Preventive First Aid

A Guide to the reduction of some common preventable injuries

Editors: John Pearn and James Nixon

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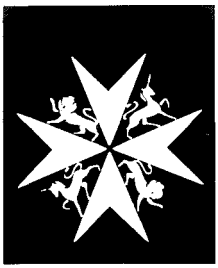

St John Ambulance Australia

and

The Child Accident Prevention Foundation of Australia

PREVENTIVE FIRST AID

A guide to the reduction of some common preventable injuries.

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FRONTISPIECE

Prevention of illness and injury is a key theme in any consideration of First Aid. This frontispiece shows the Fly Agaric, Amanita muscaria, a toxic species of toadstool which grows in association with pine trees in Eastern Australia. (Photo, courtesy of the international toxinology consultant, Mr Tony Young.) Ingestion causes severe poisoning. Primary prevention is better than a life saved, even by the most skilled First Aid and the wonders of modern intensive care medicine.

ACKNOWLEDGEMENTS

The prevention of injury is a role increasingly adopted by many responsible organisations in society. In this context special thanks are extended to members of The Australian Resuscitation Council, The Royal Life Saving Society (Australia), and The Department of Child Health within the University of Queensland, three groups which have done so much to highlight the importance of a vigorous preventive approach to injury.

This book is not a textbook of First Aid techniques. The Australian reference text for First Aid, which should be on every household bookshelf, is *Australian First Aid*, the authorised Manual of St John Ambulance Australia. The Editors acknowledge the help of that text in this preventative booklet, and similar reference to *Cardiopulmonary Resuscitation* and the cumulative Policy Statements of the Australian Resuscitation Council. This latter body is so instrumental in ensuring the highest uniform standards of the teaching and practice of emergency care delivered by many Government and volunteer organisations.

The Editors especially thank the contributors to this book, each with an international reputation in the field of injury prevention in their specialty areas. We thank also Professor Tess Cramond of the University of Queensland; Professor Villis Marshall, Brigadier Trevor Gibson, Charles Campbell Esq., and Mrs Alison Verhoeven of St John Ambulance Australia; and Mr Leon Stubbings, The Hon. Justice Leycester Meares, Dr Graham Vimpani, and Mr Keith Doery of the National Executive of the Child Accident Prevention Foundation of Australia.

Mr Paul Ramsden of the Queensland Museum; Mrs Peggy Carter, Mr Graham Jurott, and Miss Joan Hoare of the University of Queensland; Mr Charles Scandrett; and Dr and Mrs Malcolm White and the Malong Trust have enabled this publication to be a feature of the Centenary of St John Ambulance Australia – Queensland in 1989.

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THE ROLE OF THE PREVENTIVE FIRST AIDER

The identification of high-risk injury groups, and advocacy – both public and personal – will reduce the rate of impending injury such as that seen here.

No helmet, an unstable centre of gravity, and bicycle riding on a fast four-lane highway place this youth in a group which has a disproportionately high need of First Aid and medical intensive care.

Safe work practices, promoted by precept and example, do much to prevent the need for First Aid which is 'reactive' to injury. Here a civil engineer, aloft, is fabricating a geodesic dome. She is correctly attired with helmet, appropriate clothing and safety boots.

"Safety is not the foe of courage, but an indispensable ally."

FOREWORD

It is a duty and a privilege, for all in society, to be able to render skilled First Aid to those in need. First Aid is a skill required by all. It is one which knows no rank or status, no limitation by age, and no special constraints of time or place. The most important person in the world of the acutely injured is the person standing beside the victim. Every parent, every family member, every workmate, every employer, every citizen – all will at some time be called upon either to restart a stopped heart, or to prevent loss of sight from eye injury, or to prevent a fitting person from choking.

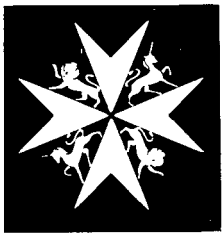
These themes are *reactive* to injury or sudden illness which can strike us all. The role of the first aider, as our society moves to the third millenium, is also to be *proactive*, that is to prevent injury. No therapy for a burnt face is as effective as taking positive steps to prevent the flash of flame in the first place. No treatment of a poisoned child is as logical as preventing prior access to the offending tablets; and no amount of skilled resuscitation will necessarily restore the heart and brain to the same degree of function that would have been achieved by providing a safety fence about the swimming pool in which such disasters can occur.

Many bodies active in a preventative role promote a current important theme in this context. This is the concept and increasing use of the word "incident" rather than "accident". This latter carries the connotation of passivity, with the implication for some that injury-producing incidents are in some way preordained or inevitable. *Injury* prevention rather than *accident* prevention is at the core of the philosophies of both St John Ambulance Australia and the Child Accident Prevention Foundation of Australia.

Preventive First Aid is thus part of the overall philosophy of reducing the effects of potential injury. The aim of this philosophy is to prevent permanent disability. Primary prevention is to prevent the incident itself. Secondary prevention is to prevent disability and to hasten recovery by timely and skilled First Aid, should primary prevention fail. The examples presented in this book have been chosen because they are common problems, and because primary prevention is so effective. Everyone can, and should be, a preventive First Aider.

Professor John Pearn AM, RFD, OStJ
St John Ambulance Australia; and
National Honorary Medical Adviser,
The Child Accident Prevention Foundation
of Australia.

May 1989

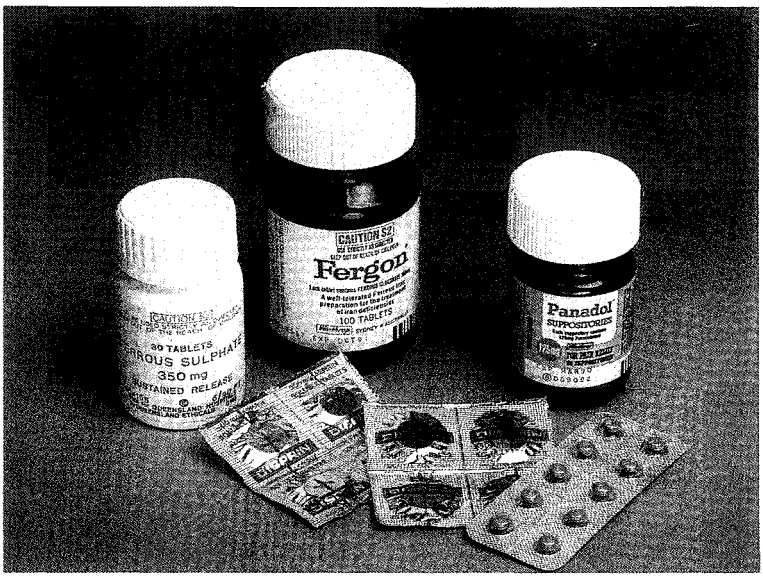


ACCIDENTAL CHILD POISONING

John Pearn

Every day a child is admitted to hospital following the ingestion of a potentially dangerous substance. The commonest substances swallowed by children are pain killing tablets, kerosene and petrol, sedatives, antihistamines, and the berries and leaves of plants. There is nothing (from dog repellent to liquid fertiliser) that children will not swallow. Fortunately, most children come to no harm. However, some suffer terrible injury from chemical burns to the mouth and throat, or suffer brain damage. Every year several children die in Australia from this cause. Particularly dangerous substances which are the cause of most injury include heart drugs, capsules and tablets used to treat depression and psychiatric illnesses, drain and oven cleaners, household bleach, iron tablets, and aspirin and paracetamol. The two main offenders from the plant world are oleander leaves and fruit, and mushrooms. The child is usually found with the tablets or capsules, or an empty bottle of liquid. The smell of the medicine or chemical may be on the child's breath, mouth, or clothes. If the substance is corrosive, the child may be screaming with pain.

PREVENTION: Prevention is so easy. Ask for drugs and tablets to be given to you in child-resistant containers. Have a locked high "nasties" cupboard in the home and workshop. Never put any other substance in milk bottles, soft drink bottles or the like. Do not grow yellow oleander trees (*Thevetia*) in gardens where there are toddlers. Never *experiment* with field or bush mushrooms. Remember that many childhood poisonings occur when toddlers are visiting relatives, especially grandparents. Do not hoard old medicines.



Child-resistant medicine bottles are very effective in deterring young children from eating potentially dangerous drugs. The peak "at risk" age is two to three years. Strip-packaging and foil-dispensing of dangerous tablets and capsules are essential for injury prevention.

FIRST AID. The drill is –

(a) immediately try to identify the substances that have been swallowed;

(b) make an estimate (or "guesstimate") of the amount that could have been taken;

(c) in the case of corrosive burning, give the child a glass of milk; get someone to call an ambulance, and make sure that the child's airway is clear all the time until the urgently-summoned help is available;

(d) see if Syrup of Ipecac is in the house;

(e) ring the Poisons Information Centre in your State (telephone numbers are in the back of this book), or ring your own doctor;

(f) the telephoned expert will tell you whether or not to make the child vomit with the Ipecac Syrup. Vomiting is not induced in case of such ingested poisons as caustic soda or corrosives, acids, or petrol and kerosene; and is not induced if the child is drowsy, unconscious or fitting;

(g) the expert doctor, or the pharmacist at the Poisons Centre, will direct you to the nearest appropriate medical facility.

"ACCIDENT PRONENESS"

Alison Verhoeven

Does an "accident prone" person really exist? It is true that some individuals sustain repeated injuries, and that a majority of accidental injuries can be identified in certain "at risk" groups. The answer to the question of "accident proneness" however, is really a question of whether there is an innate predisposition to accidental trauma among certain individuals. In the workplace, research aimed at answering this question has shown that the issue is not simply one concerning the worker as an individual. Occupational safety has to be seen in the context of the individual and his or her relationships, between employers and other employees, the physical conditions under which work is carried out, and the quality of the working environment. It is now understood that "accident proneness" is not an inborn trait, but rather a description of repeated injury that can be prevented by a multiple-targetted approach.

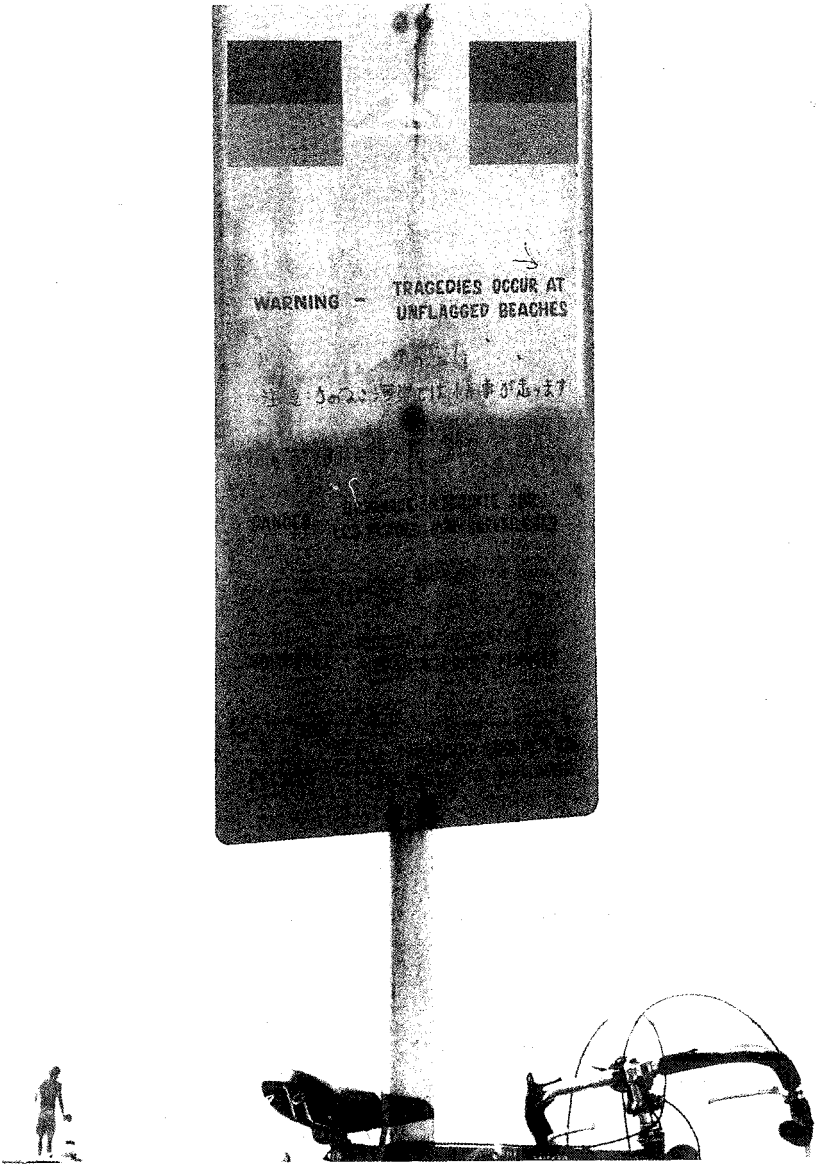
PREVENTION: Most "accidents" are not truly accidental, but rather are "incidents" which may or may not produce injury. In the workplace virtually all injury-producing situations can be avoided by the three core themes of trauma prevention – education, better design, and legislation.

Site regulations such as "No boots, no job" are important. However, injury reduction is as much a "worker-up" responsibility as a "boss down" aspect of management. Preventive First Aid is concerned with promoting a positive attitude to safety. In the context of dangerous recreational pursuits and sports, as in the workplace, the adage –

Safety is not the foe of courage, but an indispensable ally

is very true. The collection of statistics to pinpoint "at risk" groups is important, so that preventive messages can be targetted exactly at those at greatest risk. Worker awareness programmes, safety incentive schemes, and "accident free days" are important aids in this context. First Aid training for every worker, every parent, and every sports-person in itself is an effective stratagem.

The model here shows an accident about to happen.
No shoes, no socks, and no stone guard on the mower
mean that the likelihood of injury is high.
Preventive First Aid is as important here as the skilled management
of a victim with an amputated toe.



In all parts of the world, tourists and overseas visitors to surfing beaches are over-represented in adult immersion incidents. The risks of drowning and near-drowning are increased if one has not been taught the danger of the undertow, if one swims at night, and if one consumes alcohol and swims.

ADULT DROWNINGS

Tess Cramond

Adult drownings occur in three principal settings – (i) where alcohol is implicated, (ii) where the swimmer is in unfamiliar water, and (iii) in suicide attempts. Sixty percent of adult drowning victims are males who have high blood alcohol levels. Many good swimmers drown when the blood alcohol is not high and the victim does not appear intoxicated. Several well recognised groups are over represented in all series of adult drowning and near drowning incidents – tourists and overseas visitors to surfing beaches, young adults skylarking and diving in unfamiliar creeks and waterways, and boating novices.

