsciousness induced by exposure to high +Gz loads.

Historical Aspects of G-LOC
G-LOC is not a new problem. Indeed, it has been a challenge to pilots for many years, almost since man first took to the skies in powered aircraft. Episodes of "fainting in the air" were first described during and after the First World War by several authors.\(^5,6,7,8\) In 1938 Livingston carried out significant research in England into this problem, using modified aircraft to test subjects.\(^3\) He accurately reported the time of incapacitation, and also described the attendant event amnesia as well as some of the psychophysiological aspects of G-LOC.

In Germany in the 1930's, Dr. Heinz von Diringshofen proposed the hydrostatic theory of tolerance to G, based on elegant experiments he carried out on pilots flying an instrumented aircraft for data collection.\(^4\) Much of von Diringshofen's work remains valid today. He was able to identify the limits of human tolerance to acceleration. Indeed, he was arguably the first researcher to accurately describe the blood pressure changes occurring under acceleration stress and the cardiovascular compensations brought to bear as a result.\(^4\)

By the Second World War, the problem of "aviator's vertigo" was receiving a lot of attention in many countries, including the United Kingdom, America and Canada.\(^1,3,4\) This vertigo involved pilots with transient cognitive deficits or impairments not necessarily due to vestibular factors. As knowledge of this problem grew, it became apparent that the accelerations generated by the aircraft were compromising the cardiovascular systems of the aircrew. The body of knowledge concerning G-LOC was beginning to take shape. Man-carrying centrifuges became increasingly popular as research tools, as they were able to generate the same level of acceleration in a safe and reliable manner. Indeed, the first human centrifuge for aerospace medicine research was built in Berlin in 1934, by von Diringshofen and his brother, a mechanical engineer.\(^4\) During and immediately after the Second World War, the Allied forces had 6 centrifuges which were conducting G-related research.\(^1\)

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As aircraft became more powerful and manoeuvrable, G-LOC assumed a position of even greater significance. Modern materials technology has allowed fighter aircraft to be developed and produced that are remarkably strong and certainly capable of generating levels of acceleration beyond the tolerance of the human occupant. The introduction of the F-15 and F-16 fighter aircraft in the 1970’s illustrates this point quite well. Experience with these new high performance aircraft led to a resurgence of interest in the problem of G-LOC, which had not received much research attention since the mid 1950’s.1,5,6,7,8 These aircraft were involved in a significant number of accidents, many of which were fatal. A disturbing proportion of these accidents were attributed to pilot incapacitation as a result of G-LOC. It became apparent that the acceleration envelopes of these aircraft were greater than had previously been experienced, and existing countermeasures were not providing the necessary margin of safety for the pilots. Once again G-LOC became a serious problem in the high performance aircraft community. Recent surveys of fighter pilots indicate that the problem of G-LOC is certainly still present and still responsible for significant losses of both expensive materiel and highly trained personnel. In one study among USAF fighter pilots, some 12% reported having had a G-LOC episode.9 It thus remains a challenging problem for both researchers and pilots.

Physiology of G-LOC
The physiological problems inherent in exposure to accelerations beyond +1 G are simply accentuations of the same problems encountered by humans when they assume upright posture, which is essentially an applied acceleration of +1 G in the z axis. The hydrostatic effects of this force have been well described.10,11,12,13 These same hydrostatic forces are at work when the human is subjected to +2, +4, or +9 G, but are obviously several orders of magnitude greater. The physiological consequences are thus magnifications of what occurs at +1 G. Indeed, the cardiovascular system endeavours to cope with these effects in much the same way, albeit with differing results in many cases.

Holm von Diringshøfen’s haemostatic theory has contributed much to acceleration research. His theory has undergone little change since it was first put forward. Much of what we know about the effects of acceleration on the human cardiovascular system is based on von Diringshøfen’s theory. The haemostatic theory generally explains the effects of applied acceleration in a satisfactory way.

In the upright posture, the arterial pressure of the human varies in accordance with the magnitude of the hydrostatic force. Assuming a mean arterial pressure of 100 mmHg, the arterial pressure above the heart at the base of the brain is about 78 mmHg. This represents a heart-brain pressure differential of 22 mmHg.

This is an important point. It allows us to state that the pressure differential between heart and brain at an applied acceleration of +1 G is 22 mmHg. This pressure differential is increased by a factor proportional to the magnitude of the applied acceleration. Thus, at +2 G, the pressure differential will be 44 mmHg, and at +4 G it will be 88 mmHg. From this analysis, it can be readily deduced that if the mean arterial pressure remains at a level of 100 mmHg, blood flow to the brain will cease at an applied acceleration of +4.5 Gs. This would then constitute G-LOC. Indeed, it was von Diringshøfen that originally described tolerance to G as being within the range of +4.5 to +5.5 Gs.4

In practical terms, blood flow does not actually cease at the hydrostatically-predicted +Gz level. The hydrostatic forces involved in +Gz exposure are applied equally to the venous system and the cerebrospinal fluid, as well as the arterial system. The consequent development of a highly negative intracranial pressure sustains cerebral blood flow under gravitational stress. This theory was first postulated by Ranke in 1937.14 and has subsequently been examined by several researchers.15 This “perfusion without pressure” concept permits cerebral blood flow beyond the level of gravitational force that hydrostatic considerations would predict. However, this only occurs up to a point, beyond which it does effectively cease and unconsciousness results. Typically, this level is approximately +5 Gs for a relaxed, healthy subject.10,11,16,17,18,19

As the human cardiovascular system is exposed to acceleration, the increasing hydrostatic force is well tolerated up to a certain point. Then, a number of well-defined changes occur. The most significant of these affects the visual system, particularly the retina. The human eye has an internal pressure of 20 mmHg. As the pressure differential continues to increase with acceleration, there comes a point when the perfusing arterial pressure is 20 mmHg or less. At this point, the level of function of the eye becomes impaired due to relative retinal ischaemia arising through lack of the appropriate level of blood flow. The changes that occur in the vision of the human subject undergoing the applied acceleration are well documented.10,11,16,20

At a level of +3 to +4 G, retinal blood flow becomes degraded as arterial pressure approaches the level of internal ocular pressure. The retinal periphery is first affected, essentially as a function of distance from the blood supply entering the retina.20 Peripheral vision therefore becomes impaired, and this phenomenon is known as “grey-out.” This loss of peripheral vision manifests itself as grey vision or tunnel vision. It may also occur in an asymmetric fashion, especially if the head is tilted under high +Gz. It is the first sign to a pilot that he is approaching the threshold of cardiovascular compromise. At a slightly higher level of acceleration, in the order of +4 to +4.5 Gz, blood flow...
into the retina is prevented by the higher internal ocular pressure relative to the driving arterial pressure. Complete loss of vision occurs. This is termed "blackout." This term should not be confused with syncope with which it is popularly associated. This complete loss of vision typically occurs with the pilot still fully conscious, he is able to still manoeuvre his aircraft, receive radio transmissions, etc. His higher cognitive functions are all still intact. It is only his visual input that has been lost. There is an interval of approximately 4-6 seconds between arterial pressure falling below the critical level of 20 mmHg and complete loss of vision. This is due to the existence of a reserve oxygen store within the eye itself.10,11,16

When the applied acceleration is greater than +4.5 to +5.5 Gz, the driving pressure generated by the heart is insufficient to overcome the magnitude of the hydrostatic force. Cerebral blood flow ceases and unconsciousness results. This is G-LOC. It can be seen that G-LOC represents the failure of the cardiovascular system to tolerate a high applied acceleration.

Neurophysiologic Aspects

G-LOC should not be considered as an abnormal event. Rather, it is a normal physiological response to an abnormal stimulus, i.e. high +Gz acceleration. It is also not a form of seizure or syncope. It is best defined as a sudden, orderly and progressive shut-down of the brain, largely thought to occur as a self-protective mechanism. It reflects a continuum of +Gz effects from consciousness to unconsciousness. There is an important period, from the onset of high +Gz, during which the brain is able to still function despite the absence of any effective cerebral blood flow. This has been described as the functional buffer period, or metabolic energy reserve, and has in several studies been shown to have a duration of approximately 6 seconds (21,22). The mechanism underlying this buffer period is unknown, but it is generally considered to have a protective role, in that it allows for large scale accelerations to be tolerated as long as they are not sustained beyond the critical 6 second mark.21 At the end of this buffer period, consciousness is said to terminate abruptly with complete brain shut-down.

An episode of G-LOC has several features that have been well described in the aerospace medicine literature.11,21,23,24 In simple terms, a G-LOC episode will result in a period of unconsciousness followed by a period of disorientation and confusion. The time of overall pilot incapacitation is defined as the total incapacitation period. This represents in operational terms the total amount of time that the pilot is not in control of his aircraft. The total incapacitation period consists of an absolute incapacitation period and a relative incapacitation period.21,23,24 The absolute incapacitation period represents complete incapacitation or true unconsciousness, which usually lasts for about 15 seconds on average. In experimental terms, it is defined as the time from the subject's head dropping to the moment of unconsciousness to the raising of the subject's head as consciousness is restored.23

This absolute incapacitation period is then followed by a period of relative incapacitation which has a duration of approximately 10-15 seconds. This period is defined as the time interval from head raising to the first voluntary purposeful limb movement.23 During the relative incapacitation period, the pilot is once again conscious, but only in a technical sense. That is, while blood flow to the brain has been restored, the pilot is somewhat dissociated from his situation and unable to function appropriately. He is disoriented and confused, with significant cognitive slowing, and his higher cortical centres are largely dysfunctional.11,21,23,24 As a result, he is incapable of appropriately assessing his situation and thus perceiving danger. Fine motor control is absent, and often only gross motor acts are carried out. He is thus still incapacitated inasmuch as he is unable to save himself or correct his situation. He is still recovering from the major ischaemic insult his cerebral cortex has sustained. It has been reported that some pilots in such situations have watched in fascination as their altimeters have registered their rapid descent to subsequent ground impact, the pilot not appreciating the significance of what he is seeing and therefore not reacting to it appropriately. Obviously, in a supersonic jet fighter pulling high +Gz levels at low altitudes, the potential for disaster in such a situation is enormous.