PREVENTION. Don't drink and swim, and don't drink and be in charge of a boat. Be cautious when swimming in unfamiliar water, and obtain local knowledge. Warn visitors from overseas and interstate, about local hazards on our surfing beaches. Never swim in creeks or rivers, or the surf, at night. No person should attempt a rescue beyond his or her swimming ability. Many unnecessary drownings occur each year because this rule is ignored.

FIRST AID. If the victim is more than a short distance from the shore, and there is delay in getting the victim from the water, commence expired air resuscitation as soon as possible. Even for highly trained rescuers, resuscitation in deep water requires a flotation aid. The rescuer's safety must not be put at risk. Once on land, follow the basic life support flow chart – Clear the Airway, restore Breathing and if the Circulation fails, apply cardiopulmonary resuscitation (C.P.R.). The most important person is the person on the spot, and this person should stay to give resuscitation rather than leave the victim and run for help. Shout for help. If far from help, keep up cardiopulmonary resuscitation until skilled help arrives (or as long as the rescuer can keep going). Some apparently hopeless cases can still be saved.

ADULT INGESTIONS –

Suicide and Illicit Tablet Use

Noel Stevenson

Poisoning and drug overdose originated from the time of Adam and Eve. From the time of that first apple, the lethal cup has been a temptation for many. Adults are admitted to hospital every day following the deliberate or accidental ingestion of life-threatening substances. Drug overdose and poison ingestion remain the most common form of adult suicide, but many individuals are admitted to hospital following the illicit or recreational use of swallowed substances, in which there was no prior intent of terminating life. The victim may be found surrounded by evidence of drug overdose or poison ingestion. There may be a suicide note present. Several individuals may be poisoned at the one time, especially if illicit recreational use of proscribed substances has been tried. In this context, drug overdose is an ever-increasing problem, particularly in the adolescent age group. Occasionally, a victim will ingest a toxic liquid which has been left unthinkingly in the kitchen or in the refrigerator, or in a drink receptacle in the kitchen.

PREVENTION. Discourage all experimental drug taking. Minor bouts of depression are common, but take all overt or veiled hints of suicide very seriously indeed, and encourage an individual who makes them to seek medical help. Destroy out-of-date and unwanted medicines. In households, promote the concept of the "spouse as dispenser", rather than an individual taking sole responsibility for self-medication. Be aware that virtually all plant substances used for illicit recreational use, are not only potentially toxic but potentially lethal. Promote the concept of "**Syrup of Ipecac in every Home**". Be aware of the service (in every State) of the Poisons Information Service – see telephone numbers at the back of this book. Never put poisonous substances into containers that could be mistaken for food or drink bottles.

FIRST AID. The principles of First Aid are to move the patient from the poison, the poison from the patient, and maintaining life support to obviate the effects of the poison. If the patient is conscious, the First Aider's role is to seek medical help, stay with the patient so that Basic Life Support can be given if consciousness is lost, and to identify quickly the offending substances and to endeavour to obtain an estimate of the amount ingested. If the victim is unconscious, or apparently dead, shout for help and follow the ABC rules of Basic Life Support (maintaining the Airway, ensure adequate Breathing by expired air resuscitation if required, and maintaining Circulation by Expired Cardiac Compression if required). Under no circumstances leave a patient – if the victim's life is to be saved, you are the most important person in that endeavour at that time. The First Aider may be required to help Police with their note-taking.

A 30 ml bottle of Syrup of Ipecac should be in every home. In the event of the ingestion of a potential poison, ring the Poisons Information Centre in your State (telephone numbers are in the back of this book), or your local doctor. The telephoned expert will tell you what to do. Vomiting is NOT induced if a victim is losing consciousness, or if acids, corrosives, or petroleum products (e.g. petrol, kerosene) have been swallowed. If vomiting is to be produced, induce the patient to take the Syrup of Ipecac, and several cups of water. In every case, stay with the victim until medical aid arrives. Basic Life Support may be required.

BICYCLE TRAUMA

James Nixon

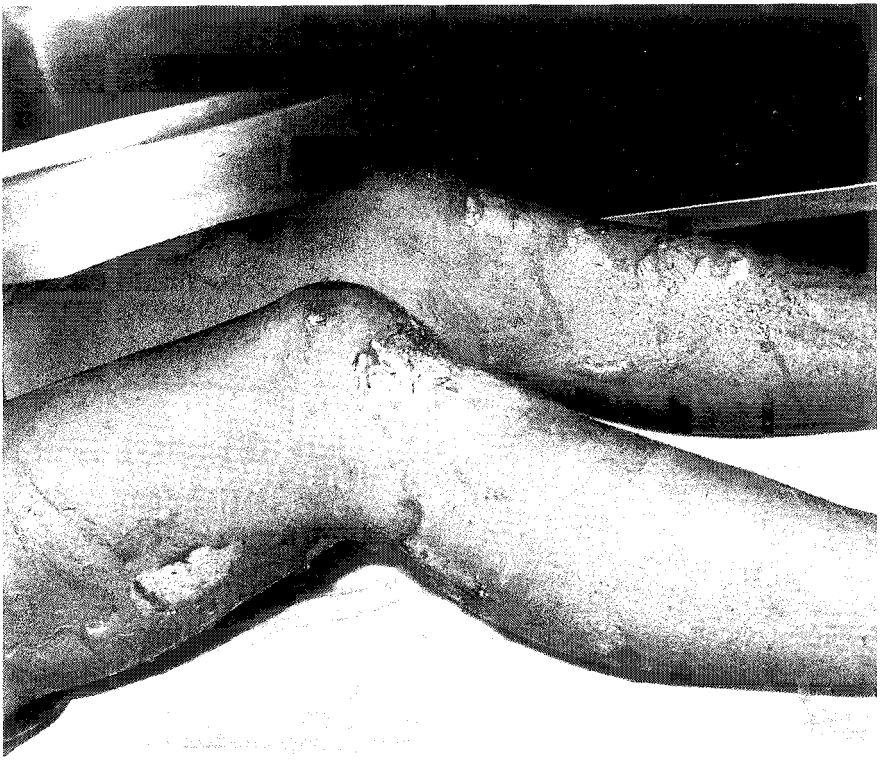
Trauma following bicycle accidents is a major and increasing cause of attendance at hospital Accident and Emergency Departments. The most common group of victims is young teenage boys riding after school on straight roads in conditions of good visibility. Alcohol is not significantly involved in bicycle accidents. Of those presenting to hospital, one third have fractures, one third have lacerations and open wounds, and some ten percent have head injuries. The predominant cause of death following bicycle accidents is head injury (70%).

PREVENTION. The skill of bicycle riding should be encouraged for all children, from an early age. Children should not ride bicycles on the open road prior to the age of 10 years. No cyclist should ride a bicycle without wearing a protective helmet. A number of commercially available cyclist helmets meet the Australian Standard, and are readily available at larger supermarkets and at bicycle shops. All bicycles should have "high flags". Discourage the use of radio earphones whilst individuals are cycling. The First Aider has an important advocacy role in promoting the courtesy of motor vehicle drivers and their relationship to bicyclists on the road, and an important role in promoting courses about the Bicyclist's Code of Behaviour, at both primary and secondary schools.

FIRST AID. Ensure that the victim, or First Aiders and other bystanders are not at further risk from a secondary accident. It may be necessary to move the victim (remembering the risk of neck or spinal injury) to a place of safety. Follow the primary rules of Basic Life Support (the ABC – checking Airway, Breathing and Circulation). If the victim is bleeding, stop this by direct pressure. If the victim is conscious, make comfortable and treat lacerations and fractures by bandaging and splinting. Depending on the circumstances, there may be a statutory requirement for the First Aider to help the Police with their note-taking, if a second vehicle (car, motor cycle or other bicycle) is involved.

Bicycle trauma is an increasing cause of childhood injury,
and will remain so until bicycles and cars are separated on the roads.
Of those children who die, seventy percent have severe head injuries.
This cyclist is typical of the great majority of cases –
a young teenage male, no helmet and no "high flag" on the bicycle.

THERMAL SAFETY ON THE WORKSHOP AND FACTORY FLOOR IS THE COLLECTIVE RESPONSIBILITY OF BOTH MANAGER AND EMPLOYEE.



This mechanic suffered third degree petrol burns to both lower limbs, in the workshop.

Protective overalls of flame resistant fabric, and standard safety boots would have reduced this disfiguring injury with its attendant long-term convalescence to one of skin reddening and a bad fright.

BURNS IN THE WORKPLACE

Stuart Pegg

Occupational burns occur from petrol flash, solvent ignition, hot industrial fluids, hot metal, electricity, and from steam and boiling water. Burns tend to occur when factory and workshop routine is altered. They are not often a feature of ordered assembly-line throughputs which nevertheless may involve very hot process work. Industrial burns occur from different types of heat – flames, flash explosion, radiant energy (as in welders "flash"), friction, and from corrosive chemicals. As part of these differences the end result – non-viable and denatured human tissue – may occur. Industrial burn incidents often involve several victims, and rescue as well as First Aid management may be required. Burns in the workplace occur in the same way as they do at home, to a large extent through carelessness. A burnt victim is a joint indictment of failure by both management and the shop floor workforce.

PREVENTION. Be an advocate for annual compulsory fire drills, and for compulsory attendance at Fire Officer briefings. In those environments where there are steam or steam pipes, hot metal processing, petroleum products, flammable solvents or hot manufacturing techniques ensure that protective clothing, fire-resistant gloves, goggles and appropriate footwear are available and used. Encourage the use of fire-retardent fabrics. Every manager and every worker should be trained in the First Aid drills to help a burnt workmate.

FIRST AID. The first rule of all First Aid is rescue, and the elimination of further danger to both victim and First Aider. Flames are extinguished by forcing the victim to the ground and smothering the flames with fabric. The burnt (or burning) area – be it flame, chemical burn, hot metal burn or scald – must be cooled instantly with cold water flooded continuously on the area for several minutes. In the case of scalds, clothing which retains hot fluid must be removed immediately. In the case of chemical burns, the area must be irrigated immediately with running water for at least ten minutes, giving priority to the eyes if these are involved. Burns about the face and mouth mean that the airway and lungs may also be burnt. The most experienced First Aider should remain with the victim, and the rules of Basic Life Support apply – the maintenance of the Airway, and the support of respiration by Expired Air Resuscitation if required.

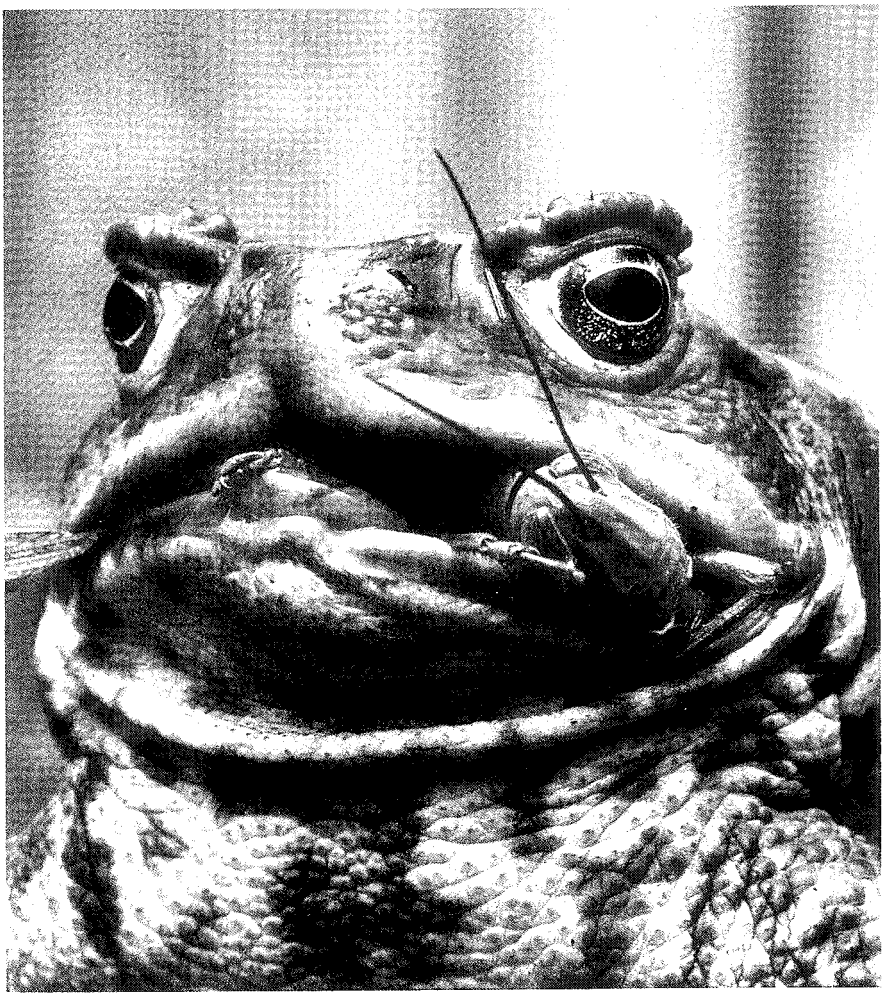
CANE TOAD POISONING

Jeanette Covacevich

The introduced Cane Toad, *Bufo marinus*, is an inoffensive animal, which feeds mainly on insects, especially beetles. It has a widespread distribution throughout much of Australia, and its range is extending. Its skin is studded with closely packed poison glands. These contain a cocktail of poisonous substances including bufotoxin, bufegenin and large amounts of tryptamine. If the contents of the poison glands enter a victim's eyes, mouth or nasal passages, severe discomfort will result. This usually occurs accidentally, or when a toad is the victim of an attack. It happens when the toad is intentionally hit, stabbed, clubbed or chopped in an attempt to kill it. With the application of external pressure a spray of venom may occur which can carry for several metres. If the creature is simply frightened, a white viscous fluid seeps from one or two ducts on the skin.

PREVENTION. Avoidance is very simple. LEAVE TOADS ALONE. DO NOT HANDLE THEM AND DO NOT ATTEMPT TO KILL THEM WITH STICKS OR STONES. It is worth noting that the brutal killing of one or even many Cane Toads will do nothing to reduce the "Cane Toad Problem". All that such behaviour achieves is cruelty to individual toads. This is not the role of a First Aider, or of any other enlightened person. Never experiment with the hallucinogenic potential of Cane Toad skins. Violent illness may result from smoking them. Besides being illegal (bufotenine is an illegal substance under the various *State Drugs Misuse Acts*) it inevitably leads to the need for First Aid management.

FIRST AID. Contact of the Cane Toad's toxin with the eyes or delicate mucous membranes produces a sharp pain. An outpouring of secretions from the victim's nose or mouth may occur. The immediate First Aid treatment is to bathe the affected area with copious amounts of running water. Medical aid should be sought. Venom on the intact human skin is harmless, but should be washed off because secondary contamination of the eyes is always a risk. All recorded human fatalities have occurred after the eating of toad material, such as an experimental soup made from their boiled eggs.



The common Cane Toad, Bufo marinus, doing what it does best — eating a grasshopper.