There is also a characteristic recovery process from an episode of G-LOC. Tingling in the extremities and perioral numbness have been reported in several studies.25 Myoclonic convulsions and flailing of the arms commonly occur, generally coinciding with the re-establishment of effective cerebral blood flow. Typically these convulsions occur in the latter third of the absolute incapacitation period, generally in the last 4 seconds of this so-called convulsion-prone period and are not associated with any electroencephalographic abnormalities.26 Whinney has proposed that these convulsions occur as a result of a functional caudal reticular formation becoming disinhibited by a non-functional cerebral cortex.26

In addition, cognitive distortions of a dream-like nature are said to occur towards the very end of the absolute incapacitation period.26,25 These dreams can often incorporate the myoclonic convulsions which typically occur in the same phase of the G-LOC event.26 No link has been established between these dreams and REM sleep, but they are akin to the hypnagogic dreams which can occur at the end of a normal sleep cycle, in that they tend to be associated with the end stages of unconsciousness.25

The rate of onset and offset of high +Gz has also been shown to affect the nature of the subsequent G-LOC episode. Gradual onset of +Gz has been shown to result in longer absolute...
and relative incapacitation periods.\textsuperscript{23,26,28} This is due to the longer period of absent or reduced cerebral perfusion during gradual onset exposure. Gradual onset thus produces a greater perfusion deficit and hence greater embarrassment to the central nervous system than rapid onset. Several centrifuge studies have shown that gradual onset runs (GORS) consistently produce prolonged incapacitation times. Rapid onset runs (FORs), on the other hand, typically produce shorter incapacitation periods. In one centrifuge study, for example, incapacitation following rapid onset was 23.7 seconds, compared with 33.3 seconds for gradual onset.\textsuperscript{29}

Gradual offset of +Gz tends to prolong the time of incapacitation in much the same way as gradual onset, as it prolongs the period of overall cerebral hypoperfusion and delays re-establishment of full cerebral blood flow. Centrifuge studies involve offset rates in the region of 0.5 to 0.9 Gs\textsuperscript{-1}, while inflight G offset rates have been found to be approximately 0.5 Gs\textsuperscript{-1}.\textsuperscript{28} A centrifuge ROR usually takes 9 seconds to return to +1 Gz from a peak of +9 Gz.\textsuperscript{34} Obviously the quicker the G offset, the quicker cerebral blood flow will be returned to normal, and the shorter the resultant incapacitation time. In terms of the rate of recovery from an episode of G-LOC, studies have shown that there is considerable individual variation. Indeed, it appears that a particular subject's G tolerance and their rate of recovery from an episode of G-LOC are not related. They are, in fact, independent variables.\textsuperscript{29}

Rapid onset of +Gz is often not associated with myogenic convulsions or dreams. This is thought to be due to the fact that rapid onset of high +Gz may disable the reticular formation just as quickly as the cerebral cortex.\textsuperscript{26} This would prevent myogenic convulsions from occurring.

The unconsciousness resulting from G-LOC has been compared with that resulting from acute arrest of the cerebral circulation.\textsuperscript{28} In an experimental setting, the latter unconsciousness is generally produced via the use of a cervical occlusion cuff. Important facts emerge as a result of this comparison. Firstly, the times of incapacitation are different between the two types of unconsciousness. G-LOC results in longer incapacitation times than acute arrest of the cerebral circulation. This is related to onset and offset rates. As we have seen, onset and offset tend to take at least several seconds during +Gz stress. On the other hand, acute arrest of the cerebral circulation can be achieved almost instantaneously, and can be reversed just as quickly. Higher onset and offset rates produce less overall incapacitation. However, the two types of unconsciousness are strikingly similar in one important aspect. The time from application of the stress (high +Gz or acute arrest) to onset of unconsciousness is virtually the same in both cases, being 6 to 7 seconds. This represents the functional buffer period, which as we have already seen is the period of time that the central nervous system can function after the blood supply has become inadequate.\textsuperscript{26} This buffer period is due to the stored oxygen and metabolic substrate supplies within the brain, which are exhausted after this critical time.

The neuropsychological effects of G-LOC have also been documented, and are accentuated by repeated G-LOC episodes. These effects include denial, euphoria, irritation, embarrassment, confusion, dissociation and anxiety, among others.\textsuperscript{28,30} It has been reported that G-LOC has the potential to "exert a temporary psychologically crippling effect" on the combat effectiveness of tactical aircrew, who may have altered judgement, and a loss of aggressiveness and motivation to carry out their mission.\textsuperscript{28,30} In the post-G-LOC period, psychological mechanisms often result in suppression and denial of the actual G-LOC event. Indeed, recovery from G-LOC is typically associated with event amnesia, with the pilot not recollecting having had a period of unconsciousness at all. These post-G-LOC psychological reactions can have a negative impact on flight safety. Full psychophysiological recovery from an episode of G-LOC is generally believed to be reached only after a complete sleep cycle.

Conclusion

G-induced loss of consciousness continues to be a challenge for the fighter pilot. The unconsciousness produced by overwhelming exposure to applied +Gz loads can produce a myriad of neurophysiological effects. Convulsions, dreams and various psychological reactions can all occur. All of these features of the post-G-LOC environment can have significant implications for flight safety.

With the continued advances in fighter aircraft technology, the elimination of G-LOC as a cause of aircraft loss seems a highly unlikely proposition. What is required is a greater level of understanding of the nature of G-LOC and its neurophysiological consequences. In this way more effective anti-G countermeasures can be developed for the protection of the aircrew who operate in the high G environment. Only by understanding the problem more thoroughly can we hope to produce an effective solution.

References

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Clinical Cases

Trauma at sea. Bilateral femoral fractures in USS Independence off New South Wales

K.A. Mitchell

We had an interesting case recently aboard CV-62 (USS Independence). It was much like the case from CVN-71 (USS Theodore Roosevelt), as described by LCDR Lenny Klein (Spring 1987 NAS Newsletter, Vol. 9, No. 2, pp. 14-15).

During routine flight operations off the south eastern coast of Australia, the left main mast on an F/A-18 failed during a catapult shot. The left wing dipped down and hit an open hatch which closed on the legs of an airman. Less than two minutes after calling for the Medical Response Team (MRT), the conscious airman was extracted from the destroyed flight deck hatch. The MRT quickly assessed the extent of damage, applied pressure dressings and immobilised the obvious bilateral open femur fractures. Within ten minutes the injured airman was being assessed by the surgeon (LCDR Gary Schwendig, MC, USN) and myself in Main Medical.

The airman arrived spontaneously breathing, coherent and complaining of pain of sight to nine on a scale of 10. In Main Medical, a Propaq and pulse oximeter were used as an adjunct to clinical assessment. Large bore intravenous lines were secured in each arm and initial blood work was drawn. His haematocrit upon arrival in Main Medical was 33%.

Fluid resuscitation was immediately initiated and the walking blood bank was called for. His injuries included the known bilateral open femur fractures, as well as a right ankle fracture/dislocation, a left knee dislocation and a fractured right thumb.

The surgeon decided that the injuries were beyond our capability to repair on the ship, but not so severe as to warrant amputation or immediate exploration for haemostasis. Fortunately, the carrier was only one hour steaming at top speed, outside helicopter range of Sydney (the closest major trauma centre). Additionally although there was significant ongoing venous bleeding, there was no obvious major arterial injury.

We were fortunate to be within two hours of a major trauma centre and to have a patient who was stable enough to survive an emergency medevac. If we had been any further out, exploration of both thighs to control ongoing blood loss would have been indicated.

Ninety minutes after the initial injury, the patient's haematocrit had dropped to 21%. By this time, the first of the fresh whole blood was available. Our injured man went on to receive three units of warm, fresh, whole blood while in Main Medical (all that was available).

During the administration of the initial units of blood, the ship notified us we were within helicopter range. Bilateral Hare traction splints were placed and the seaman was sent off with a flight surgeon (LT James Cox, MC, USN - soon to be an anaesthetic resident) and our ship's nurse (LCDR Robert Amaya, NC, USN) in attendance.

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2. This article was originally published in the Navy Anesthesia Society Newsletter, Volume 9 Number 3, 1997, and is reprinted by kind permission.
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We sent the airman to Prince of Wales hospital, a major Australian trauma centre, via Sydney International airport.

In all, after fluid volume resuscitation and intravenous morphine for pain management, our airman received a total of six litres of lactated Ringers and four units of warm, fresh whole blood (three in Main Medical and one in flight). He remained conscious, stable and comfortable throughout the resuscitation effort and transport to the Australian trauma centre. Our surgeon assessed that homeostasis, while not optimal, was adequate for transport.

More definitive intervention would have required surgical exploration. The consequences of a shipboard exploration (possible double amputation) made this an unattractive option. I was personally gratified that two hours after leaving the carrier, our airman arrived at Prince of Wales Hospital still conscious, comfortable, stable and spontaneously breathing.

Our airman underwent multiple major vascular and orthopaedic operations in Sydney. His first operation lasted approximately eight hours and required so much blood (28 units PRBCs) from the local Red Cross Blood Bank that a planned organ transplant in Sydney had to be cancelled.

He eventually went on to recover and two months later, is in Bethesda undergoing rehabilitation with a walker.

Prince of Wales Hospital credited the airman’s survival to our early intervention and skilled resuscitation efforts. The credit for this goes to the skill of our entire team. Our MRT is always fast on the scene and very capable. As soon as the MRT was called away, Main Medical filled with all available providers and corpsmen. Our surgeon is very skilled and provided expert trauma management. Our sea Medical Administration Officer (LT Roy Lockwood, MSC, USN) organised a smooth medical evacuation and later attempted to ensure that the entire department was well recognised for our life saving efforts. Our corpsmen organised supplies, fluids, traffic flow and blood donations.

As a sideline, the F/A-18 pilot went on to recover from his launch incident and belly land his plane at an airfield in Australia (RAAF Base Williamtown at Newcastle). After striking the hatch, the wing of the aircraft bounced up and grazed the head of the shooter ( catapult operator). If the hatch had not deflected the wing up, the shooter would have been decapitated.

Of the fifty-plus anaesthetics that I have delivered during this four month deployment, the resuscitation of this patient was the most interesting case. The rest of our cases have been a mixture of emergencies (appendicitis and trauma) and routine cases. I was able to provide a sciatic nerve block to an Australian female sailor with a fractured ankle. She had been transported to us from an Australian ship and required further transportation to shore. Watching her turn from tears of pain to relief and then smiles made all of that time learning regional anaesthesia seem like time well spent. Providing anaesthesia is a good job. Providing anaesthesia at sea is a great job.

Editor’s Note
Independence was visiting Australia following the Combined Exercise Tandem Thrust 97 held off the coast of Queensland in March 1997. The sailor injured in this incident spent several weeks recuperating at Balmoral Naval Hospital in Sydney following discharge from Prince of Wales and prior to being fit for strategic aeromedical evacuation (carried out by the US Air Force). The Australian sailor with the fractured ankle was from an RAN ship participating in Tandem Thrust. She enjoyed the thrill of being launched from Independence and being flown into Rockhampton. There, she was processed by the RAAF Aeromedical Staging Facility before being flown south for definitive treatment. What a mix!
History

Australian doctors at war. A literature review. Part One: Up to the evacuation of Gallipoli

S. Due

Introduction

This review aims to cover the whole field of published literature relating to the war service of Australian doctors. It is adapted from the introduction to my bibliography on this subject, which is now out of print, but is available in the AMMA library.1

Our understanding of any body of literature depends in part on background knowledge. The two areas especially relevant to the literature about Australian doctors at war are (a) the histories of the wars in which the action takes place, and (b) the development and organisation of the Australian armed forces medical services.

It is not difficult to find background reading material on any war in which Australian medical personnel have been involved, and some suitable resources are mentioned in this review. However the problem of becoming acquainted with the development and organisation of medical services in the Australian forces is more difficult, as there is no comprehensive work on this topic. The period prior to Federation is quite well covered by several authors (see below). The rapid expansion of the medical services in the major wars is documented in the official histories of the medical services, but in too much detail for the general reader. The period between the two World Wars is covered succinctly by Allan S. Walker (see under World War II). However, there are many gaps in the overall picture.

In compiling the bibliography, I originally built up a database, over a period of about five years, using my own collection and those of the major libraries, and aided by computerised library catalogues, periodical indexes, and printed bibliographies in related fields.2 Since then I have continued to add to the database, which now contains about 800 records of individual publications (books, reprints, and serial titles) and of articles published in journals. The specifically medical references in this review number about 200, concentrating on official histories, and first hand reports by doctors in the field. Clinical material is not included.

The nineteenth century

Imperial troops were withdrawn from Australia in 1870, leaving the colonies to fend for themselves. Each colony had a small enlisted force, supported by volunteers and, in some cases, a partly paid militia. The medical service was not well developed, except in NSW, where W.D.C. Williams became the Principal Medical Officer of the New South Wales Medical Staff Corps (est. 1888). This in turn became, under his guidance, the New South Wales Army Medical Corps (1898). The NSWAMC served with distinction in South Africa, and proved the value of some innovative ideas of its commanding officer. On 30 July 1902 the old colonial medical units were amalgamated to form the Australian Army Medical Corps. The history of the service in the nineteenth and early twentieth centuries is covered succinctly by several writers, including A.G. Butler, the medical war historian.3

Prior to the Sudan campaign in 1885, none of the colonial medical units had been to war. However some individual Australian doctors had served in European conflicts, and two produced published accounts relating to the 1870s: J.P. Ryan wrote of his experiences in the Franco-German War (1870-71),4 while C.S. Ryan recounted his experiences in the Russo-Turkish War (1877-1878), in which he served first with the Turks (at the siege of Plevna) and later with an English relief team assisting them (at Erzeroum).5

1 Due S. Australian doctors at war. A literature review. Part One: Up to the evacuation of Gallipoli. AUS MIL MED 1997, 6(3):10-15
2 This is Part One of a two part article, the second of which will be published next year.
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Page 10
The Sudan Campaign (1885)

In 1885, after the murder of General Gordon at Khartoum, a contingent of seven hundred and sixty-five troops was sent from New South Wales to assist British forces in the Sudan.12,13 They left Sydney on the 3rd March and were back there on the 23rd June, fortunately having seen little conflict. A small medical unit, including three doctors, went with them. This was the first Australian military medical detachment to go on active service. The medical officer in charge was W.D.C. Williams, who is generally regarded as the 'father' of the Army medical services in Australia. Williams ultimately retired from the AIF early in the war, but reached the height of his achievement in the Boer War. His military career has been quite extensively documented, notably by Gurner. Some recent publications refer to the Sudan contingent's medical service. Williams himself published a brief account of the medical aspects of the Sudan expedition.17

Abyssinian War (1897-8)

T.H. Fiaschi served with the Italian Army in this war against the Ethiopians.18-19 He later served with the NSWAMC in South Africa, and as CO of No.3 AGH at Lemnos in World War I.

Boer War (1899-1902)

The Boer War was fought between Great Britain and the two Boer republics (Transvaal and Orange Free State).20 The Boers had the upper hand in the beginning, and the British were besieged at Ladysmith and Mafeking, but large numbers of British reinforcements ultimately resolved the issue in Britain's favour - the British force numbering over 500,000 against less than 100,000 Boers. After 1900 the Boers fought a guerrilla war, to which the British responded with a brutal but effective scorched earth policy.

Because of the rudimentary state of the army medical service in the other colonies, the Australian medical contingents to the Boer War came largely from New South Wales. Three contingents of the NSWAMC went to South Africa under W.D.C. Williams. The first left Australia in October 1899, the second in January 1900, and the third in March 1901. A fourth medical contingent, drawn from all over Australia, and known as the Australian Commonwealth Army Medical Corps, sailed in February 1902. The official history of the four medical contingents appears in the Official record of the Australian military contingents to South Africa.21

Among the medical officers with Williams in the first contingent were Fiaschi and A.E. Perkins. After returning home Williams, Perkins, and Fiaschi wrote extensive accounts of their experiences and the exploits of the Corps. These were published in The Story of South Africa, and can be regarded as an unofficial 'official history' of the Australian Army medical services in the war.22,23 Others also published accounts of their experiences, notably Robert Scott Skirving,24-25 who has a fine, if somewhat idiosyncratic style. Shorter first-hand accounts are those of Sir T.N. Fitzgerald,26-27 consultant surgeon, and Honman from Victoria and Douglas from Adelaide, who were regimental medical officers.28-30

The most written-about Australian doctor in this conflict is N.R. Howse, who won the Victoria Cross for his actions at Vrededorp on the 4th of June 1900:

Lieutenant N.R. Howse, New South Wales Army Medical Corps, seeing a trumpeter fall, rode out to his assistance. His horse was shot under him, but he continued on foot, dressed the soldier's wounds, and carried him back through heavy crossfire to shelter.31

Howse was the first Australian, and remains the only Australian doctor to have been awarded the VC. He later became Director of Medical Services in the AIF, Director-General of Medical Services in Australia, and a federal government Minister.32-33

Boxer Rebellion (1900)

G.E. Morrison, from Geelong, was The Times correspondent in Peking during the Boxer Rebellion. Morrison seems to have written, fought and doctor with equal verve in Peking. He was a gifted writer, and his formal accounts of this conflict are gems of descriptive prose.34-35 There was also an official Australian force in the Boxer Rebellion, known as the China Naval Contingent,36 Staff-Surgeon Steel, who was a medical officer with the contingent, died on active service in China.37

World War I

The full destructive power of 'civilisation' was unleashed in this war on a scale which is little understood today. Britain and the dominions put over six million troops in the field. Their casualties exceeded three million, and of those more than one million were killed in action or died of their wounds.38

A useful overview of Australian military involvement in World War I is given in the current edition of the Australian Encyclopaedia. Few now will read the monumental official histories, but many could read with profit Anzac to Amiens, a masterpiece of C.E.W. Bean. In round figures, Australia raised 400,000 troops for this war. Among them there were over 200,000 casualties, of whom 60,000 were killed in action or died of their wounds.
About 1,300 of Australia's 3,000 doctors served in the armed forces in World War I. More detailed figures were given by Petherston at a special meeting of the Council of the Victorian Branch of the BMA, and reviewed by Mitchell. According to the *Medical Journal of Australia*, over 500 doctors had joined the AAMC by October 1915, and a further 200, many of whom had joined up very early in the war, were serving with the RAMC. Some of these had been in England at the outbreak of war. Among the first doctors to leave Australia for overseas service after the war commenced were those known as 'Kitchener's Hundred'. Some, such as the talented writer A.L. McLean, started with the RAMC and later joined units of the AIF.

**Medical Casualties**

The first Australian doctor killed on active service in World War I was B.C.A. Pockley, who at the time was with the First Australian Military Expedition to New Guinea. He was killed at Herbertshohe, on December 12th 1914, after giving his red cross arm band to a soldier who was helping the wounded. Smithurst states that, by 1917, one thousand Australian doctors were in France or Palestine, and over 50 had died on active service. The *Medical Journal of Australia* in 1918 gave the names of seventy-five Australian doctors who had died on active service in the war.

**The Official History**

The publications describing the war service of these doctors are dominated by the monumental work of A.G. Butler, whose official history of the Australian Army Medical Services appeared in three volumes and a supplement. Most of this work was written by Butler himself, although sections were contributed by R.M. Downes (Sinai and Palestine), and McQuire and Cientlo (New Guinea). The work was an enormous undertaking, from the first call for contributions in 1919, to its completion in 1943, over twenty-five years later.

**Egypt**

Late in 1914 the first contingents of the newly-formed Australian Imperial Force, under General Bridges, sailed for Egypt, there to establish base camps in the desert preparatory to taking part in the war in Europe. On the way to Egypt their escort, *HMAS Sydney*, was able to trap and destroy the German raider *Ednaden*. The senior medical officer on *HMAS Sydney* during this engagement, L. Darby, published several reports of his experiences.

Once arrived in Egypt, the AAMC established its base hospitals, No.1 AGH and No.2 AGH. J.W. Barrett worked tirelessly to build up the strength of No.1 AGH in the Heliopolis Palace Hotel. He and J.E.F. Deane later wrote a book, *The Australian Army Medical Corps in Egypt*. Deane recorded his experiences in two elegant short pieces. Other doctors wrote articles describing their experiences in Egypt. Summons produced a brief description of medical life at the Heliopolis Palace Hotel with No.1 AGH, and J.B. Nash wrote a series of articles for the *Medical Journal of Australia* - the first aboard ship, the others in Egypt - giving a lively account of life at Mena House, home of No.2 AGH.

**Gallipoli**

From Egypt the Anzacs went by ship to Gallipoli, where they landed at dawn on the 25th April 1915. The medical officers immediately found themselves in difficulties because of lack of shelter from enemy fire and a great number of casualties. Throughout the campaign, medical arrangements involved doctors on the peninsula gathering in the wounded who were then transferred to hospital ships and taken to the base hospitals on Lemnos and in Egypt. Doctors 'at Gallipoli' were therefore either on land, or in the ships collecting the wounded. Apart from the Official History (volume one of Butler), there is a recent, major work by M.B. Tyquin, who examines the organisation of medical services at Gallipoli in detail. Australian doctors at Gallipoli formed a medical society known as 'The Anzac Medical Association', the activities of which were reported in the *Medical Journal of Australia*.