Although its skin is packed with poison-secreting glands, the animal is medically harmless to humans unless attacked. Cruelty to individual Cane Toads is mindless sadism and does nothing to reduce the "Cane Toad Problem".

The best preventive advice is

LEAVE THEM ALONE.

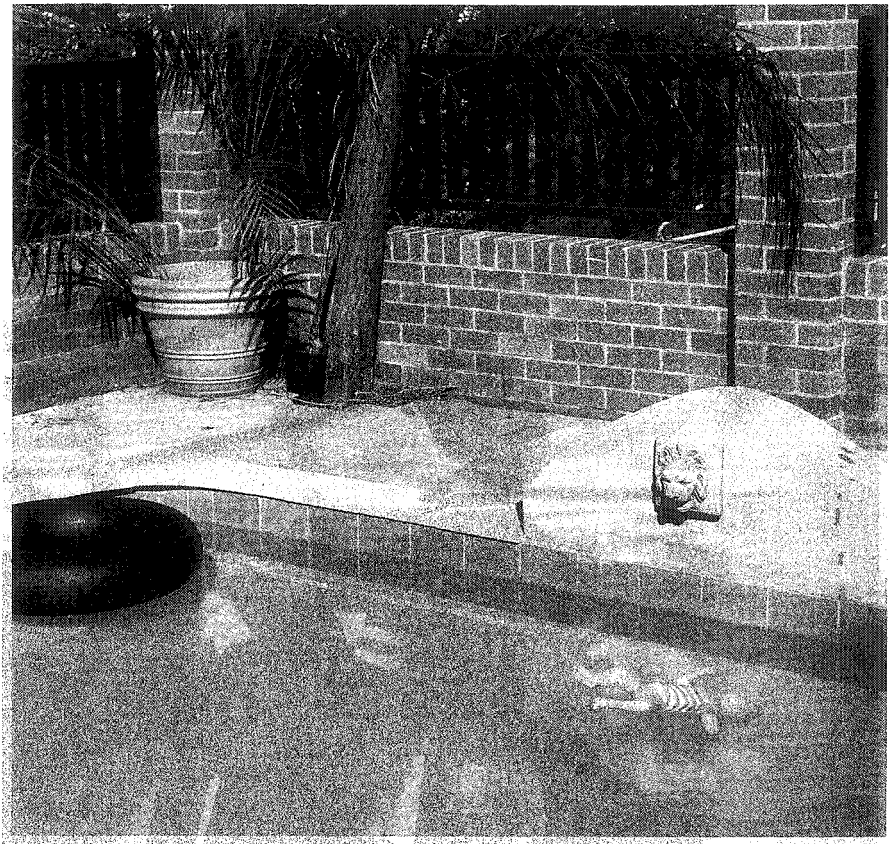
CHILDHOOD DROWNINGS

John Pearn

Almost all child drownings occur in still fresh water. Sixty percent occur in the child's own backyard swimming pool, and ten percent occur in a neighbour's backyard pool. Fifteen percent occur in nearby dams and water-filled trenches, and some five percent in caravan park and hotel pools. Ten percent occur in the family bath tub. The average age of the victims is two years. The victims are toddlers who have no innate fear of water, and are curious and adventurous. The children simply walk into the water. Some are found on the bottom, but the majority are discovered floating by distraught parents, or grandparents, or neighbours. Childhood drowning is the biggest single cause of preventable accidental death in Australian pre-school children.

PREVENTION. The single most important stratagem is the effective fencing of backyard swimming pools. To conform to the Australian Standard, the fence **must** be 1.2 metres in height, **must** surround the pool on all sides, have horizontal ribbing not more closely spaced than 90 cm, and have a self-closing, self-latching gate with a high hidden lock. The safety fence, like the safety catch on a gun is not an optional extra, but an intrinsic part of the pool. It should be aesthetically appealing and add to the landscaping beauty of the pool surrounds. Keep toys, balls and other attractant objects out of pools when not in use. Teach all children to swim from the age of three years. Never leave children under the age of ten years unsupervised whilst swimming. Resuscitation given by a trained First Aider (as opposed to an untrained one) will turn an extra 30% of potential fatalities into survivors.

FIRST AID. Basic Life Support will save approximately half of those pulled from the water apparently dead. It is important to extract the child from the water with the greatest speed possible. Some hysterical parents have run to get help or to telephone, and have left the child on the bottom of the pool, or still submerged in the bath! Clear the airway, and commence combined Expired Air Resuscitation and External Cardiac Compression if required. The person with the



A vista that haunts many who love and care for children. Sixty percent of child drownings involve toddlers who drown in their own backyard pool. Preventive First Aid promotes the vigorous concept that every domestic pool should be protected by a safety barrier on all sides, with a self-closing, self-latching gate with a high, hidden lock. Every parent should be a trained First Aider.

apparently dead child is the most important person in the whole world at that moment, more important than the ambulance man or doctor who may still be five minutes away. Shout as you are giving resuscitation. If no help comes, run with the child for help, continuing the resuscitation as you go. Most children who are going to respond, give a gasp (in response to effective resuscitation) within five minutes of rescue. Keep resuscitation going until the child is breathing spontaneously, or until skilled help arrives, or as long as the First Aider can keep going.

The peak risk for pedestrian rundowns is six years of age. Road safety education and town planning schemes to separate children from traffic will do much to prevent the need for roadside First Aid.

CHILD TRAUMA ON THE ROADS

Fred Leditschke and James Nixon

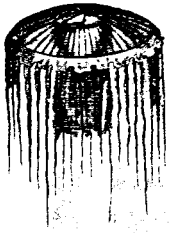
Children are injured and killed on the roads –

(a) as pedestrians when they are hit by motor vehicles,
(b) as occupants in vehicles in inter-vehicle crashes, and
(c) as cyclists.

Child pedestrian rundowns cause the biggest group of fatal pedestrian injuries. The peak risk is at 5–6 years of age, a time which coincides with increased independence, and the mobility of going to school. Pedestrian injuries occur particularly when young children dash unpredictably on to a road often without any attempt to actually cross the road, or happen when they emerge from between parked cars. Many are unseen by approaching motorists. Children who are killed or injured in a collision with a vehicle sustain multiple injuries with head injuries being the most severe.

PREVENTION. The First Aider, himself or herself as a motorist, should be aware that children are impulsive and may dart on to the road unexpectedly. Bring advocacy to bear to ensure that school and other pedestrian crossings are manned at peak times. Promote abstinence from alcohol for all drivers, and support random breath testing. Ensure, irrespective of age, that each and every car ride is a restrained ride. Promote safety education programmes for children, to start in a child's pre-school years. Be an advocate for town planning and civil engineering schemes which separate children from traffic.

FIRST AID. In the case of a child pedestrian rundown, the first duty is to ensure that secondary injuries to the victim and to the First Aiders do not occur. This may necessitate moving an injured child from a roadway, to a place of safety. Keep in mind the possibility of a neck or spinal injury, but remember, this never takes precedence over maintaining a clear airway. Standard ABC (Airway, Breathing and Circulation maintenance) techniques must be followed. Stop any haemorrhage that is occurring by direct pressure with a pad or palm. Splint fractures or extensive soft tissue injuries, and cover open wounds with the cleanest fabric available. Assist the Police if required.



COMMON JELLYFISH STINGS

Peter Fenner

The commonest causes of jellyfish stings in Australian waters result from the "bluebottle" (*Physalia*), the "blubber" (*Catostylus*), and the "hair jelly" or "snottie" (*Cyanea*). Occasionally victims are stung by the "little mauve stinger" (*Pelagia*) and by *Chrysaora*. Stings from these creatures can occur in mass proportions, sometimes with dozens of victims needing attention on the one beach, at the same time. Their occurrence depends on season, and on prevailing winds and tidal conditions. Usually, these creatures cause painful skin weals only, although some occasional deaths have occurred in the United States from the Atlantic species of *Physalia* ("bluebottle") which is often much larger than its Pacific Ocean cousin. Some people are made drowsy from the venom of these creatures, and occasionally breathing difficulties or allergic reactions have been reported.

PREVENTION. If surfers are coming from the water stung, or if "bluebottles" are obvious along the tidal edge, children should be dissuaded from swimming. If adults elect to swim in the face of these risks, one should not "dive under", as eye injuries may be particularly severe. Remember that stinging jellyfish which are washed up on the tidal edge and which have died, can still cause stings if entangled on a stamping foot.

FIRST AID. Rescue the victim and restrain the victim (or anyone else) from rubbing the sting area. Use fresh or salt water to wash off any remaining adherent tentacles. Because some recent evidence has suggested that vinegar may cause further discharge of the stinging cells (nematocysts) in some species, the current First Aid treatment is basically different from that applied to the Box Jellyfish (*Cubomedusae*). Apply ice packs to the area of the sting for fifteen minutes. Reapply these for a further fifteen minutes if pain recurs. If this first aid management fails, or if generalised symptoms develop, seek medical aid.

COPING WITH CHEMICALS

Barry Pratt

The prevention of accidents involving chemicals is an important subject in the factory, school and office, and at home. Almost all industrial and commercial activities involve the use of poisonous chemicals. These may prove harmful either by people swallowing them, inhaling them or absorbing them through the skin. Effects of these poisons may be immediate but in many cases effects are delayed and even initially ignored. Whilst some chemicals insidiously corrode, others react violently or explode. The most common injuries from chemicals are those arising from fires involving readily ignitable flammable liquids.

PREVENTION. Be familiar with the chemicals in your home and workplace. An understanding of their potential danger reduces much of their threat. Attend the lectures and demonstrations of the Works or Company safety officer. This may seem expensive in time, but the old adage – "*If you think education is expensive, try ignorance*" – is never more true than in the case of dangerous chemicals. There are six separate themes for the prevention of chemical injury – the limitation of quantities, containment, segregation of compatible chemicals, ventilation, fire protection and specialist control systems. Engineering control of exposure is preferable to reliance on protective equipment. Have appropriate protective equipment available for handling dangerous chemicals and to prevent secondary injuries in the case of rescue and emergencies.

FIRST AID. In providing First Aid at a chemical accident, it is critical that the injured person is removed from exposure to the chemicals without the persons assiting themselves being unnecessarily exposed. As with all First Aid, the key to treating chemical injuries is prompt action. This is particularly true in the case of chemical injuries to eyes. Most corrosive and chemical burns to human tissue require urgent and prolonged washing with water. Chemical manufacturers and suppliers provide First Aid information to the workplace and other users, and the special requirements of specific chemical injury must be followed. Chemical injuries may take a long time to heal and, as the risk of secondary infection and severe scarring is high, medical aid should be sought even for what (at the time) may appear a trivial injury.

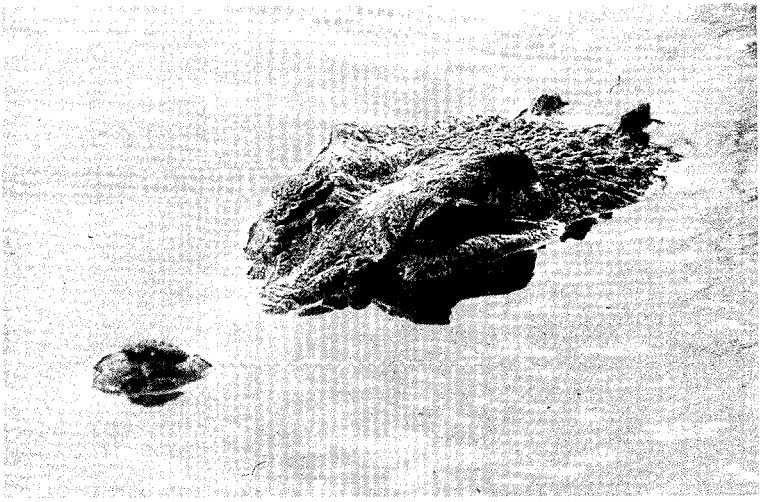
CROCODILE INJURIES

Jeanette Covacevich

Over one million people each year now travel in the northern regions where the potentially dangerous estuarine crocodile is found. Only one of the two species of crocodiles found in northern Australia is known to attack humans. *Crocodilus porosus*, the so-called Saltwater Crocodile, occurs widely in mid-coastal Queensland, across the north of Australia, and in north-western Australia. It is not confined to saltwater or even estuarine situations, but lives and hunts in freshwater lagoons, creeks, and rivers which are often quite remote from the sea coast. Five victims have been taken by crocodiles in the last four years, and with increasing tourist activity (and inappropriate behaviour on the part of many) the risk is not decreasing. Saltwater Crocodiles can be very large (to nearly 10 metres, it is reported). Large vertebrates form a significant part of their diet. Occasionally crocodiles attack and consume humans in the same way as they prey upon pigs, cows, marsupials, or large birds.

PREVENTION. Such attacks are easily avoided by STAYING OUT OF THE WATER AND AWAY FROM EDGES, ESPECIALLY AT DUSK OR NIGHT. GIVE NESTS A WIDE BERTH. Riverside barbecues with heavy alcohol consumption and night swimming in high-risk areas, whilst anticipated by the crocodiles, contribute disproportionately to case series.

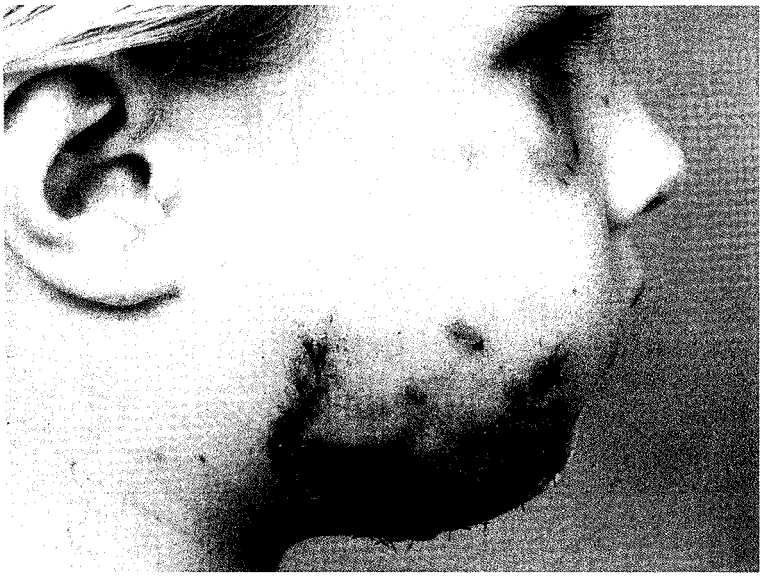
FIRST AID. First Aiders do not often have a role following crocodile attacks on humans. If a victim survives, his or her life depends always on timely First Aid. Potential survivors have a combination of lesions including near drowning, potentially severe haemorrhage to the point of exsanguination, and multiple fractures often including chest injuries. The standard principles of First Aid apply. Following rescue (perhaps more easily written than achieved!), standard ABC drills apply (maintenance of Airway, support of Breathing by expired air resuscitation if required, and maintenance of the Circulation, again by external cardiac compression if required). Hold spurting vessels between one's finger and thumb to stop bleeding, and control haemorrhage on stumps by direct hard pressure with fist or pads of fabric. Splint damaged limbs before movement. If one is helping a victim on the bank, keep an eye out for returning ripples on the surface.