There are a number of notable works by doctors describing their experiences of the campaign of 1915. J.L. Beeton, CO of the Fourth Field Ambulance, wrote a book, *Five months at Anzac*, which is recognised as one of the best personal accounts of the war. A shortened version appeared in the *Medical Journal of Australia*. J.W.B. Bean, brother of the military historian, published a series of *Reminiscences* of the 3rd Battalion at Gallipoli, from the unique perspective of the RMO. Carefully written, but in a colloquial 'man-to-man' style, these convey something of the ethos of the Anzacs. There are a number of other short pieces by medical officers describing their experiences.

H.M. Moran, an outstanding medical writer, provided a potent account of his war experience in his autobiography. He served off Gallipoli in a 'travesty of a hospital ship' (a converted cattle carrier), and his description of the nocturnal disposal of the dead in the sea 'by Samothrace' makes chilling reading. Other doctors who wrote of their experiences on hospital ships off Gallipoli were Syme, Aspinall, and Poate. H.J. Stewart and J. Morton wrote of their experi-
ences at No.3 AGH, which was established on Lemnos. Gallipoli was evacuated in December 1915, in one of the most remarkable withdrawals in military history, using a plan conceived by the Australian General C.B.B. White. One of the first of many published accounts of this operation was written by a medical veteran, J.W. Spragthorpe. The campaign at Gallipoli has inspired many notable works of literature, including some by medical authors. At least four Australian doctors published contemporary poems about Gallipoli. C.H. Souter, although he was not there, wrote two stirring poems ('The Tenth' and 'The Toast'). Another poem about Gallipoli was published by W.M. Anderson, who had served in the Boer War while a medical student, but had been disabled since in an accident. A fine work is the poem Alma Mater by Prof. H.B. Allen of Melbourne, with its haunting introduction, Australia’s Dead. Two poems written by J. Sprent at Gallipoli were published in the Anzac Book.

Bury the body - it has served its ends;
Mark not the spot, but "On Gallipoli"
Let it be said, "he died". Oh, Hearts of Friends,
If I am worth it, keep my memory.

- Capt. James Sprent, AAMC (3rd Field Ambulance).

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Abstracts from the Literature

submitted by Andrew Robertson


There has been an increasing interest in developing clinical practice guidelines for general practitioners as a means of improving health outcomes. We conducted a survey of a national random sample of Australian general practitioners in May 1995 to determine their needs, preferred formats and dissemination strategies and to identify potential lead agencies for guidelines development. Of 373 eligible general practitioners, 286 (77 per cent) returned completed questionnaires. At least 50 per cent of respondents considered guidelines in angina, psychotic illness, skin cancer and attention deficit disorder as 'extremely' or 'very' useful. However, three other topics identified as areas for future guidelines development in Better health outcomes for Australians were so rated by less than half of the general practitioners surveyed. The Australian Cancer Society and the Australian Medical Association outranked nine other organisations in terms of credibility in guidelines development. Innovative formats, including computerised medical records or text, were not highly rated, consistent with our finding that only 27 respondents (9 per cent) had Internet access. Strategies nominated as likely to increase the adoption of a guideline included a personal visit by a trained nurse, a lecture about its content or a Medicare rebate being available when a patient was managed in accordance with the guideline. Public health practitioners and nominated lead agencies are encouraged to respond to these findings and recognise potential strategies to enhance the effective dissemination of guidelines. Interventional studies are required to demonstrate and allow understanding of changes in clinical practice attributable to guidelines.


Where are the goal posts, your honour? There are currently in excess of 20 000 published guidelines so it is too late to argue against their use or publication. The problem we face is the use and abuse of guidelines, particularly in a medicolegal context.

Comment. Clinical practice guidelines, and how they are implemented, are becoming important issues for all health care systems. The ADF needs to consider these guidelines and provide appropriate direction on how they are to be used. As Cregan intimates, we can get ourselves into some deep medicolegal water if they are not used appropriately.


Clinical infection with Barmah Forest virus (BFV) is becoming increasingly recognised with serological testing. We report the first case of glomerulonephritis after BFV infection. The patient required diuretic and antihypertensive therapy, but made an almost complete recovery. BFV infection should be considered in the differential diagnosis of glomerulonephritis.

Comment. Another good reason to ensure that troops deployed in Northern Australia are adequately protected from mosquitoes.


Ingestion of seeds of the castor oil plant is rare, and may cause toxicity but rarely death. The presumed toxic component is ricin, a highly potent cellular poison. We report the case of a young adult who ingested a large number of the seeds, causing initial toxicity, but with subsequent full recovery. The management of such ingestions and the apparent discrepancy between the extreme toxicity of ricin and the generally milder toxicity of ingested seeds are discussed.

Comment. An interesting review of the accidental ingestion of ricin. Pure ricin remains a lethal biological warfare agent which is far more toxic if it is inhaled rather than ingested.
submitted by James Ross


The ability to control water borne diseases is critical for soldiers, hikers, and others who may need to drink directly from an outdoor source. Water borne protozoan parasites that are specifically of concern are Giardia and Cryptosporidium because of their resistance to halogen disinfection. The purpose of this study was to determine the effectiveness of iodine tablets against Giardia and Cryptosporidium under general and worse case water conditions that might be found in the field. Giardia cysts and Cryptosporidium oocysts were exposed to iodine according to manufacturer's instructions. (two tablets/L = 18-18 mg/L for 20 minutes). This dose inactivated 3-log10 of Giardia in general case water and pH 9. In worst case water, however, only about 35% of cysts were inactivated at pH 5. Fifty minutes were required to achieve a 3-log10 reduction at pH 5. Cryptosporidium oocysts were more difficult to inactivate. Only 10% were inactivated after 20 minutes exposure to iodine according to manufacturer's instructions; even after 240 minutes of exposure to iodine only 65-81% oocysts were inactivated. These data strongly suggest that iodine disinfection is not effective in inactivating Cryptosporidium oocysts in water. Because this organism is common in all surface waters, it is recommended that another method of treatment be used before ingestion.

**Comment.** Filtration devices can eliminate over 99.8% of these parasites. Boiling is also effective. Iodine does not appear to be the method of choice, either from taste or protection from disease.


**Background:** Recently, the US Air Force conducted several studies to examine sex differences on pilot selection tests and training performance. **Methods:** Research has focused on mean score performance, the structure of ability, the predictive utility of pilot selection tests, and the causal role of ability and prior flying knowledge in the acquisition of additional knowledge and flying skills. **Discussion:** Despite male-female mean score differences on pilot selection tests, confirmatory factor analyses indicated that the same factors were being measured for both groups. In studies of predictive bias, no evidence of differential validity was found for male vs. female pilot trainees. An examination of causal models of ability and prior flying knowledge on the acquisition of additional flying knowledge and flying skills showed similar structure for men and women.

**Comment.** The struggle continues to find predictive indicators of success in pilot selection. This is another piece of the puzzle suggesting that despite differences in testing, the relevance in pilot training outcome is debatable. In the meantime, something has to be used to determine who to select, and psychological testing is as good as anything.


This study investigated the microbial causes of diarrhoeal disease among US troops deployed near Alexandria, Egypt, during October 1985. Bacterial causes associated with 10 cases of diarrhoea included: enterotoxigenic Escherichia coli (ETEC) 42% (21% heat stable, 11% heat labile, and 11% heat stable/heat labile producers); enteropathogenic E. coli (5.3%); and enterohedrent E. coli (42%). Four cases of diarrhoea were associated with enterohedrent E. coli based on probe analysis for enterohedrent heat stable enterotoxin 1. Protozoan causes included: Entamoeba histolytica (11%); E. hartmanni (5%); E. nana (6%); Blastocystis hominis (5%); Chlamidixia mesnili (11%); Dientamoeba fragilis (5%); Entamoeba coli (5%) and Cryptosporidium (5%). Shigella, Aeromonas, Plesiomonas, Vibrio, Campylobacter, and Salmonella were not detected. Of the eight ETEC cases, one was colonisation factor antigen (CFA/I only, one was both CFA/I and CFA/IV, three were CFA/I, two were CFA/IV, and two were CFA negative. Anti-biograms of the ETEC and enterohedrent E. coli strains showed that all isolates were susceptible to norfloxacin, ciprofloxacin, and nalidixic acid but resistant to ampicillin, tetracycline, chloramphenicol and sulfamethoxazole.

**Comment:** Continuing the gastrointestinal flavour of this instalment, Nineteen cases out of 1 200 troops, but I could not find anywhere the length of exposure. Only 2% presenting

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1 Wing Commander James Ross RAAF, is a specialist aviation medicine medical officer currently serving on exchange with the US Air Force. He is based at Langley in Virginia.
with diarrhoea is very low, even if it is for only one month; after all, it is to be expected that there will be more presentations early in a deployment as naive tummies are exposed. It is also interesting to find that pathogens were found in all 19 cases, and multiple pathogens in several. Absence of many of the common aetiological pathogens is noteworthy: no Shigella, Salmonella, Vibrio, Campylobacter. The last paragraph of the article was revealing, however: ‘acute diarrhoea cases were reported common among advance-party personnel who lived and ate in local establishments’.

**Morse SE, Reese MA. The use of bifocal soft contact lenses in the Fort Rucker aviation environment. USAARL Report No. 97-27.**

There are problems with the compatibility of spectacles and certain helmet mounted electro-optical visual display systems. The incompatibility has been partially resolved with single vision contact lenses. However, these contact lenses have not helped senior aviators, who must wear bifocal glasses due to presbyopia. The purpose of this study was to compare the performance of bifocal soft contact lenses with that of bifocal spectacle lenses to determine if contact lenses are an option for helping older aviators meet the visual requirements needed to fly military aircraft. **Methods:** Seventeen volunteer presbyopic aviators from Fort Rucker were fitted with five bifocal soft contact lens combinations and bifocal glasses. A four-phase investigation was conducted: a clinical phase involving the fitting of the bifocal contact lenses; a laboratory phase involving measurements of visual functions; a simulator phase involving measures of visual performance in simulated flight conditions; and an operational phase consisting of subjective responses regarding in-flight use of bifocal contact lenses. **Results:** In general, vision in the best performing bifocal contact lenses typically was slightly reduced from vision in bifocal spectacles. The amount of reduction, and whether it was clinically significant, depended on the refractive error of the subject (myopes generally performed better), the age group of the subject (low group subjects performed better), and the type of bifocal contact lens. Aviators performed flight simulation manoeuvres better in bifocal contact lenses than in bifocal glasses, and they evaluated their own ease of vision while performing aviation duties to be much easier in bifocal contact lenses than in bifocal glasses. In actual flight operations, each aviator preferred bifocal contact lenses over bifocal glasses. **Conclusions:** Bifocal soft contact lenses are an acceptable alternative to glasses for presbyopic aviators. However, there is not one specific bifocal lens type that performs optimally on all subjects. As a minimum, monovision, modified monovision, and selected simultaneous vision bifocal contact lenses (at least two types: centre near and concentric), must be available to successfully fit presbyopic aviators with bifocal contact lenses.