BEFORE AN ATTACK

POST-PRANDIAL SNOOZE IN THE SUN

The Saltwater Crocodile, Crocodilus porosus, of northern Australian waters.
A million tourists now trespass in its domain each year.
First Aiders do not often have a role following crocodile attacks on humans.
In high-risk areas, stay out of the water especially at dusk or night,
and give nests a wide berth.



A TYPICAL VICTIM OF MULTIPLE DOG BITE WOUNDS

Victims who are seriously injured are almost always young children, and forty percent sustain bites to the face and head.

The most important preventive factor is the knowledge that dog bites are common.

DOG BITES

James Nixon

Dog bite injuries are common in Australia. Each year one person in every 500 requires hospital treatment following a dog bite. One in every four bites involve a child. Dog bites to children are potentially serious and disfiguring as almost forty percent of such bites occur on the face and head. Eleven percent of children who are bitten by dogs sustain multiple bites. Soft tissue injuries are usually minor problems, but sometimes very severe attacks are sustained and deaths have occurred from multiple head and neck injuries with severe bleeding. Toddler victims are usually bitten by the family dog.

PREVENTION. The most important factor in prevention is the knowledge that dog bites are common. One in every forty dogs causes a bite, sometime in its life, which requires hospital treatment. Toddlers and young preschool children are particularly at risk, and the larger breeds of family dog are implicated disproportionately. Never leave babies or toddlers within the unsupervised reach of any dog. Dogs injured on the road will almost invariably snap at a helper's hand and special care is needed in rendering First Aid to these animal victims. Rabies does not occur in Australia from bites sustained in this country. Rabies immunisation is recommended for impending tourists who will be spending long periods of time in rabies epidemic areas of the world (e.g. the Asian and South American continents), and who may be exposed to a significant risk of any animal bite from such creatures as monkeys and bats as well as dogs. The introduction of rabies into Australia would be a disaster of unimaginable proportions. Promote the advocacy of the Customs and Quarantine Services which maintain unceasing vigilance to prevent rabies introduction here.

FIRST AID. Rescue a child, and go to the aid of an adult who is the victim of a continuing attack. Check any bleeding, and check for fractures. Clean the bitten area with soap and water, and then with an antiseptic solution. Bandage with a standard dressing. If the limb has extensive soft tissue injury, or if there is suspicion of fracture, apply a splint. Every patient bitten by a dog must be referred to medical care for tetanus immunisation.

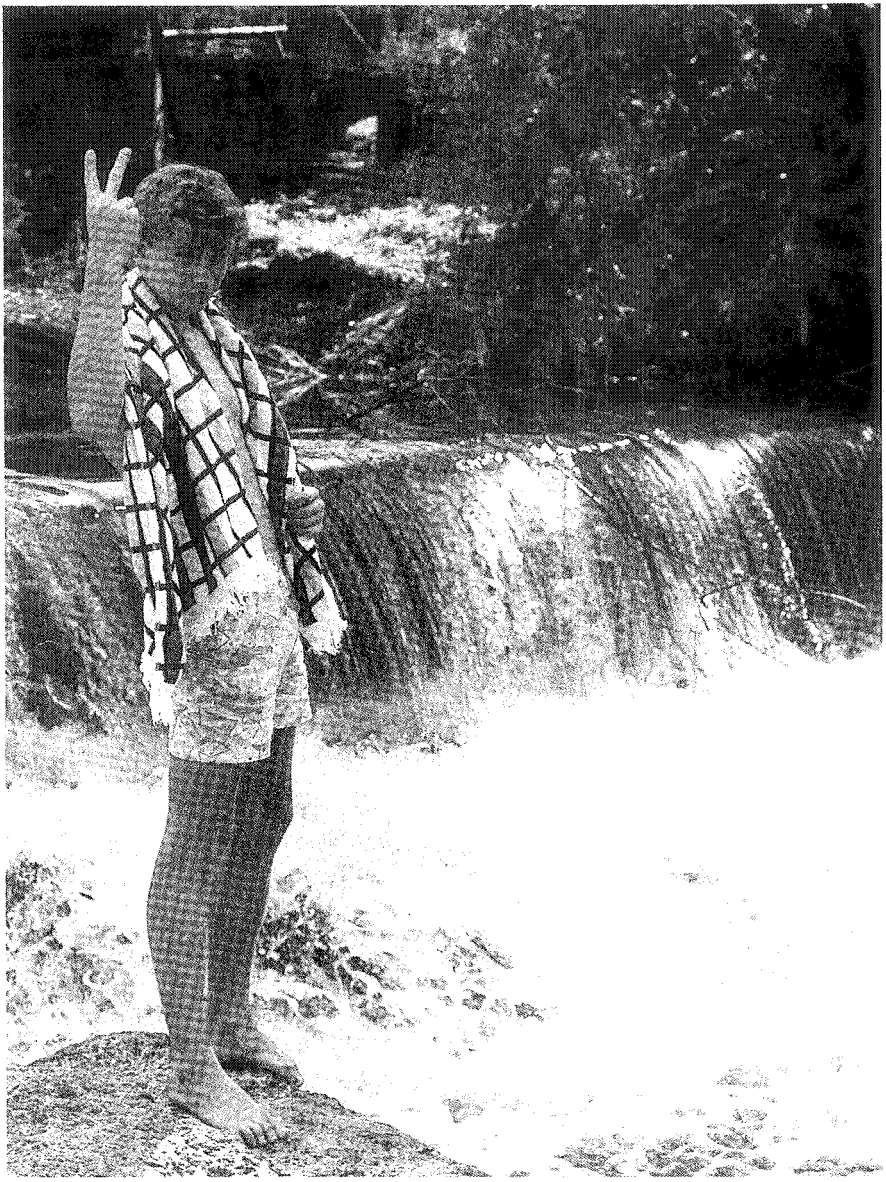
DROWNINGS IN CREEKS, RIVERS AND DRAINS

John Pearn

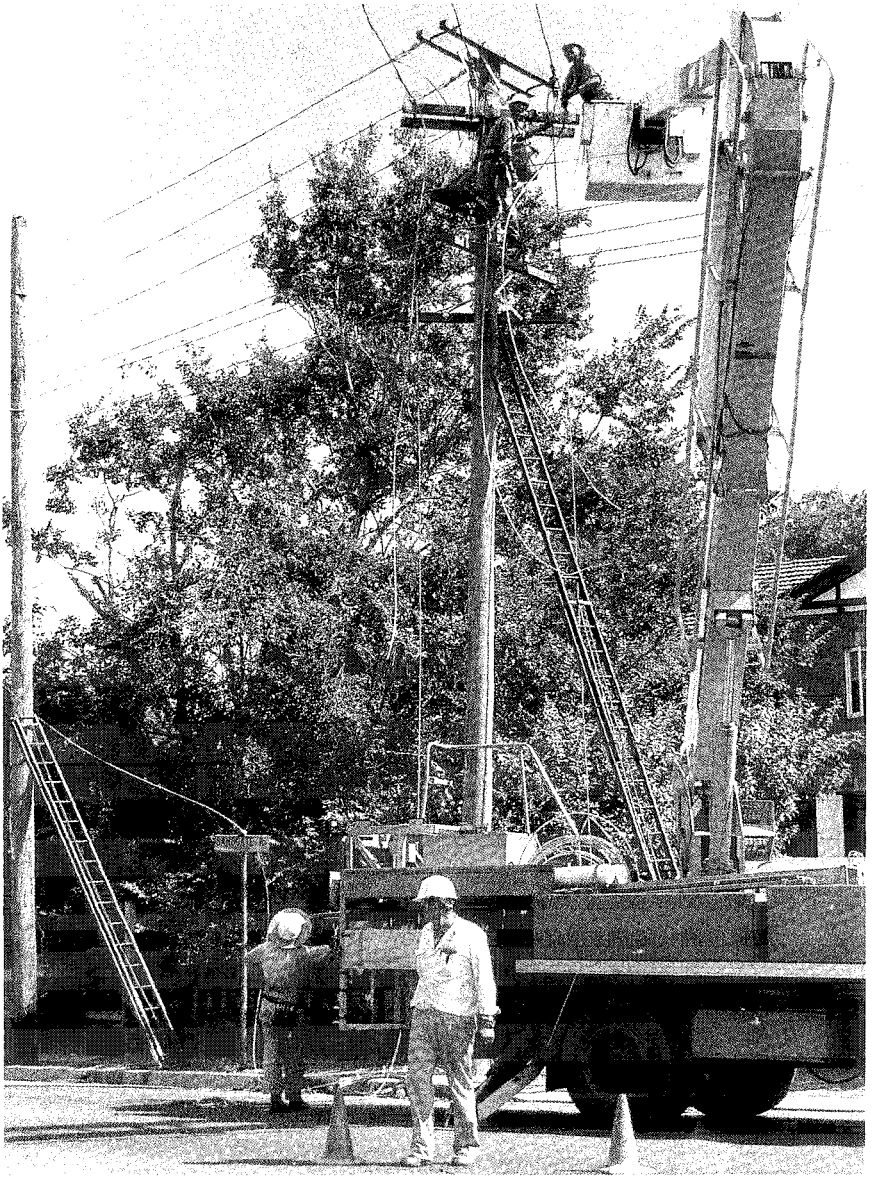
A small proportion of drowned victims comprise those who drown in creeks, rivers and stormwater drains. Eighty percent are males, and a proportion of these are boys who are swimming with a friend in a forbidden waterhole or creek. The survival rate, if a child gets into difficulties in such situations and loses consciousness, is very low (perhaps only ten percent in some series). This is because the victim disappears, or the friend is unable to effect a rescue, and because there is usually a long distance to run before the alarm can be raised. Under normal circumstances, it takes between 3 and 10 minutes of submersion for a person to drown, and every second counts before effective cardiopulmonary resuscitation is started. Often there is difficulty in locating the victim in these circumstances, even before the person can be extracted from the water.

PREVENTION. Being aware of the risk of swimming in remote spots, and in stormwater drains, is half the battle of prevention. Ensuring that all children (over the age of three) are taught to swim is important. Truancy from school is a bad prognostic sign, and illicit play in remote creeks and drains may be part of this scenario. All children over the age of ten years should be taught the elements of Basic Life Support – it is often another teenager who rescues or extracts the unconscious victim from the water.

FIRST AID. There are two important principles here. Firstly, rescue and extraction from the water, and secondly the importance of Basic Life Support. In this scenario of drains and watercourses surging with flood water, or with boys who disappear in a deep hole in a local creek, there are always potential dangers to rescuers. Improvised ropes, safety lines, and human chains of strong volunteers may prevent the rescuers themselves from drowning. Remember, "throw and reach" rather than diving in also may offer a better chance for the drowning victim. Once an unconscious victim is extracted from the water, the most important person is the person on the spot, and the application of standard cardiopulmonary resuscitation techniques.



Drowning and near-drowning incidents in creeks, waterholes and stormwater drains predominantly involves older male children. There often is an element of forbidden or illicit swimming, and often anti-social behaviour as well.



ELECTRICAL SAFETY IN ACTION

The workman up the pole has his helmet, gloves, safety boots and safety line attached. He has a buddy nearby. Another buddy watches from the ground. A fourth electrician watches and directs traffic around the hazard.

ELECTRIC SHOCK

Tess Cramond

An electric shock may stop the victim's breathing and may stop his heart. Although death due to passage of electric current through the body is the most dramatic and serious event to occur, passage of current of lesser intensity may cause injury or at times warn of the danger. Effects vary with the strength of the current, the resistance of the skin, and the actual pathway by which the current flows through the body, especially if the current passes through the heart. In all situations where an electrical accident occurs, the rescuer and other bystanders are at risk as well as the victim.

PREVENTION. Don't have frayed cords or damaged plugs in your home. Hazardous situations may arise if the earth wire is broken or effective earthing not maintained. Multiple use of double adaptors may overload a current, resulting in loss of power and local heating, causing fire. Power packs have the same inherent problems. Extension cords or long cables may be severed or cause a fall and physical injury. Always employ a qualified electrician to undertake installations and effect repairs. Ask your electrician to install a core balance circuit breaker in your home. This equipment monitors the current between active and neutral leads and if there is a problem with the appliance, the current breaker switches off the current. Place safety caps over power outlets near the ground, especially when small children are in the home. Ensure power points on the outside walls are weather proof. Never use heaters and hair dryers in wet areas of the bathroom. Always let a spouse or the children know when you are using electrical equipment in the workshop or the garden.

FIRST AID. Turn off the current if possible and warn others of the risk. If the current cannot be turned off, disconnect the victim from the electricity supply using a dry non-conductor (a piece of wood). Avoid any direct contact with the skin, especially moisture under the arms, or any conducting material touching the victim. Commence resuscitation. In a road accident where power lines are in contact with a vehicle or a person, no attempt should be made at extrication or resuscitation until the situation is declared safe. Bystanders must be kept a minimum of 6 metres from fallen power lines – in some circumstances (e.g. if water is on the road), even greater distance may be necessary.

EXPLOSIONS

Barry Pratt and John Pearn

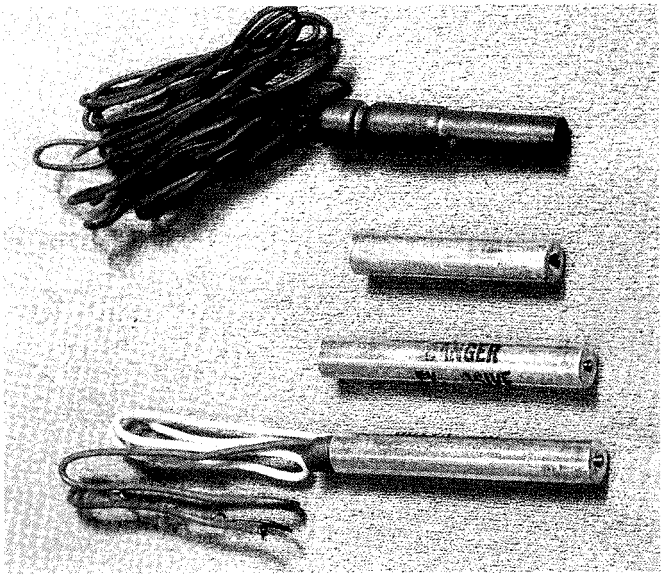
Explosions occur in the home and school, and in factories and the workplace. Leaking household gas from broken pipes or suicide attempts may be easily ignited. Explosions occur when pressure containers fail, either through heat or by mechanical damage. Liquid petroleum (LP) gas causes some explosions, sometimes following domestic leaks or from container rupture especially during transport. Liquid gas may vaporize instantly if a container fails, causing a BLEVE – a Boiling Liquid Expanding Vapour Explosion. Amateur welding and soldering of cans which have contained petrol or solvents are a recognized cause of injury. Blast injuries include a mixture of burnt tissue, shock, lacerations, limb avulsion, blindness and deafness, and bleeding. Surprisingly few explosion injuries occur in quarries and mines where, although exposure is high, safety procedures are enforced.