**Comment:** A good, comprehensive investigation of bifocal contact lenses. Clearly, the convenience of lenses, and compatibility with helmet mounted devices, masks, and so on, makes any minor deterioration in best vision insignificant. Certainly worth looking at in Australia.

**Newman DG. +Gz-induced neck injuries in Royal Australian Air Force fighter pilots. Aerial Space Environ Med 1997; 68(6):520-4.**

+ Gz induced neck injuries are a relatively common occurrence in pilots of high performance fighter aircraft. We surveyed 52 fighter pilots from the Royal Australian Air Force base at Williamtown via an anonymous questionnaire in order to determine the prevalence and operational significance of these injuries. The pilots flew either the F/A 18 Hornet or the MB 326H Macchi. Of the respondents, 44 reported having had a neck injury under + Gz. A higher rate was reported in pilots of the F/A 18. Most of these injuries were simple muscle sprains. There were 20 pilots who reported their neck injury as having interfered with mission completion. Only 12 pilots reported doing any regular neck strengthening exercises, while 33 pilots reported doing preflight neck stretches immediately prior to high + Gz exposure. There were 14 pilots who sought medical attention for their injury, with 9 being taken off flight status for an average of 2 weeks. Air combat manoeuvring sorties and the ‘check six’ head position were identified as causal factors by most pilots. This study demonstrates the operational significance of these injuries, and highlights the need for more research into this important aerospace medicine issue.

**Comment:** The latest from the highly productive pen of Dave Newman. This study has confirmed the sort of levels experienced around the world by the high performance fighter pilot community - 85% self reporting neck injury of some sort. This is certainly enough for an occupational physician to take note and say this is too much - there must be ways to limit the pathology and of course the potential for costly compensation. Stopping the exposure is not likely to happen in the medium term, nor would the pilots want that! But some addition to the life support equipment may be possible to provide neck support.
Popper SE. Incorporating occupational medicine methodology into military fitness for duty and readiness issues. Aviat Space Environ Med 1997; 68:740-5

The need for the US Air Force to know its personnel’s fitness for duty and readiness status is one of the most significant criteria for determining their ability to complete missions assigned to them. This is especially critical in the current milieu of increasing deployments. However, the USAF has a very limited program to meet this need. Occupational Medicine has had extensive experience in determining job requirements, assessing individuals, and monitoring performance over time. Further integrating Occupational Medicine methodology and the current state of scientific knowledge on physical performance is advocated to improve the USAF’s ability to have a fit and ready force able to meet its burgeoning mission. This paper reviews the literature with the following recommendations: a) assess the physical fitness of the force given future demands due to readiness taskings and if necessary mandates individual and unit exercises and provide time for these activities; b) eliminate the weight management and cycle ergometry programs; c) establish physical fitness standards appropriate to each job as well as for initial entry into the USAF, these standards should incorporate ongoing testing, evaluation, and training; d) body fat should be treated only as a medical condition and not as an image standard; and e) establish case management teams to optimise the identification, treatment, return to duty and medical boarding of personnel with injuries or subpar performance.

Comment: Well, this one is interesting. The author has tried to jam the military in to the same box that other ‘industries’ are located. It just doesn’t fit that easily. Being a Fellow of the Australian Faculty of Occupational Medicine, I can understand how an enthusiastic student of Occupational Medicine would love to apply the pure principles of Occ Med to his workplace - the USAF. Providing time for unit and individual fitness activities is highly desirable but needs a change in the Air Force culture, and at a time when there is less time available for uniformed personnel to be spending on other than their ‘core’ work activities. Job specific fitness standards ignores the fact that there is a minimum fitness standard needed by everyone to perform what the RAAF calls Base Combatant Personnel duties - erecting tents, security duty, sandbagging, digging, that will likely be as tough as anything deployed personnel will be required to do thus, for most people, a single test will suffice; finding the right functional test to proxy for real world exposure is the challenge. Body fat should not be seen as a purely medical condition. There is no reason to not deal with personnel administratively for excessive body fat. Medical intervention should be on the basis of the medical consequences of that excess body fat. So, an overly enthusiastic and naive doc is my assessment.

Ramsey CS, McGlone SE. Zolpidem as a fatigue countermeasure. Aviat Space Environ Med 1997; 68:926-31

Background: In light of greater emphasis on global reach, fatigue has a real potential to negatively impact the USAF mission. Sustained operations and extended air missions will become ever more common and critical in a smaller USAF and human performance may be the most important limiting factor in the effectiveness of advanced weapons systems. Pharmaceuticals may be considered for fatigue countermeasures. Methods: A literature review was conducted to examine the potential of zolpidem as a pharmaceutical countermeasure against fatigue in USAF operations. Results: Zolpidem is a hypnotic which appears to cause less global impairment than benzodiazepines during peak effect, and is free of persistent performance decrement or hangover effect. Few adverse effects have been reported. Several studies suggest a benefit of effective sleep produced by hypnotics on next day performance compared with sleep of questionable quality using no medication. Conclusion: The USAF should conduct further investigation into the potential safety and efficacy of Zolpidem during sustained operations and extended air operations.

Comment: Zolpidem has a much shorter half life than Temazepam (about 90 v 240 minutes) and seems to be without other drawbacks such as dependence and tolerance. Some claims of memory loss in a very small percentage have not been substantiated. The USAF is very close to approving Zolpidem as an alternative to Temazepam as a ‘No-go’ pill.

Rudzki SJ. Injuries in Australian Army Recruits. Parts I - III. Mil Med 1997; 162:472-88

Further detailed study by Steve Rudzki. Space and keyboard fatigue precludes and copy of the abstract or detailed comment. Substituting weighted marching for all running periods significantly reduced the incidence and severity of injury in recruits. What is not specifically mentioned is whether the walkers were able to pass the physical fitness test as part of the graduation requirements. The need for the running test is questioned - certainly a more functionally based test would be desirable - but will the walkers meet an acceptable test? There may well be a compromise required. The study also looked at pretraining orthopaedic screening, which was an object failure at identifying ultimate injury outcome. The screening examination had poor sensitivity,
specificity and predictive value. Abnormalities of the foot were not significant factors in the development of injury during recruit training.

Conference Reports


Nader Abou-Seif

The sixth AMMA Conference was held at the Hotel Sofitel in Melbourne over the weekend of the 29th to 31st August 1997. There were approximately 120 registrants, which, disappointingly, was less than the previous year. Delegates came from all States in Australia.

There was a positive response from the delegates as to the quality of papers presented, which, as in previous years, covered a broad range of topics and disciplines.

Our keynote speaker, Captain Mo Treadway, the USAF Air Combat Command Flight Surgeon of the Year, presented an excellent and timely paper on 'The Khobar Towers Bombing' which reinforced both the need for adequate preparedness and the realisation that paperwork tends to be forgotten during emergency situations.

The Weary Dunlop Award this year being awarded to Wing Commander Tracy Smart, whose subject 'Fast Women' was presented with the panache that only Tracy can deliver (and possibly, get away with!).

The highlight of the social program was the address by Ron Wambeek, whose inspiring and entertaining presentation once again reminded us that we have lessons to learn from those who have gone before us. The opportunity to 'network' and form and renew friendships was once again a highlight.

The Conference was again well supported by a number of sponsors without whom the organisation and conduct of the meeting would not have been possible. Our thanks, again are due to:

- Smith Kline Beecham
- Abbott
- AVL Medical Instruments
- Boehringer Mannheim
- CSL Pharmaceuticals
- Ego Pharmaceuticals
- Laerdal
- MIMS Pharmaceutical
- Pfizer
- Scribing Plough

The conference organisers would like to thank all those who attended for their support during the meeting, and would like to encourage all members to join them in supporting next year's conference in Sydney.

6th AMMA Conference. President's Address

Nader Abou-Seif

During my opening address to last years National Meeting, I commented that I have seen in our meetings a reflection of the quality of the human side of Military Medicine in Australia. We are a small nation operating within Budget constraints. This situation is unlikely to change in the near future. We have, however, always responded selflessly and effectively when asked.

This year has been one which has seen fundamental changes in the structure of the ADF Health Services. This is part of an ongoing cycle of change which commenced over 10 years ago. It is a true comment on the resilience and commitment of those involved in the day to day practice of Military Medicine in Australia that the care of those whose well being is entrusted to them receive continues to reach the highest standards of selflessness and efficiency.

Our traditions, in this country reach back to the earliest days and hopefully we will continue to build on them into the future.

This year has seen the death of one of those whose selflessness could well be an example to us all, but whose brief contribution to Military Medicine has been forgotten. In 1915, a call went out from Lord Kitchener for 100 medi-
6th AMMA Conference
Address to the Official Dinner

Ron Wambeck

Thank you for the honour of inviting me to speak here tonight on the occasion of the dinner of the Australian Military Medicine Association's 6th Annual Conference. My apprehension has not been eased in any way by the excellence of the papers given at the meeting, however my contribution is very low tech. Thank you, Marcus, for your kind words of introduction. I do hope you will be around to deliver my eulogy when I fall off the perch. Take notice, however, I hold you completely responsible for my somewhat rash appearance here tonight.

To start with, a story about four men talking in a train.

The first man said, "I am a Brigadier, I'm married and have three sons, and they are all soldiers."

The second man said, "I am a Brigadier, I'm married and have three sons, and they are all doctors."

The third man said, "I am a Brigadier, I'm married and have three sons, and they are all doctors."

The fourth man remained silent. "Well, aren't you going to tell us about yourself?" asked the first Brigadier. "Very well, then," he replied. "I'm a Sergeant Major. I've never been married, but I do have three sons, and they are all Brigadiers."

Now I'll probably be up before a Military Tribunal for discrimination against Brigadiers.

Military medical personnel throughout the British Commonwealth have upheld the great traditions of their respective services for over two centuries, particularly in two World Wars,
After the war, the Lab, as it was known, was to become the Royal Air Force Institute of Aviation Medicine, and one of its Commandants, the late Air Vice Marshal Harry Roxborough, a close friend, had this to say about him:

“Roland Winfield was not the best physician in the RAF Medical Branch, and neither did he claim to be in the front rank as a pilot or air gunner. Yet by any standard, he was an exceptional individual, because, during most of the war, he was able to carry through two careers, one on the ground, as a medical officer, and another in the air, as a member of aircrew on war operations. On the ground he directed and took part in research in aviation medicine; in the air, he flew against the enemy on a large number of sorties. Each career was complementary to the other, for the knowledge he gained on operations was, par excellence, the guide to research, and he could quickly make use of research output to improve conditions under which aircrew operated.”

He held the view that a researcher in environmental medicine should be familiar at first hand with the physiological and psychological stresses concerned. It was the stress of war operations that he had chosen to study - a stress he knew could not be simulated. To this end, he sought permission from the Air Council to fly on operations. Between the wars, the RAF had neglected research into aviation medicine and, with crippling air losses, the Air Council was only too willing to allow him to do so.

He had already obtained his pilot's wings during his time as a squadron medical officer. In those days it was accepted practice in the RAF if there was a qualified flying instructor, and a suitable dual instructional aircraft, available on the station.

One other medical officer, who had great influence over Roland Winfield's career, had also obtained permission from the Air Council to fly on operations, in fact, it was he who had set the tradition for RAF medical officers to fly on operations in WW II. He was Group Captain Hugh Corner, Deputy Principal Medical Officer of Fighter Command, and he flew Spitfires against the Luftwaffe throughout the Battle of Britain, and subsequently, until he was killed in March 1942, when he baled out over the Channel, returning from a sweep over enemy occupied France. He and Winfield agreed that they flew on operations for three reasons: first, it was the only way they could get the information that they wanted from the aircrew; second, because they hated the Nazis and all they stood for; and, third, because they could not bear to be left out of it. It had been clearly pointed to them that in the event of capture by the enemy, the penalty for making war, in their case in the guise of medical men, was death; as in the case of those who engaged in spying, counter espionage, sabotage and escaped POWs. I have no doubt however, that, as with these other groups of com-

and in other major conflicts, such as Korea and Vietnam. Those who survived, wasted little time getting back to their civilian jobs, still in the field of helping the sick and the dying, and little remains in the way of biography and autobiography to inspire future generations of military men and women. The media and the history books dwell on the spectacular, the victories and the successes. The true courage of those who endure danger, hardship and often death, in less spectacular situations, receives little attention. Possibly this is the way they would prefer it.

Who could not be inspired by the epic of Simpson Kirkpatrick, a stretcher-bearer in the Australian 3rd Field Ambulance at Gallipoli, who, for 24 long days and into the nights as well, with his donkey “Murphy”, brought in literally hundreds of wounded under deadly enemy fire and heavy bombardment, until, inevitably, he was killed by an exploding shell.

And who could not be inspired by Australia’s own Weary Dunlop, a giant among men in every respect, whose example under withering enemy fire, in Greece and in Tobruk, and whose exceptional courage and leadership later, in Japanese Prisoner of War camps, were beyond the call of duty. There are numerous other stories of medical personnel who overcome their own fears in many situations, and of those who remained behind, caring for, and often defending their wounded, in spite of the utterly callous reputation of their captors.

Tonight, I am going to tell you about a little known medical officers, who served in the Royal Air Force during World War II. Dr Roland Winfield. He had qualified at Cambridge and Edinburgh Universities in 1934, and after the usual hospital appointments had worked as a ship’s surgeon, and then in general practices, before joining the RAF in June 1939.

At the outbreak of the war, he was posted to France as a squadron medical officer, from where he was evacuated with many others in the near rout of the British Expeditionary Forces in the spring of 1940; an indignity he could not forgive the enemy, particularly as his ambulance so frequently came under attack from the ci, that eventually he painted out the Red Crosses that should have given it some protection. Never again did he seek the protection of the Red Cross, preferring to defend and avenge himself, and his country, by more aggressive action.

What I am going to tell you about his activities and those of other senior RAF medical officers, will raise some eyebrows here tonight, but more about that aspect later.

In November 1940, as a result of numerous reports he had submitted on the problems of cold and hypoxia amongst aircrew, which he was convinced contributed significantly to our aircraft losses, he was posted to the Physiological Laboratory at Farnborough, as Assistant to the Director, then Professor Brian Matthews, Professor of Physiology seconded from Cambridge.
batants, they used false identities when they operated against the enemy.

Winfield built up contacts with the squadrons, and flew as second pilot, air gunner or parachute dispatcher, for operational aircraft are not designed to carry passengers. He drove himself hard, sometimes operating on four or five successive nights, and he made no effort to select skilled crews with which to fly, telling the squadron commanders that he would fly with those crews about which they were concerned, and particularly those that were nearing the end of their operational tours.

Among his services, he advised the Special Air Operations Executive and, as part of his research into the problems involved, he took a parachute course, and then acted as dispatcher in aircraft delivering agents to enemy occupied Europe. On several occasions, he was dropped into occupied France to give medical attention to injured agents, or to assist in their evacuation.

Observing that they were usually cold, tired, scared and airsick by the time they were dropped, and thus at a very low ebb during that vital period of making contact, he advised that everything should be done prior to their departure to improve their morale and well being. For this purpose, Audley End, a beautiful old sixteenth century country house, situated in its own grounds, and within ten minutes drive of the departure airfield, was requisitioned by the Organisation: where agents could live in comfort for their last few days and receive their final briefings before leaving the country.

The danger of landing an aircraft in enemy occupied territory led to the concept of the ‘snatch’ as a means of picking up agents without the aircraft landing. In this concept, the aircraft would fly past and catch on a hook a loop of cable, set up on posts, and attached to a harness on the subject; and then climb away. Winfield was the first live subject in the RAF experimental programme, and in fact was snatched twice. He reckoned the risks of this procedure to be less, both to aircraft and agent, than those of landing, turn-round and take-off, in any area where there was an enemy presence. The invasion of Europe came about before it could be put into service, and since then the helicopter has obviated the necessity for it.

He took part in the first experiments on the effects of rapid decompression in the event of a pressure cabin failing or becoming holed. To complete the picture he decompressed one of the first pressure cabin spitfires, at its ceiling of 43,000 feet - undertaking in a single seat aircraft a combined engineering and physiological assessment. All this happened in 1942, when very little was known about altitude decompression sickness.

He was much in demand also as a consultant, by those with aeromedical problems. He advised the Royal Air Force at all levels, from Commanders-in-Chief to squadron level, and he was consulted by those in charge of airborne forces. He took as much care on behalf of the youthful junior officer or NCO aircrew, as he did of Winston Churchill, who was in his medical charge for flights to Tehran and Moscow.

The confidence he engendered by his willingness to fly with any aircrew, on bomber operations, and his deep interest in 'what made people tick' made him an excellent GP psychiatrist, because people confided in him long before they would report to medical. These close contacts with aircrew, and his own experience of fear and overcoming it, make his views on the psychology of courage extremely important, and of more account than those of others, medically more expert, but without his personal experience.

He has recorded his views on the subject with a great deal of modesty, charm and understanding, in his book The Sky Belongs to Them, in a chapter entitled 'The Enemy', for fear, not death, is the real enemy, regardless of which side you are fighting on.

Very briefly, he felt that you had to believe completely and absolutely in the ‘cause’ for which you were fighting; and this was very much the case for those who had been through the Blitz, and had experienced the loss of relatives, friends and fellow countrymen.

His bubble labelled ‘It can’t happen to me’ had burst after his third or fourth bomber operation, and there followed a period of about five months when he never knew a moment’s peace of mind, until he grasped the fact that the ‘cause’ for which he was fighting was more important than even his own life. After that he was able to stop hoping, for it was hope that he would return from the next sortie, that he found so demoralising. Hope plagued his mind, sapped his energy, distracted his concentration, and impaired his skill.

It was an Australian flight navigator, Squadron Leader Chris Martin from New South Wales, and an American air gunner, Tex Mitchell, from Texas, both of whom had joined the RAF at the beginning of the war, who had put this philosophy to him when they had realised that he was near the end of his tether. Both were killed in action later in the war.

Even then it had taken him time to grasp that death was nothing compared to defeating the Nazis, and only after he grasped this was he able to achieve peace of mind. He could remember the exact moment when it happened. It was the night of the 1 000 bomber raid on Cologne in May 1942, after a very moving briefing from the Station Commander. He remembers that his experience after that briefing was akin to a conversion, and from then on he was able to accept death, ‘daily taking his friends; close enough to become familiar with it, and more important no longer afraid of it’. And was at peace with himself.

You have to remember that only 21 years earlier, in WW I in fact, a British soldier who refused to go over the top would be court martialed, and if found guilty, sentenced to death.
before a firing squad; my father once told me that the most distressing thing he had ever had to do in WW I was to attend as a medical officer at the execution by firing squad of an Army Captain on his Unit, who held a Military Medal, had been commissioned in the field, and later had won the Military Cross; but after four years in the trenches, he suddenly broke, could take no more, and had refused an order to go over the top.

It was only in WW II, thanks to concerned medical officers like Roland Winfield, that it became recognised that individuals each have their own limit to the amount of stress they can take, and that after that, they are a danger to themselves and to those around them, and they must be taken out of the line to rest and recuperate.

As a result of this, the RAF introduced a system of operational tours, which for Bomber Command was 25 sorties, although at the discretion of the Commanding Officer and Medical Officer, aircrew could be taken off operations sooner if signs of severe stress appeared. For Bomber Command, the average survival rate for a tour of 25 sorties was only around 30 per cent, and it says a lot for the aircrew of Bomber Command, made up of volunteers mainly from Australia, New Zealand, Canada, South Africa and the UK, that the majority of those who survived to do so, actually completed their full 25 sorties. Many returned after a rest, for a second and if still alive even a third tour of operations.

Wing Commander Roland Winfield carried out 98 operational sorties in Bomber Command; he carried out an additional 30 sorties in Coastal and other Commands, including daylight bombing missions with the United States Strategic Air Command. Many said that he led a charmed life, but those who knew him well knew that he was meticulous in his planning for any sortie, and never left anything to chance. He was just as meticulous in his preparations for an experiment, and, where there was any particular danger, he insisted on being the first live subject in the trial.