PREVENTION. By their nature, explosions occur without warning, and prevention has to be a "cold", considered, planned approach. Industrial explosions occur in three scenarios – during construction, in the course of maintenance, and during demolition. Always separate gases from flames, and liquids from heat. In the home, welding and barbecues are sources of explosions. Never light barbecues with petrol, or throw aerosol cans into the fire. Leaking household gas can cause explosions of great intensity – control cigarettes and flames if there is an odour of gas. Never allow teenagers to experiment irresponsibly with chemistry sets. Teach children the risks of handling detonators and unexploded shells.

FIRST AID. Conscious victims of explosions are always stunned, and often blinded and deafened. Move them to safety from fire, treat bleeding by direct pressure and fractured limbs by splinting, and seek medical aid. Air passages may be burnt and breathing become difficult in the aftermath. Move unconscious victims to safety, and give standard Basic Life Support.

PREVENTION OF EXPLOSIONS.

Detonators and fuses. Teach children what these are, and the dangers of handling them. These will explode on heating or percussion.



A hand-grenade with detonator (right) attached, found as a lethal war trophy.

Teach children about the dangers of old ammunition which is sometimes found in paddocks, on dumps, near quarries and mines, and in homes.

Third degree burns to the buttocks and lower limbs of a young teenage boy. He had stuffed several "bungers" (explosive fireworks) into the back pockets of his jeans, which were lit by a "friend" as a practical joke.

FIREWORKS INJURIES

John Pearn

Fireworks are fun. Their enjoyment need not be bought at the expense of preventable injury. The legacies of fireworks injuries include blindness, burst ear drums, burns, and foreign bodies in the eyes. With the controlled sale of fireworks now the norm in Australia, fireworks injuries are uncommon. Those that do occur are often the result of anti-social behaviour by adolescents. Very serious injuries still occur each year, involving youths who attempt to make explosive charges from chemicals, or by extracting gunpowder from many small fireworks to make one "big bang". The result of this latter can be most satisfying in terms of percussion and consternation, but is so often bought at the expense of eyes and hands.

PREVENTION. Never allow children to buy fireworks, or to hoard unexploded fireworks as treasures. Never allow unsupervised children to ignite fireworks. Fireworks parties are fun, provided that two cardinal rules are followed – adequate supervision, and sensible clothing. Be sure there is one responsible adult present for each three children who are igniting fireworks. The best clothes are track suits or jeans and should not be made of synthetic fibres which tend to be highly inflammable. By example and precept, never allow practical jokes or horseplay with fireworks. Teach older children the risks of pooling gunpowder, and illicit experimentation with chemistry sets.

FIRST AID. In the event of blast to the eyes, simply cover the eyes, lie the patient flat or with the head slightly raised, and seek medical aid. Remember that the airway may be burnt also, and secretions or swelling may block adequate breathing before the victim can be got to hospital. If ear drums are burst, simply rest the patient in the most comfortable position, and seek medical aid. If clothing is on fire, force the victim to the ground and smother the flames by rolling and by covering with any available fabric. Immediately cool any burnt area with cold water for several minutes. Cover burnt areas with the cleanest fabric available and seek medical aid.

FIRST AID AND THE PREVENTION OF INFECTION

AIDS, Hepatitis B and Other Infections

Tess Cramond

There has been no scientific record of any First Aider contracting AIDS from emergency resuscitation procedures. Furthermore, there has been no recorded instance of cross-infection resulting from resuscitation training, but cleanliness and personal hygiene are essential whenever resuscitation is taught.

PREVENTION. Protect yourself and the resuscitation training manikin by (a) observing personal hygiene, (b) working in small groups of 2-4, (c) by NOT training on a manikin if you have a cold or influenza, sores on the face, mouth or hands, hepatitis B or AIDS.

FIRST AID. When using a training manikin, each trainee should use an individual mouth-nose piece and air bag to prevent any risk of cross-infection. When the trainee breathes into the manikin, the air bag expands in the air-tight head compartment, displacing the air outside the bag and forcing it through the tracheal valve into the body of the manikin. This process is reversed when expiration begins. The trainee comes into contact only with his own mouth-nose piece, and after each use should scrub it thoroughly with a disinfectant, detergent solution of chlorhexidine in alcohol and a nail brush for at least thirty seconds, rinse in clean water and dry thoroughly with clean cloth. Use disposable lung bags, discarding after each use by placing in garbag.

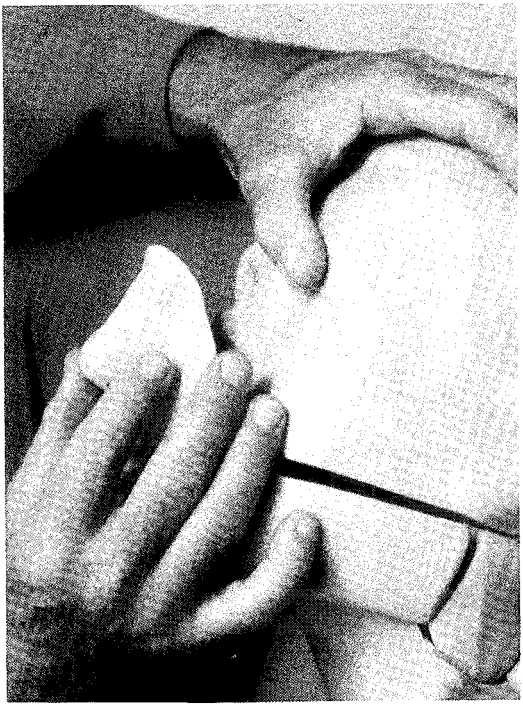
Instructors should ensure that trainees assume responsibility for removal and cleaning of individual face and nose pieces and for the disposal of air bags. At the end of a training class, manikins should be thoroughly cleaned and disinfected . Face pieces or overlays should be immersed in a disinfectant solution of –

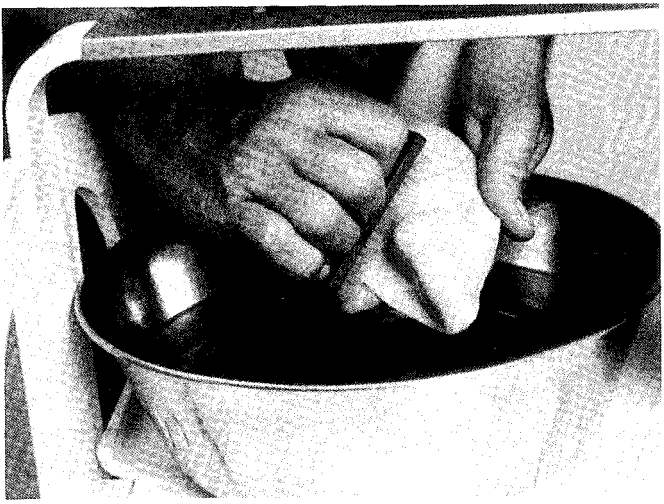
(a) 70% alcoholic chlorhexidine (for 2 minutes), or

(b) 30% alcoholic chlorhexidine (for one hour).

After immersion, articles should be rinsed in clean water and dried thoroughly, and all disinfectant solutions discarded at the end of each class. Different disinfectant agents are needed to control contamination by different viruses and bacteria. Hexachlorophene is an excellent disinfecting agent but with gradual and slow effect which is not appropriate for use in a large training class. Faster agents are recommended for manikin disinfection in CPR training classes and a

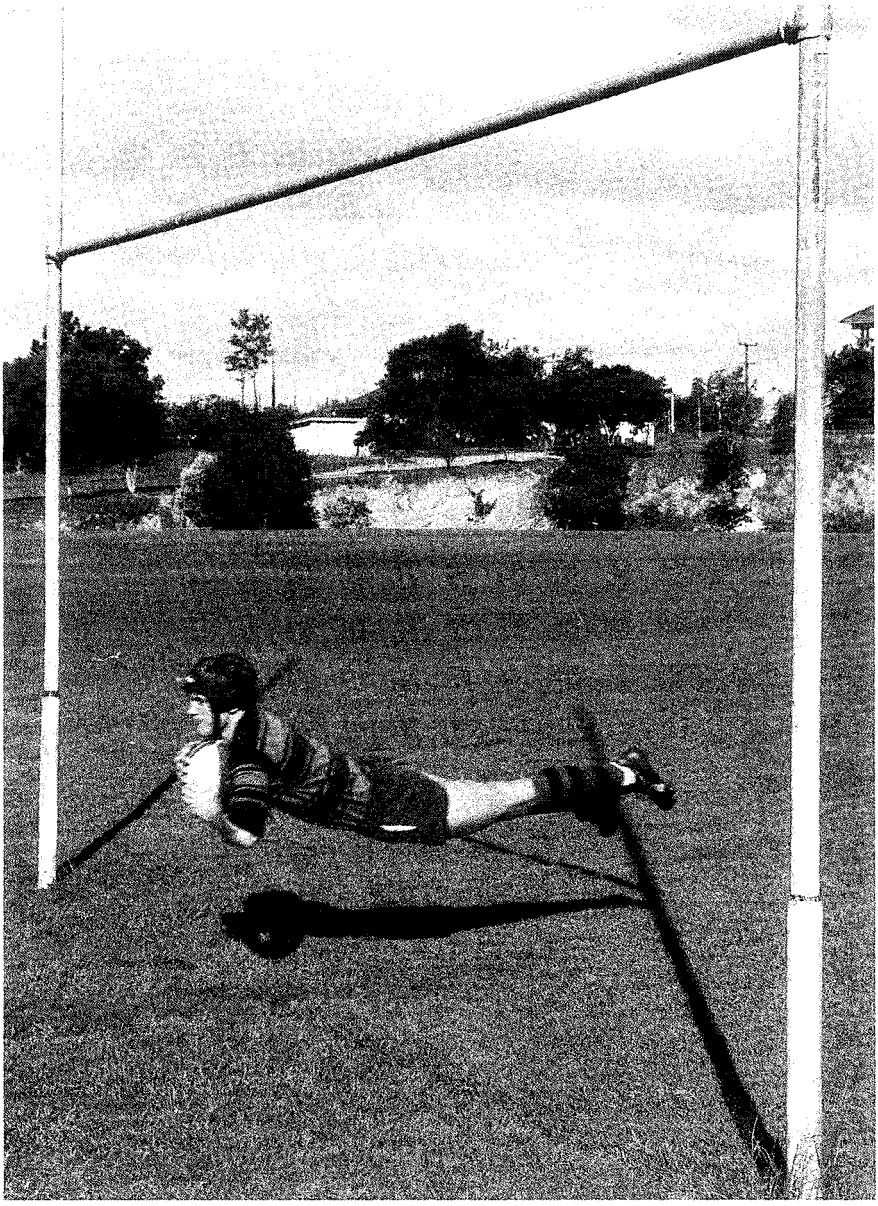
mixture of 70% alcohol and chlorhexidine has been shown to be effective against a range of bacteria and viruses likely to be associated with manikin multi-use situations. Household bleach (hypochlorite) is not recommended for manikin disinfection. Store clean face and nose pieces in disposable plastic bags. Manikins should be inspected on a regular basis for cracks or tears in the outer surface. These make efficient cleaning impossible. Damaged parts should be replaced.





Transmission of the germs causing AIDS, hepatitis and tuberculosis cannot occur with attention to proper antiseptic technique. Training manikins must be disassembled, cleaned, and washed with antiseptic between subjects.

PREVENTION OF INFECTION



Football injuries can be reduced by ensuring adequate pre-season training, always warming up before a game, and discouraging illegal tactics in the code of your choice.

FOOTBALL INJURIES

Wally Lewis

Some degree of injury from football is inevitable, as football is a contact sport. Most football injuries are trivial and result in proud scars of battle. It is a statistical inevitability that some players will suffer concussion, bruising, dislocations and fractures. There is nothing surprising about this, but a sensible player reduces the risk of serious permanent injury by taking note of certain themes important in protection. The rate of injury is greater in the earlier part of the match, and in the earlier games of the season. An injured player who stays (courageously) in the thick of the match is more likely to suffer secondary injuries, and players who play with excessive aggression not sanctioned in the rules of the game themselves suffer a disproportionate injury rate.

PREVENTION. Ensure that one is fully trained before the start of the season. Warm up well *before* the game. Especially in the case of forwards, head gear slows deceleration and reduces concussion, and bruising of the brain. Mouth guards protect not only teeth and gums, but also the brain. If injured, retire and give a keen reserve some part of the remaining action.

FIRST AID. Always ensure that someone trained in First Aid, either as a coach or player, is at the match for which one has responsibility. First Aid training is enjoyable, and can be a valuable part of the season's overall training activities. If an injured player is "concussed" do not allow him to continue playing. If a player is unconscious, go to his aid even before the referee stops play. It is ludicrous to bypass an unconscious player who may need help in breathing, or who is choking on his mouthguard or broken teeth. If the player is unconscious, turn him on his side and check that he has a clear airway and is breathing adequately. Think of the possibility of a fractured (broken) neck in an unconscious football player, but the airway always takes precedence.

GASSING – Inhalation Incidents

Tess Cramond
John Pearn

Victims may be overcome by smoke, gas and fumes in a variety of situations which include fire fighting, working in confined spaces, in underground tunnels and in cold environments where heaters are used in tents and caravans.