He was awarded the Air Force Cross in 1942, and the Distinguished Flying Cross in 1944 - combination of decorations unique among medical officers in the Royal Air Force. Those who were aware of his record felt he should have received far greater recognition, but as he operated with many different squadrons and organisations, few knew his sum total of operational flying; besides, under the Geneva Convention, it would have been difficult for Authority, formally, to have given any greater recognition to the militancy of a medical officer.

There will be those among you here tonight who disapprove of the decision to allow medical officers such as Group Captain Hugh Corrner and Wing Commander Roland Winfield to take an active part in war operations, but the situation that prevailed at that time was critical for the whole of the free world.

In those dark days, known only to Churchill, Roosevelt and the Chiefs of Staffs in London and Washington, the Nazis had stolen a significant advantage over the free world in the race to harness nuclear energy for mass destruction. Through their invasion of Norway they had seized the Norek Hydro Electric Plant, the world's only commercial producer of heavy water at that time. Hitler was already bragging about his secret weapon against which there was no defence, and developing his V2 ballistic missiles with which to deliver it. The consequences of losing that race would have been too appalling to contemplate.

This is why absolute priority had to be given to the defeat of Germany before anything else. It is something about which the critics of that policy do not appear to have been aware, or prefer to ignore. Among other things, therefore, anything that could be done to reduce our crippling aircraft losses was of vital importance.

The Geneva Convention of 1929 was current during WW II, but I have been unable to ascertain its provisions with regard to the protection of military medical personnel. The Geneva Conventions of 1949, and their two additional protocols, are in force at the present time, and it is interesting to note that military medical personnel are entitled to use the Red Cross emblem, and enjoy its full protection. This would imply that if they choose not to do so, they merely lose that protection.

However, if this speech should provoke discussion within the Association of this and other matters concerning the provision of the four Geneva Conventions and Protocols, it will have served a purpose. With communications and weapons technology advancing rapidly, constant review is necessary.

What better forum for discussion than a learned Association such as this one, with its combination of medical and humanitarian expertise and experience; and what better organisation to lobby Government on such matters?

Mr President and Members, it has been a pleasure to speak here this evening at your annual dinner. On behalf of my wife and myself, thank you for your hospitality, and for a most interesting meeting, and a delightful evening.
Director Health Services - South Queensland Exercise

Russ Schedlich

The 1997 Director Health Services - South Queensland Exercise was held at the University of Queensland Medical School from 24 to 26 October. The theme of the conference was "Hospitals and Hippocrates. Service Hospitals in Contemporary and Future Operations".

The conference was opened on Friday 24 October at the United Services Hall, Victoria Barracks, with the keynote address being delivered by Professor Robert Milns AM on "The Asklepion: Prototype Hospitals".

During the two days of the conference, a variety of presentations were grouped around the themes - Challenges, Responese, Be Prepared, and Mobility. Papers covered the role of military hospitals in campaigns, and focussed on historical aspects, current trends, and preparation for the future. The capabilities available, or soon to be available, in each of the three Services were considered.

The conference was attended by about 80 delegates, mostly Regular and Reserve Army health officers.

A formal buffet dinner was held at Victoria Barracks on the first night, and offered a suitable occasion for social intercourse.

On the second day of the Conference, the Surgeon General, Air Vice Marshal Gnaeme Moll, launched a new book on the life of Sir Neville Howse VC written by Murdoch Wales and John Pearn.

1997 Military Medical Symposium

Russ Schedlich

The 1997 Military Medicine Symposium was held at the Marriott Hotel, Sydney, on the weekend of 15 and 16 November.

Jointly hosted by the Director Health Services - NSW, COL Bill Melloy RAAMC, and Professor Robert Lusby from the University of Sydney Professorial Unit at the Repatriation General Hospital, Concord, and organised in its usual adept fashion by LTCOL Ted Kremer RAAMC, 21 high class presentations were delivered to an audience of around 70 - mostly Regular and Reserve Army.

Presentations covered a wide variety of topics, ranging from military surgical history to the forefront of specialist clinical research. The old regulars of malaria and arboviruses, and injuries consequent to training and fitness testing (will they never learn?) were covered, as were trauma and orthopaedic surgery.

Subjects not so directly related to military medicine were also presented, including the Metabolic Syndrome and one of those growing diseases - obstructive sleep apnoea. A couple of travelogues - Rome and Annapolis - provided some slightly lighter relief.

At the academic level, there were perhaps two highlights. First, an ophthalmologist presenting on mountain climbing and acute mountain sickness. Second, Associate Professor David Celemajer's erudite presentation on the latest advances in research into the aetiology and prospects for early diagnosis and intervention in atherosclerosis (the author always thought that red wine did the trick - which leads logically on to ....)

On the social side, the highlight was the formal dinner on the Saturday. Attended by former NSW Governor, Rear Admiral Peter Sinclair AC, RAN (also a Councillor of the Anzac Health and Medical Research Foundation), the inaugural Thomas Henry Fiaschi Oration was delivered by Colonel C.R.B. Blackburn ED (MB BS, BA (Hon), MD (Syd), Hon MD (Ndle), FRCP (Lond), FRACP, FACP (Hon), Emeritus Professor of Medicine - the University of Sydney, Captain 2/5 AGH Crete and 2/11 AGH Alexandria, Major 2/1 CCS Milne Bay, 106 CCS Port Moresby and 113 AGH Sydney, Lieutenant-Colonel LHQ Malaria Research Unit Cairns and Sydney, and Colonel Consultant Physician AHQ Sydney), Colonel Blackburn spoke eloquently on his experiences in casualty management during the long days of the Second World War, and kept the diners captivated by his accounts.

The dinner was also an opportunity to dine out the departing Director of Health Services, Colonel Bill Melloy RDF, ED.
Book Reviews

A Bibliography of Australian Doctors at War

Stephen Due

Review by Russ Schedlich

Stephen Due, the Librarian at Geelong Hospital, has kindly donated a copy of his work “A Bibliography of Australian Doctors at War” to the Association’s library. This work cites over 500 books and articles written by or about doctors and medicine in war, from the Franco-German War of 1870-70 to the conflict in Somalia in 1993. The bibliography also covers some general topics, such as Defence Medical Services, and also a section on Literature and Medicine, with subsections on Poetry, Drama, Fiction, and Essays. The book includes a comprehensive literature survey.

Stephen is working on a second edition of his bibliography, which will include works published on the ADF’s role in Rwanda, amongst other new entries. This is a valuable new reference work for the Association’s Library.

Baghdad Area Medical Unit

Andy Robertson

With ADF support continuing to OPERATION BLAZER, three of our ADF medical officers crossed paths in Baghdad recently. CMDR Andy Robertson was in Iraq for a short inspection mission, SqnLdr Karen Gisler had just posted in as the new Senior Medical Officer for six months and LTCOL Dave Sweeney was posted as an inspector with the Biological Monitoring Group - a truly purple mix.

*Andy Robertson, Karen Gisler and David Sweeney, Canal Hotel, Baghdad, 20 September 1997.*
AMMA Update

News and information for members of the Australian Military Medicine Association

Successes
The following AMMA members have achieved success through honours, awards, promotions, publications, etc.

Members will note that, while these items are more accurate, they are not complete. The Assistant Editor needs sources of information from the three Services and from our civilian members as well, so that this section of your journal can truly reflect the cross-section of our membership. Updates can be faxed to CMDR Andy Robertson on 09-5532800 or e-mailed to: agrobert@perth.DIALix.oz.au

Defence Force Promotions
The following AMMA members have been selected for promotion in the Defence Forces:
- LCDR Mike O'Connor, RANR to Commander.
- SQNLDR Pennell to WNGCDR and posted to SOHO RAAF TSUG
- LEUT Zoe Read to LCDR and posting as SO2 Professional Development in Office of SGAADF.
- LEUT Eddie Burke to LCDR and posted to Maritime Headquarters.
- LEUT David Lassam to LCDR.
- LEUT Tim Cunningham to LCDR and posting back to Australia.
- LEUT Peter Collins to LCDR in the RAN Reserve.
- FLTLT Andrews to SQNLDR and posting to OHS PLANS RAAF TSUG
- FLTLT Masini to SQNLDR and posting to SO2 HML in the Office of SGAADF
- FLTLT LJ Down to SQNLDR and posting to OIC OHSTF 303 ABW
- Defence Force Movements
- The following AMMA members have posting/deploying to new roles and functions:
  - COL Wayne Ramsey to head up the new National Health Support Agency from Jan 98.
  - GPCAPT Graham Boothby retiring to an OHS practice in Melbourne.
  - SQNLDR Karen Gisler deployed to Iraq in Sep 97. She is the UNSCOM SMO for the next six month tour.
  - LTCOL David Sweeney deployed as an inspector to Iraq for a three month tour in Sep 97.
  - SQNLDR Ian Hosegood returns to RAAF Pearce after six months in Iraq.

AMMA Conferences

1998 Conference
The 7th AMMA Scientific Conference will be held in Sydney on 18 to 18 October 1998. Pencil it in. Start writing. More details next issue. See you there.

Congratulations
Awards were given at the 6th Annual Conference. The Weary Dunlop Award for the Best Original Paper was awarded to Tracy Smart for her paper entitled "Fast Women".

The Research Grant for 1997 was given to two recipients:
SBLT Darren Delaney for an Investigation of trauma and injury management in young people in NSW and Military Personnel and an Encouragement Award to Rosalind Hearder for her work in the area of Australian Military Medicine History.

Congratulations to all our winners.