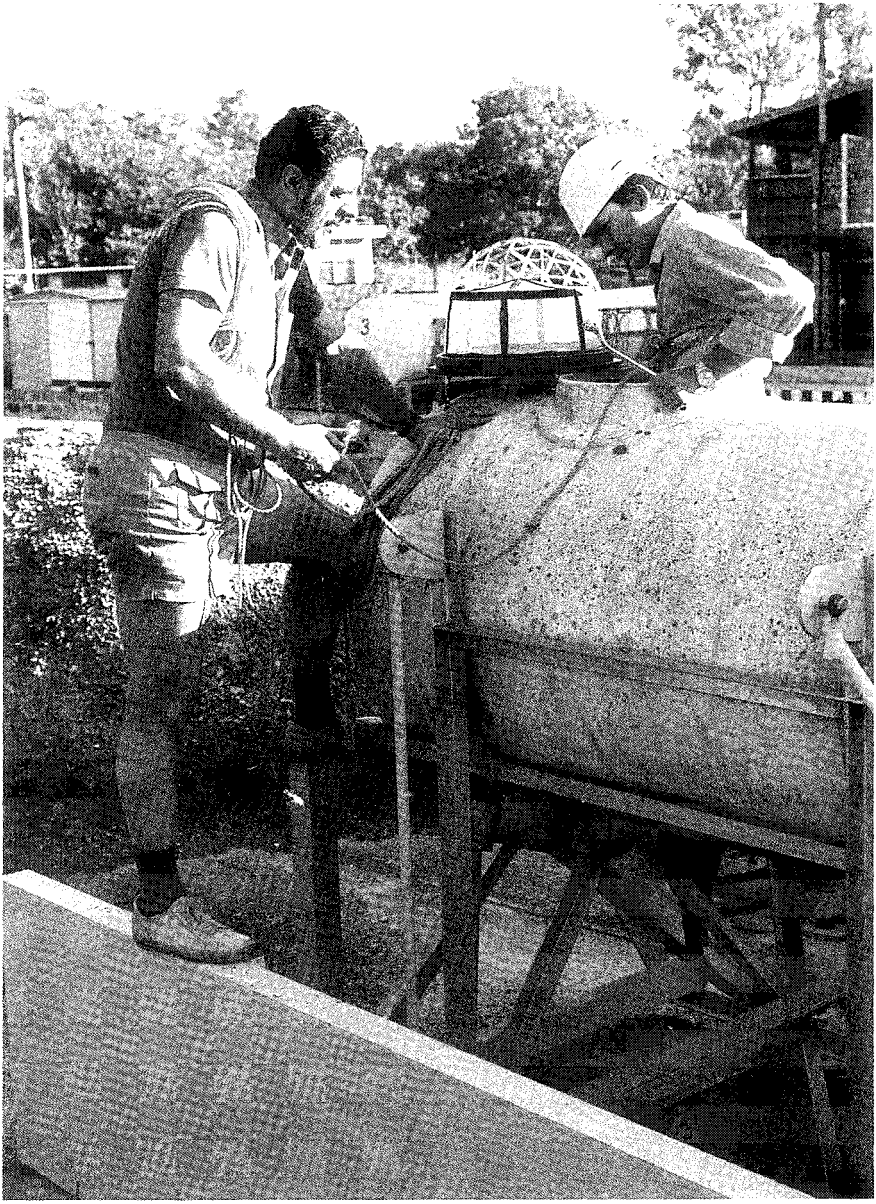
- In most cases deaths are due to lack of oxygen, rather than the chemical effects of the gas or vapour.

- Deliberate glue and petrol sniffing may have similar tragic results. Suspicion should be roused if groups of children, or individuals, behave as if they are drunk with euphoria and excitement and loss of control.

- Slurred speech and drowsiness may be followed by unconsciousness. The hair, breath and clothing may smell of solvent.

- Attempts at self destruction may involve the use of exhaust fumes from cars or gas from stoves. In such suicidal attempts fatality rates are high unless rescue is prompt and resuscitation is commenced immediately.

- In occupational mishaps, fatality rates are low provided the rescuer takes appropriate precautions, using respiratory protection and life lines.



Death from asphyxia and inhalational incidents can be prevented by safety drills. Here the worker entering the tank has a stout life-line attached, and a buddy "on top". The buddy has a second life-line ready should he need to effect a rescue.

GASSING – Inhalation Incidents

PREVENTION. There are two aspects to prevention –

(a) to reduce the incidence of the primary inhalational mishaps, and

(b) to prevent rescuers from being overcome.

- Always treat threats of self destruction seriously and try to persuade the depressed person to accept medical support.

- Always have a buddy and remember to rig up a life line before entering tanks, tunnels and smoke filled rooms. Crawl low along the floor when smoke is dense.

- Never seal a tent or caravan if a gas or spirit heater is inside.

- Open the garage doors if the car engine is running.

- You cannot help anyone if you are overcome by gas or fumes.

FIRST AID.

Prompt RESCUE without jeopardising the rescuer's safety, and immediate RESUSCITATION are the watchwords.

- Remove the victim from the contaminated atmosphere and follow the Basic Life Support routine, caring for Airway, Breathing and Circulation.

- Resuscitation of victims of inhalation of irritant gases may be complicated by the outpouring of copious secretions and fluid into the airway. Some may be drained from the mouth by posture but resuscitation should not be delayed by repeated attempts to clear the fluid completely.

- To rescue a victim from a gas or smoke filled area, rig up a life line with a bystander and arrange a system of signals so that the rescuer can be pulled to safety if necessary. This is the "buddy" system.

- Always check the temperature of a door and the air coming from under a door. If either is hot, KEEP OUT.

- If smoke is dense, crawl along the floor.

- Drag the victim to safety.

- If a victim is in a garage with the car engine running, open the doors to ensure good ventilation.

- DO NOT LET THE RESCUER BE AT RISK.

MULTIPLE FACIAL LACERATIONS FROM PLATE GLASS.
This girl walked through a glass door which did not have any decorative design to indicate its presence.

GLASS LACERATIONS

Fred Leditschke

Whilst lacerations from glass occur at all ages, children running through glass doors produce one of the most serious types of incisional injury. Such lacerations are multiple, often involve the face, may result in disfiguring scars, and may result in near-exsanguination from arterial blood loss. In this type of injury, slivers of glass are often embedded in the tissues. Another pattern of glass laceration results from adults fighting with glass bottles. Children are sometimes injured when they fall whilst running and carrying glass bottles.

PREVENTION. Be an advocate for the use of laminated or approved safety glass for all domestic glass doors and low windows. Promote the use of decorative indicators and decals on expanses of plate glass to indicate the presence of the otherwise (often) invisible barrier. Glass explodes – teach the potential danger of using glass bottles for illicit chemical experiments where gas may be generated. Use goggles in chemistry experiments.

FIRST AID. Freshly-broken plate glass is the sharpest substance known. Control bleeding by direct pressure with a clean handkerchief, pad, or bare palm. Pinch spurting vessels between finger and thumb. Place a "doughnut" of fabric around embedded glass so that pressure does not force the glass in further. Lie the patient down, reassure and do not remove blood-soaked bandages. Apply new tight ones over the top whilst medical aid is being sought.

HORSE RIDING ACCIDENTS

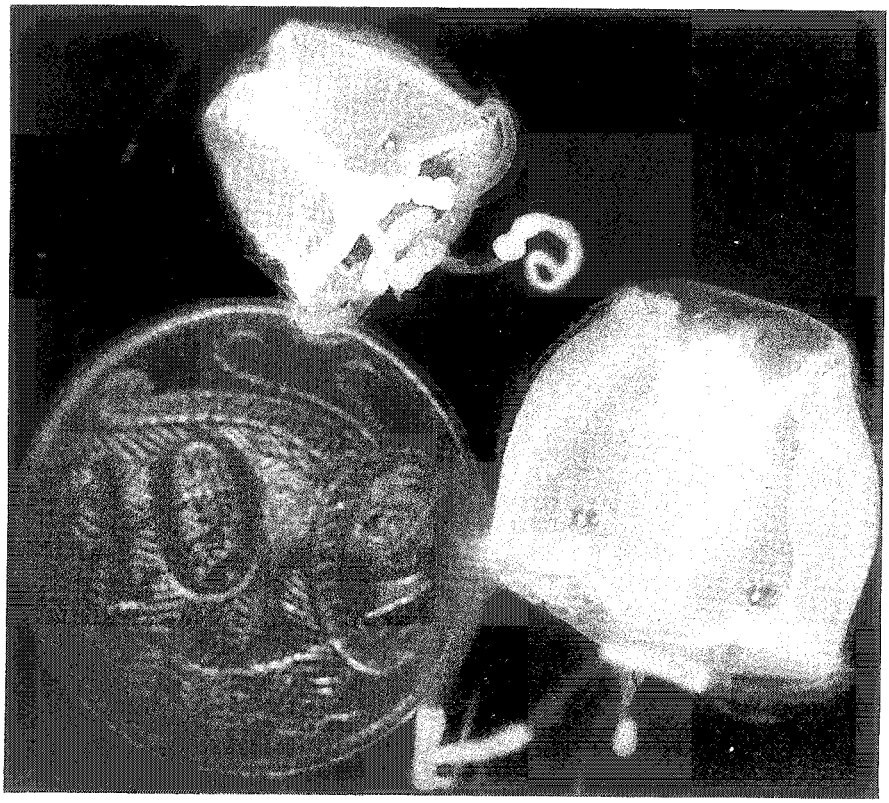
James Nixon

Horse riding is a desirable and popular pastime for all including children and the disabled. Injuries requiring First Aid are common amongst those who enjoy horse riding. Thirty percent of those injured in Australia are children, with some victims as young as three years of age. The majority of injury victims are girls, with an average age of thirteen years. Severe injuries (skull fractures and internal injuries) are an occupational hazard for professional horsemen and women. Two thirds of injuries sustained in the context of horse riding involve simple falls from a trotting or galloping horse. Thirty percent of horse riding injuries presenting to hospital are head injuries, and amongst these, skull fractures, concussion and lacerations are common.

PREVENTION. The role of the First Aider is to be a strong advocate for the wearing of protective riding helmets. The majority of injuries follow simple falls from a horse, and a significant percentage of head injuries can be prevented by the use of a protective helmet. A helmet is not an "optional extra", but is as essential to the rider as the reins or saddle. Proper supervision of recreational horse riding will further reduce the risk of injuries, especially amongst the high-risk group of adolescent girls. Never allow practical jokes to be perpetrated, by exposing a novice rider to a dangerous horse. Be an advocate for improved courtesy by motorists, when there are horses sharing the highway.

FIRST AID. Ensure that the victim on the ground is not exposed to further danger. Check the ABC (Airway, Breathing and Circulation), following standard Basic Life Support. Remember the possibility of a fractured neck or spine in the context of someone lying on the ground who has been thrown from or fallen from a horse. If the victim is conscious, make comfortable and treat fractured limbs by splinting before movement or transport. If the victim is unconscious, but with adequate breathing and circulation, manage in a stable side position until medical help arrives. Under these circumstances, the most experienced First Aider should stay with the victim.

Horsing about is a wonderful pastime for all children, both able bodied and disabled. Serious injuries can be largely curtailed by three preventive rules – adult supervision, the wearing of adequate headgear, and an attitude that practical jokes have no place in horseriding.



TWO SPECIMENS OF "IRUKANDJI", CARUKIA BARNESI

The sting from this tiny jellyfish causes severe pain in the body, trunk, limbs and joints, and a feeling of impending doom.
There is a latent period (five to twenty minutes) between the sting and the onset of symptoms.

IRUKANDJI SYNDROME

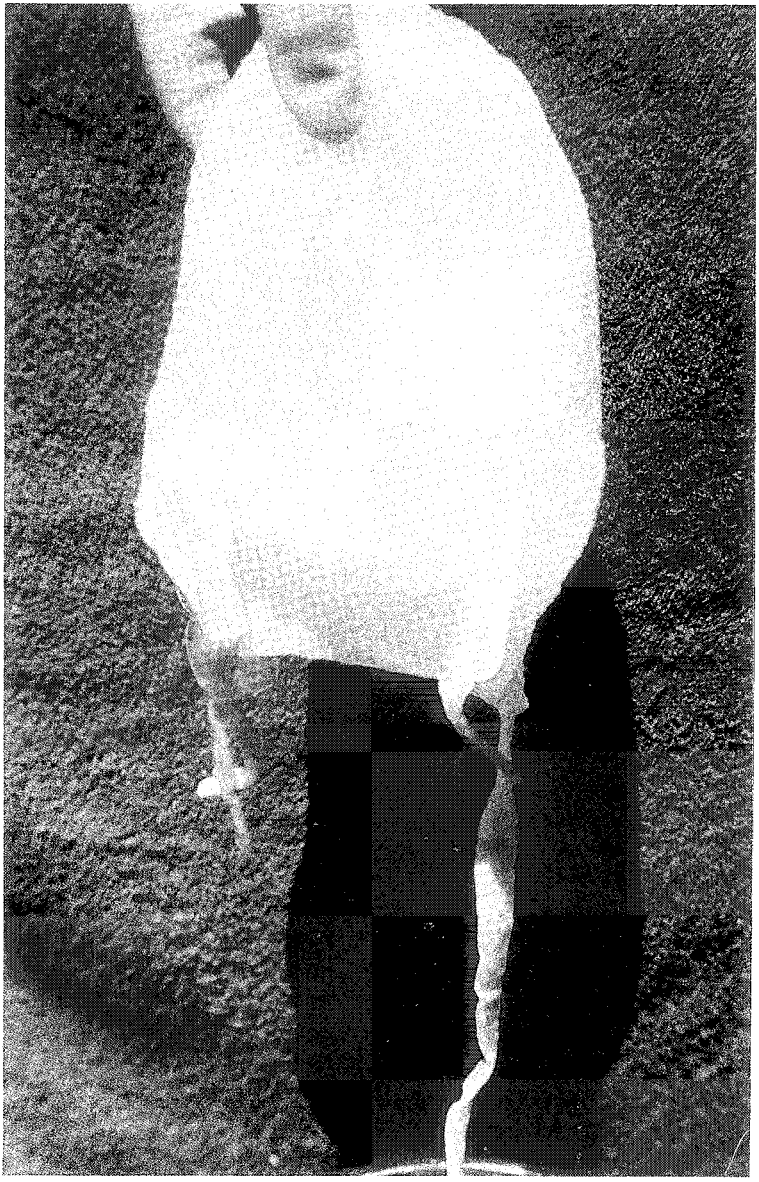
Peter Fenner

Although the Box Jellyfish (*Chironex fleckeri*) is a rightly-feared jellyfish, other Cuboidal Jellyfish may cause severe medical problems to swimmers in tropical Australian waters. Envenomation by the *Irukandji* (*Carukia barnesi*) cause a characteristic very severe generalised reaction, often ten to twenty minutes (or sometimes more) after the initial sting which may be mild, or unnoticed. Sometimes a number of victims are stung at the one time. Other small Box Jellyfish can produce severe stings, but are not fatal. Envenomation by the Fire Jelly (*Morbakka* species) is painful and may cause a milder *Irukandji*-like reaction. Stings from the Jimble (*Carybdea rastoni*) cause itchy, irritating skin weals.

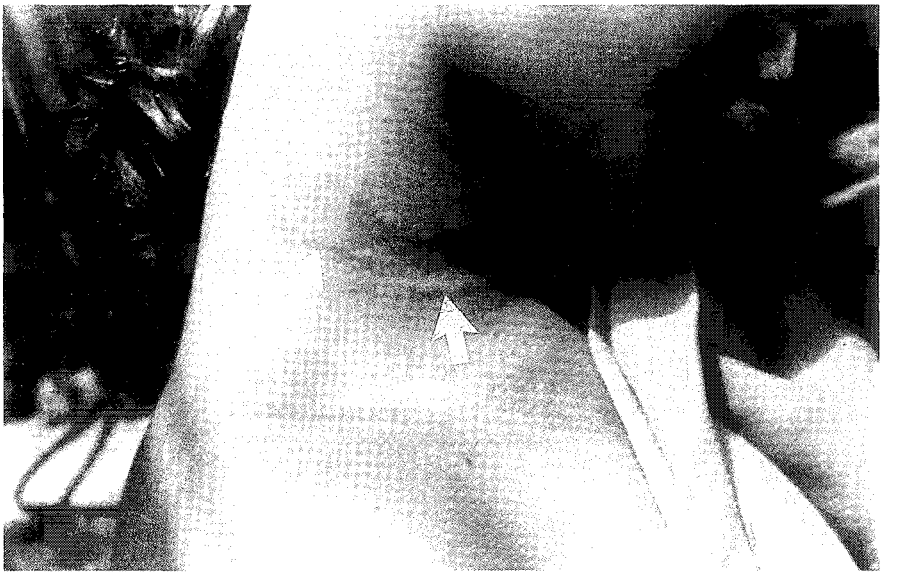
PREVENTION. It is dangerous to swim on mainland beaches (including "still water" salt water beaches) in tropical Australian waters during the summer months unless –

(a) one is swimming inside an "*Irukandji* resistant" stinger net, which has a smaller mesh than the normal Box Jellyfish Stinger Net; or
(b) one is wearing protective clothing such as a full length "Lycra Stinger Suit", or pantyhose if one is simply wading; and
(c) one is swimming on beaches patrolled by the Surf Lifesaving Association of Australia.

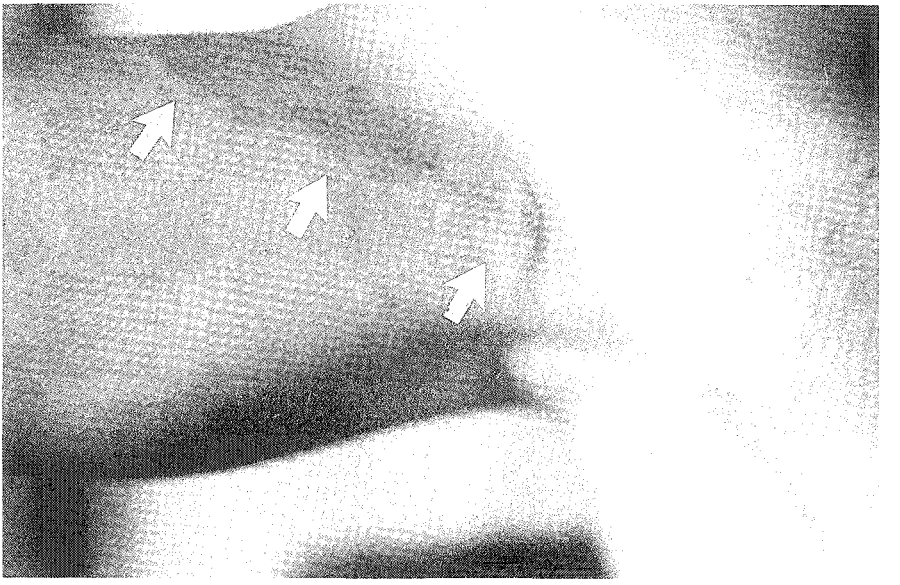
FIRST AID. Rescue the victim and restrain him or her (or anyone else) from rubbing the stung area. Cover the area of the sting with copious amounts of vinegar (4 to 6% acetic acid). Although there may be a significant delay (fifteen minutes or so) between the sting and the onset of the first symptoms, vinegar is important in an attempt to prevent further envenomation. Wash off any adherent tentacles with vinegar, or with water if this is not available. If vinegar is not available, apply pressure immobilisation *above* the stung area. Apply ice packs to the area of the sting for fifteen minutes, either directly or through the compressive bandage if pain is severe. Transport the patient to medical aid.



The "Morbakka", a small box jellyfish with four tentacles, one arising from each corner of the bell. Also known as the "Fire Jelly", its sting is very painful. Flood the sting area with vinegar, and wash off adherent tentacles with vinegar or water.



Sting on a child's neck, from the "Fire Jelly", or "Morbakka" jellyfish.
Appearance of welts 10 minutes after envenomation.



Sting on the upper right arm of a young woman, caused by the "Jimble"
or Carybdea rastoni.
Appearance of welts 10 minutes after envenomation.

One of the three common types of lawn mower injury.
A boy with traumatic amputation of the toes,
an injury sustained whilst mowing in bare feet.

LAWN MOWER INJURIES

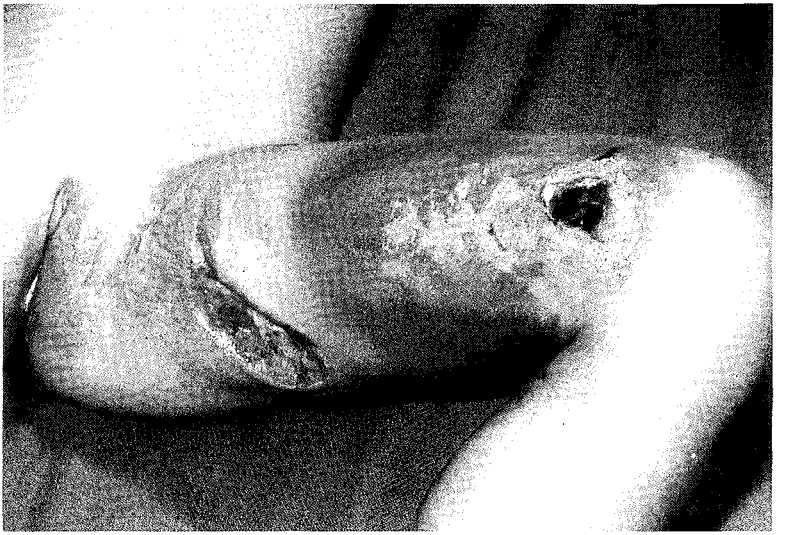
Fred Leditschke

In every Australian capital city, over one hundred patients present each year with mower injuries. The three main patterns of injury are (a) amputation to tips or part of fingers when the victim endeavours to clear the blades of a rotary lawn mower before the blades have ceased rotating, or before the mower is turned off; (b) slipping on wet grass while wearing inadequate foot protection, an injury which leads to amputation of the toes or feet; and (c) foreign bodies which are thrown into the eye.

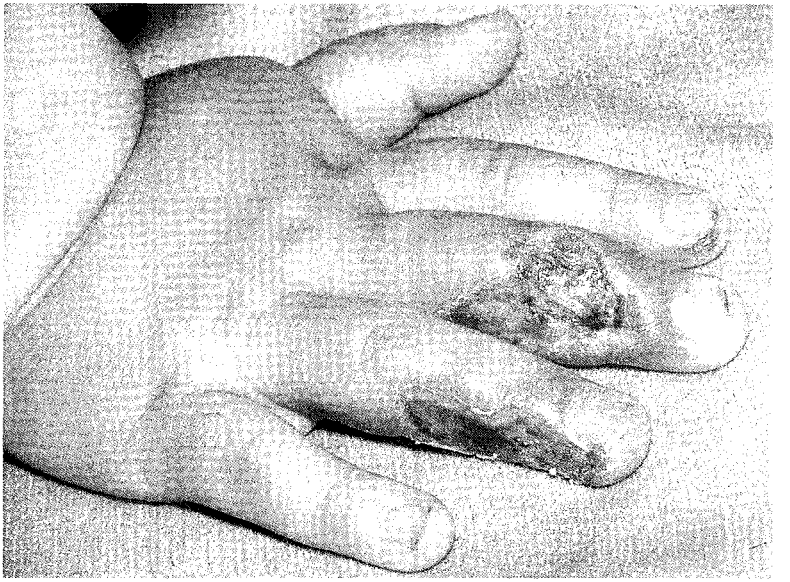
Multiple injuries from run over accidents (involving children) and ride-on mowers have become a recent problem with the production of multiple fractures and extensive widespread soft tissue injury. The main First Aid problem in this latter situation is the control of haemorrhage. Of lesser frequency (but of greater severity) are the electrical injuries sustained from inadequate earthing of electrical lawn mowers, and electrical injuries which follow the use of unsatisfactory extension leads.

PREVENTION. If one has an electric mower, buy a circuit breaker today for the domestic house supply. Never, ever, allow children near ride-on mowers. Wear stout shoes when mowing. Never ever mow with the stone guard (or grass catcher) not in place.

FIRST AID. In the case of electric lawn mowers, the first thing to do is to switch off the power. When toes or fingers have been amputated, foreign material may be mixed up with the wound. (The risk of tetanus must be constantly borne in mind.) Foreign material such as dirt, grass or clothing should be quickly removed from the wound, and the wound then covered with as clean a dressing as possible, haemorrhage being controlled by direct pressure for five to ten minutes by the clock. If there is a simple foreign body sitting on the eye, apart from one on the cornea, it can be safely removed with a damp cotton bud or the end of a handkerchief. If a foreign body is embedded in the eye, the victim may complain of hot fluid running down the cheek, even if the splinter itself cannot be seen. In the case of all foreign bodies flung into the eye in this type of accident, the eye should be padded and bandaged, the patient kept at rest, and transported urgently to medical aid. It is important that the patient does not strain, and everything done to lessen the raised pressure that occurs if coughing and vomiting should ensue.



Left thigh of a young girl who fell from a ride-on mower, and became entangled in the blades.



Right hand of a toddler who put her hand under a lawn mower whilst the blades were whirling.

LETHAL BOX JELLYFISH

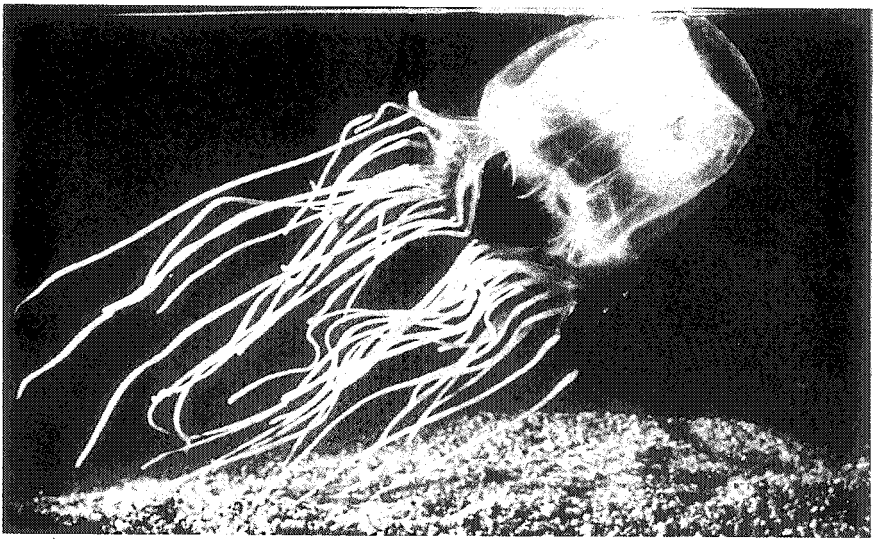
Chironex fleckeri

John Williamson

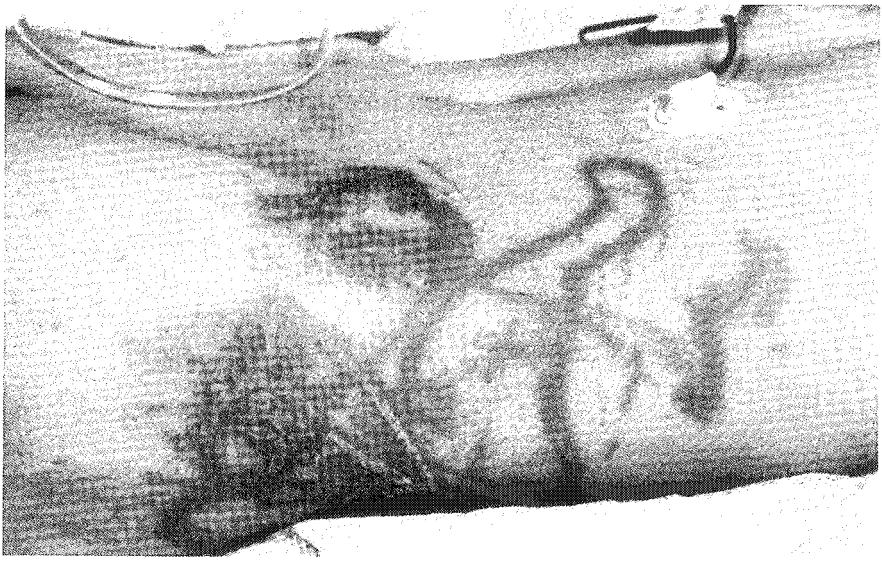
The Box Jellyfish (*Chironex fleckeri*) is the world's most venomous animal. It continues to kill Australians (sometimes within a few minutes) and both *preventive* and *reactive* First Aid will save lives on nothern beaches. The creature is found throughout the Indo-Pacific regions, and occurs particularly in still water mainland (non-surfing) salt water beaches in the summer months. Terrible pain and collapse are the features of stings from the large Australian species of Box Jellyfish (*Chironex* and *Chiropsalmus*). Because of the pain, behaviour may be irrational, and drowning (before the patient can be got to the beach) is always a risk. The stung area quickly develops a characteristic whitish ladder-like appearance outlining the course of the tentacles.

PREVENTION. Never swim on northern Australian mainland still-water sea beaches in the summer months unless (a) one has a buddy on the beach, and the beach is patrolled by the Surf Life Saving Association of Australia, (b) one is within a Stinger-proof Net, or (c) one is wearing a Stinger protective suit. Unlike other jellyfish, Box Jellyfish possess primitive eyes, and will move away from a human in the water if given time to do so. For this reason never rush blindly into the water or dive in, but wade in slowly.