AMMA Contacts
For all general AMMA enquiries contact the Secretariat:
Paula Leishman
Tel: (03) 6247-1850
(0412) 87-5390
Fax: (03) 6247-1855

Research Grants
Details of the AMMA Research Grant programme are included in this journal. Members are reminded that applications for the 1998 Research Grant must be received by 30 April 1998. Further details on the Grant can be obtained from:

Janet Scott:
Tel: (08) 8272-7399

Journal
Journal's for 1998 will be published as follows:

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Conference and Meeting Calendar

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<td>9-17 January 1998</td>
<td>2nd Annual Amazon Travel Medicine Course</td>
<td>Peru</td>
<td>1 (205) 428-1714</td>
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<td>6-14 February 1998</td>
<td>12th Annual Anaesthesia Update</td>
<td>Copper Mountain, USA</td>
<td>1 (414) 257-6269</td>
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<td>4-8 April 1998</td>
<td>Australian Society of Infectious Diseases ASM</td>
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<td>2-6 May 1998</td>
<td>ANZCA ASM</td>
<td>Newcastle, NSW</td>
<td>(03) 9510-6299</td>
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<td>SPUMS Annual Meeting</td>
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<td>10-16 May 1998</td>
<td>RACS ASM</td>
<td>Sydney</td>
<td>(03) 9859-6899</td>
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<td>RACP Annual Scientific Meeting</td>
<td>Melbourne, VIC</td>
<td>(02) 9256-5422</td>
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<td>National Sexual Health Conference</td>
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<td>World Organisation of Family Doctors</td>
<td>Dublin, Ireland</td>
<td>353 (1) 676-3705</td>
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<td>17-20 June 1998</td>
<td>Clinical Dermatology 2000</td>
<td>Singapore</td>
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<td>29-30 August 1998</td>
<td>RACGP Practical Procedures Workshop</td>
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AMMA ON THE NET

A few useful Internet addresses:

International Society of Infectious Diseases - http://www.isid.org

AMMA Survey

Council of the Australian Military Medicine Association instructed the Secretariat to undertake a survey of members to assist in determining their wishes for the future directions of the Association.

The results of this survey are included in this issue of the Journal.
AMMA Members’ Survey 1997

The Secretariat

Council of the Association initiated a survey of members on a number of aspects of AMMA's activities, in particular the annual Conference and the Journal.

Survey forms were sent in a mail out to all members in June. As of 22 October, a total of 66 forms had been returned. A summary of results is presented.

Your Council would appreciate any further feedback, or comment on the results of this survey - with any input likely to be published in the Journal.

Q1 Are you fully aware of all the elements of AMMA?

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Q2(a) Have you ever attended an AMMA Conference?

48 responded Yes - 18 responded No

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<td>16</td>
<td></td>
</tr>
<tr>
<td>1994 - Melbourne</td>
<td>27</td>
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</tr>
<tr>
<td>1995 - Sydney</td>
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<tr>
<td>1996 - Canberra</td>
<td>19</td>
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<tr>
<td>1997 - Melbourne</td>
<td>21</td>
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</tr>
<tr>
<td>Ever Attended a Conference</td>
<td>48</td>
<td>18</td>
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</table>

Q2(b) How would you rate our Conferences?

<table>
<thead>
<tr>
<th></th>
<th>1 Poor</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>No Comment</th>
<th>Not attended</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>32</td>
<td>8</td>
<td>3</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

Q2(c) If no previous conference attendance, what would encourage future attendance?

<table>
<thead>
<tr>
<th>Suggested Themes/Topics</th>
<th>Location</th>
<th>Other reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take specific areas &amp; develop them</td>
<td>Closer to home</td>
<td>Clashes with other medical conferences (3 responses)</td>
</tr>
<tr>
<td>Topics relevant in civilian &amp; military/Naval work</td>
<td>Resort environment</td>
<td>Availability</td>
</tr>
<tr>
<td>Dental</td>
<td>Depending on location (5 responses)</td>
<td>Not during school holidays</td>
</tr>
<tr>
<td>NBC, EMST etc</td>
<td>Adelaide</td>
<td>If presenting, support to attend</td>
</tr>
<tr>
<td>Medical content</td>
<td>Mel/Syd rotation, other cities filling in between eg. Mel Bne Syd Hba Mel Per Syd Adl Mel</td>
<td>Classed as reserve training time</td>
</tr>
<tr>
<td>Suggested Themes/Topics</td>
<td>Location</td>
<td>Other reasons</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td>Program relevant to Navy issues or NBC medicine</td>
<td></td>
<td>Timing - early in year Feb/Mar?</td>
</tr>
<tr>
<td>Content of the program</td>
<td></td>
<td>A better roster in my “other job”!</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aug/Sept heavy exercise months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adequate time off work (4 responses)</td>
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<tr>
<td></td>
<td></td>
<td>Will attend eventually (3 responses)</td>
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Q2(d) For future conferences, list in order of preference - destinations.

<table>
<thead>
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<th>Destination</th>
<th>1st</th>
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<th>3rd</th>
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<td>9</td>
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<td>4</td>
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<td>Resort/Exotic/Regional</td>
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<td>RAN Base</td>
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<tr>
<td>Doesn’t matter</td>
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What time of year would you prefer the conference/AGM to be held?

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
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</table>

1 No | 1 No | 1 No | 1 No | 1 No
Q3 How would you rate our Journal?

<table>
<thead>
<tr>
<th></th>
<th>1 Poor</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>6</td>
<td>18</td>
<td>35</td>
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<td></td>
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<tr>
<td>Content</td>
<td>6</td>
<td>26</td>
<td>29</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Style</td>
<td>5</td>
<td>20</td>
<td>34</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Suggestions for improvement

- Should be some scope to play about with new ideas, ??? & ???
- Publish the Director of Health Services conferences
- Its OK as a young publication. Needs more gutsy contributions & that is hard when drawing from a relatively small group of potential authors
- More papers, but this means I have to be more prolific!
- Photos
  - Suggest an underwater and an aviation medicine clinical case discussion each journal along the lines of “You’re the Flight Surgeon” in Aviation/Space/Environ Med. Perhaps they would allow AMMA to reproduce these?
  - Possibly larger print. ‘Research in Progress’ section? Report all world MM meetings. International meeting calendar of MM.
  - Editorial Board &/or referees. Listing/acknowledgment as “Refereed Journal” so that contributions count towards University Department Credit/Funding. Index in Medline etc.
  - A good effort and the lack of original articles is not the fault of the AMMA
- More original articles/review articles
- Need to attract more articles, while original ones are preferable, we should include significant reprints from elsewhere and increase production of papers from the AMMA conferences.
- More original papers
- List future meetings/venues including conferences of similar nature
- For what it is I’m happy
  - I basically am not stimulated to read it fully. I feel guilty that I only read it very superficially. Papers are not of sufficient scientific merit to capture my attention.
  - More peer reviewed papers. Commissioned reviews.
- People like myself should contribute more. The journal content is very good but lacks a breadth of authorship. It is the product of a “dedicated few”.
- Advertising to generate profit
  - Journal improved when biographical notes and locations added to articles. There are large panels of consultants to each of the single service. Why not actively chase one from each service (in rotation) for a guest “advances in clinical - - - - - - - - - - - in the military” or similar.
  - Elimination of delays in publication
  - More clinical discussion and debate eg. re preparation for war/disaster.
  - Peer-review process would greatly enhance the scientific quality of published papers. There is enough expertise in the ADF, I would think, for this to be an achievable aim. I would be more than happy to act as a reviewer.
  - More original research. More frequent NBC articles.
  - Does well enough with material

Q4 Administration

<table>
<thead>
<tr>
<th></th>
<th>1 Poor</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>4.5</th>
<th>5 Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
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<td>10</td>
<td>47</td>
<td>5</td>
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<tr>
<td>Renewal Procedures</td>
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<td>10</td>
<td>46</td>
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<tr>
<td>Communications</td>
<td>2</td>
<td>15</td>
<td>42</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
Suggestions for improvement

| Agree with maintenance of Association as civilian. I suggest discouraging more wearing uniforms at all. |
| There needs to be some academic affiliation perhaps with ADFA or one of the Universities interested in postgrad studies - a committee should be asked to produce at least a subject in the area of Mil. Med. I would be pleased to work on this matter. |
| Website poor - needs - sample articles, interactive Mil. Med. Problems, ability to submit articles etc. |
| How about maintaining a register of members who are willing to involve M.D.s (probably junior) in eg. surgical assists, anaesthetic experience etc. etc. |
| Publication of membership cut |
| Bulletin ?? courses, conferences, ADF operations for ADF & Reserves |
| Need to get the July issue out well before the annual meeting. |
| Run library contents more often |
| I don’t really feel part of it. I need to be more encouraged, enticed. |
| Newsletter |
| For the last fee increase ie. Double - need a bit more value for money. |
| Slowness of communication at times |
| Need clear reminder re: renewal - not general notice to everybody as it is too easy to forget not having paid up. |
| A credit card facility for payment of annual dues would make life easier, particularly those members on overseas exchange. |
CONTRIBUTIONS

for the April issue should be sent to:

The Editor
Australian Military Medicine
PO Box 730
PYMBLE NSW 2073

Deadline is 28 January 1998

Instructions for Authors:
Articles submitted for publication in AMM should conform to the following guidelines:

- two hard copies should be submitted, typed double-spaced on A4 paper (single-side)
- if possible, an electronic copy on an IBM formatted 3.5 inch floppy disc in a standard word processing programme should be submitted
- the text in both hard and electronic copies should be unformatted
- references in the text should be numbered consecutively as they are cited and annotation of the references should accord with the style given in Index Medicus. Where there are seven or more authors, list only the first three then et al. For example:
- figures and tables should be submitted separately with an indication in the text as to where they should be located
- the originals of all photographs, ECGs, EEGs etc should be submitted to allow high quality reproduction

Articles submitted may be subject to peer review. Articles which have been published elsewhere will only be considered if they are of importance to the field of military medicine, and publication will only proceed with the prior approval of the original publisher.
Australian Military Medicine
Volume 6 Number 3
December 1997

The Australian Military Medicine Association
Patron
Air Vice-Marshall G.D. Moller
Surgeon General, Australian Defence Force

President: Nader Abou-Seif
Secretary: Marcus Skinner
Journal Editor: Russell Schedlich
Assistant Editor: Andrew Robertson

TABLE OF CONTENTS

Editorial
Whither the Journal? 1
Deputy Surgeon General Appointment Announced 1
President’s Message 2
Original Articles
The neurophysiologic aspects of G-induced loss of consciousness (G-LOC) 3
Clinical Cases
Trauma at sea. Bilateral femoral fractures in USS Independence off New South Wales 8
History
Australian doctors at war. A literature review. Part One: Up to the evacuation of Gallipoli 10
Abstracts from the Literature 16
Conference Reports
6th Australian Military Medicine Association Conference - Melbourne, 1997 20
6th AMMA Conference. President’s Address 20
6th AMMA Conference Address to the Official Dinner 21
Director Health Services - South Queensland Exercise 1997 25
1997 Military Medical Symposium 25
Book Reviews
A Bibliography of Australian Doctors at War 26
Baghdad Area Medical Unit 26
AMMA Update 27
Conference and Meeting Calendar 28
AMMA Members’ Survey 1997 29

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