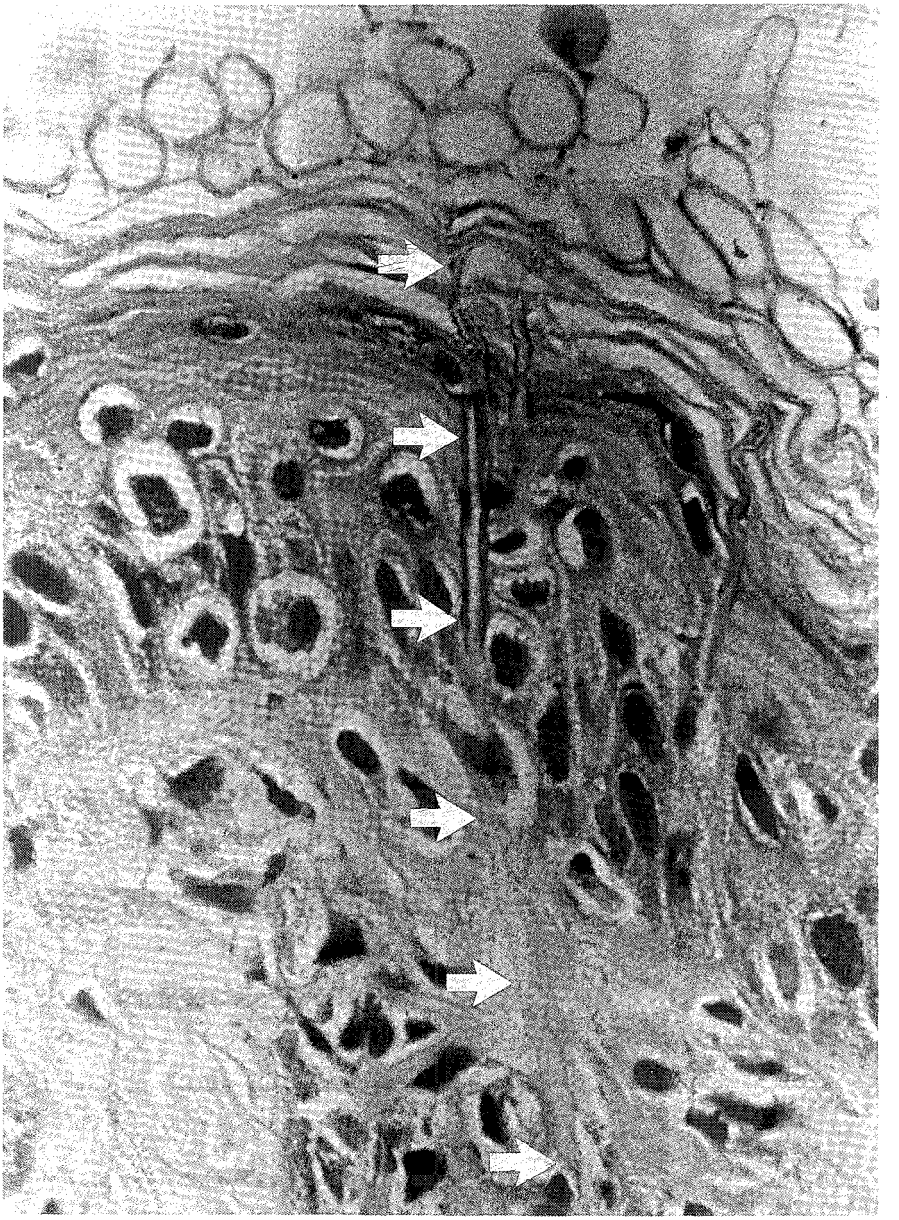
FIRST AID. Rescue the victim and restrain him or her from tearing at the stung area. Initial First Aid is of supreme importance. Those on the spot play the most vital role. Douse the stung area with vinegar (4 to 6% acetic acid), at the same time following the standard Basic Life Support ABC procedure (observing the victim's Airway, Breathing and Circulation continuously). Never leave the victim, even if conscious. Apply pressure immobilisation over the area which has been treated with vinegar. Shout for help and send for medical assistance and Box Jellyfish anti-venom immediately. Apply a compression bandage, with splinting to reduce movement, and hence the absorption of venom. Douse the compressive bandage to over-saturation with vinegar. If vinegar is not available, apply the compressive bandage, with splinting immobilisation, only *above* the sting. Pull off any adherent tentacles with fingers protected by a handkerchief or cloth.



The Box Jellyfish, Chironex fleckeri, of Northern Australian waters. Photo, courtesy of Mr Charles Fitzpatrick, of Townsville.



Typical skin lesions caused by Chironex fleckeri. Case of a young man successfully resuscitated on the beach and at Cairns Base Hospital, Queensland. Photo, courtesy of Dr Ian Audley, of Cairns.



Microscopic appearance of the skin from a fatal case of Chironex fleckeri, (Box Jellyfish) envenomation. Note the nematocyst (stinging cell) threads (arrowed) penetrating deeply into the skin. Photo, courtesy of Dr Geoff Strutton, of Brisbane.

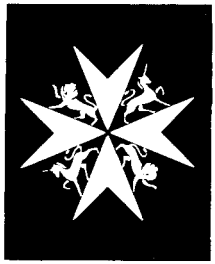
SCALDS

Fred Leditschke and Stuart Pegg

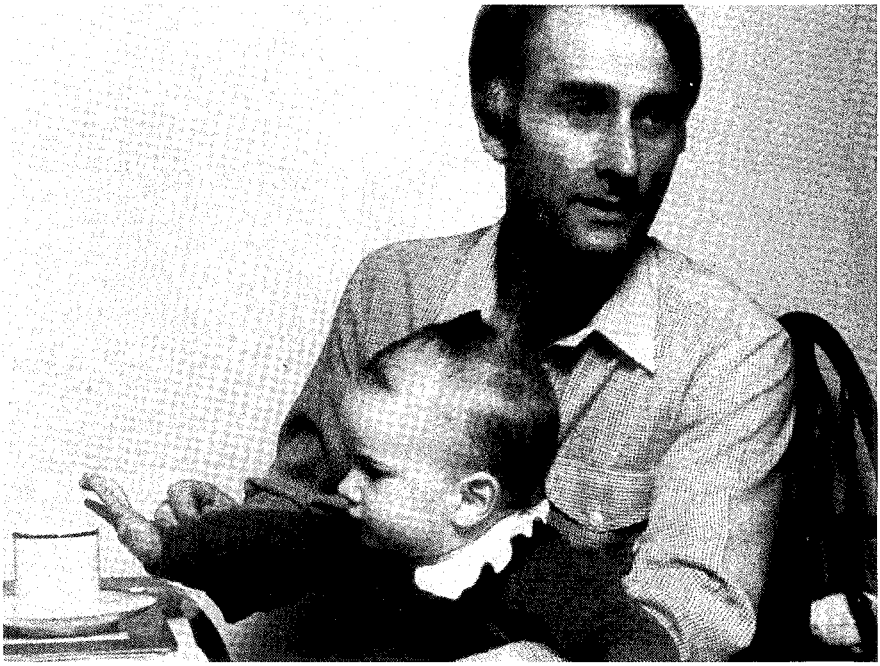
Scalds are the commonest cause of hospital admission due to thermal injury, in the childhood years. Children two years and under are at particular risk of scalds from hot beverages. Spilled hot tea and coffee and teapot upsets cause one-third of cases. Children scalded in the family bathtub sustain more extensive life threatening burns, often requiring skin grafts. Hot water above 45°C will cause skin burns in children. Most home hot water systems are set at 70°C and will cause serious burns in children, with only two seconds or more contact.

PREVENTION. Avoid drinking a cup of tea or coffee whilst nursing an infant. Be aware that two to three year olds are exploring their environment constantly, and will endeavour to pull teapots, kettles and saucepans down to their level to explore the contents. Buy, and be an advocate for stove guards to prevent saucepans and kettles being pulled to the floor. Buy, and promote the use of concertina cords on electric jugs and kettles. Promote the setting of domestic hot water systems to deliver water no hotter than 55°C. When running a bath for children, the rule is "cold in first", and never leave children under three years of age unattended in the bath.

FIRST AID. Immediately cool the scalded area by application of cold tap water for five to ten minutes. Cover the scalded area with the cleanest fabric available, and seek medical aid.



THE COMMONEST CAUSE OF SCALDING IN CHILDHOOD IS SHOWN HERE.



Water which is hotter than 45°C will cause burns to the delicate skin of children. Many teapots and cups of hot beverages contain fluids hotter than 70°C. The floor is a dirtier but safer place than a parent's lap when tea and coffee are on the table.

SKATEBOARDING IS A DESIRABLE SPORT FOR CHILDREN.
Preventive First Aid means that a helmet and knee-guards are not "optional extras", but form an intrinsic part of the skateboarder's basic equipment.

SKATEBOARD INJURIES

Di Nailon and James Nixon

Skateboarding has gained much popularity in recent years, especially among adolescent boys. The growth of skateboarding has been reflected in the alarming increase in injuries sustained, mainly among the novice enthusiasts. Eighty-five percent of injuries are to boys and the vast majority of these are in the 10–14 year age group. Injuries usually occur as a result of a fall from the board. Most often the rider is relatively inexperienced and with inadequate control of the board. Crashes into cars and roadside objects are another cause of injury. Fractures comprise the major serious injury with forearm fractures of the radius or ulna bones being by far the most common (over 60%) followed by fractures of the wrist (10%). Cuts and lacerations are common – especially to the head. Wrist sprains are very common. Very few skateboard injuries occur to skaters whilst they are riding on formal sports areas such as designated ramps. The most likely sites for accidents are public roads and driveways, followed by the child's own backyard and the footpaths. Deaths have occurred following collision between skateboarders and motor vehicles.

PREVENTION. Skateboarding is fun and a desirable pastime for children of both sexes. Skateboarders should check the area in which they are riding to ensure that the surface will not contribute to instability that will lead to a fall. Riding should be undertaken on a surface or incline that is compatible with the rider's skill. Skateboards and motor vehicles and pedestrian traffic do not mix. While the protective equipment available for knees and elbows will not prevent fractures, they will reduce the severity of injury from the spills inevitable in learning this complex skill. The use of approved sports helmets to reduce the likelihood of serious head injury makes good sense as does the use of adequate nonslip footwear.

FIRST AID. If a skateboarder is injured on the road it may be necessary to move the victim to a place of safety. The prevention of secondary injury to the victim or the First Aiders or ambulance personnel is important. If the victim is conscious, make him or her comfortable, stop bleeding by direct pressure, and splint injured limbs before moving. If the victim is unconscious, follow the ABC of Basic Life Support – maintenance of the Airway, Breathing support if required, and maintenance of the Circulation.

SNAKEBITE

Jeanette Covacevich and Peter Richardson

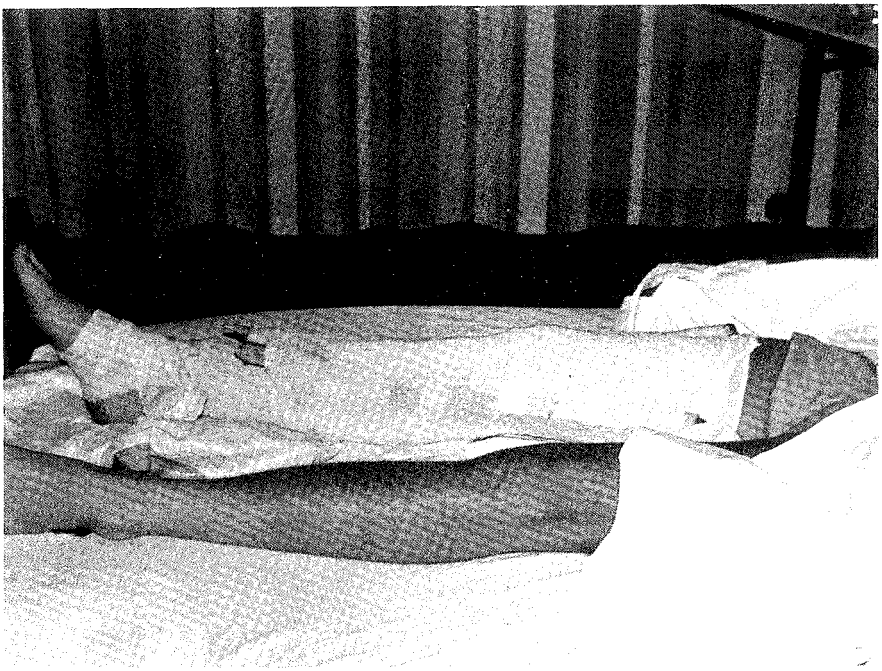
Snakebite is a not uncommon injury in all Australian States. Snakebite syndromes include those involving children, innocent adults (rarely), the male "big game hunter", reptile fanciers and herpetologists. Snakes are not aggressive. All will bite humans, but in defence, and must be provoked to such a potentially dangerous, drastic behaviour. Before it bites, a snake will usually give some warning. This may involve hissing, adopting an aggressive posture, lunging with mouth closed or open, or even inflicting a "dry" bite.

Some species can be provoked to bite very easily. The Taipans, for example, will sometimes bite if an "aggressor" moves just a little too close. Other species, like the Brown Snakes, readily adopt their defensive stance, but usually bite only after continued aggravation.

The type of bite varies with the species and the circumstances. It may be a warning or a "half-hearted" bite or it may be a "full" bite either to stop a prey animal in its tracks, or in defence. Taipans snap and release, Brown Snakes bite and coil, Mulga Snakes and Tigers bite, hang on, and even chew a victim.

Venom has three functions. It immobilises prey, it begins to digest it, and is useful in defence. Once someone has been bitten by a venomous snake, three factors are vital in determining its likely effects – the type of venom, how much was injected, and the application of skilled First Aid.

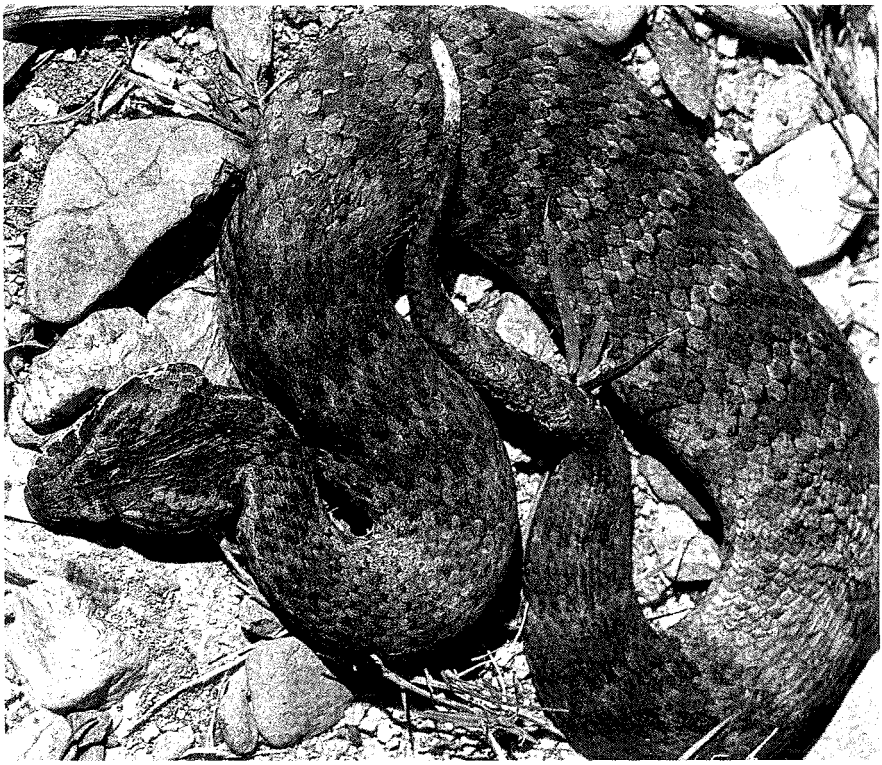
PREVENTION. Almost all snakebites are preventable. If one does not handle snakes, if sensible footwear is worn in the bush and in green suburbia and if one is observant, snakebite need not occur.



The right lower limb of a victim of a (sea-snake) bite, with compression bandaging and splinting correctly applied.
Photo, courtesy of Dr Chris Acott of Rockhampton.

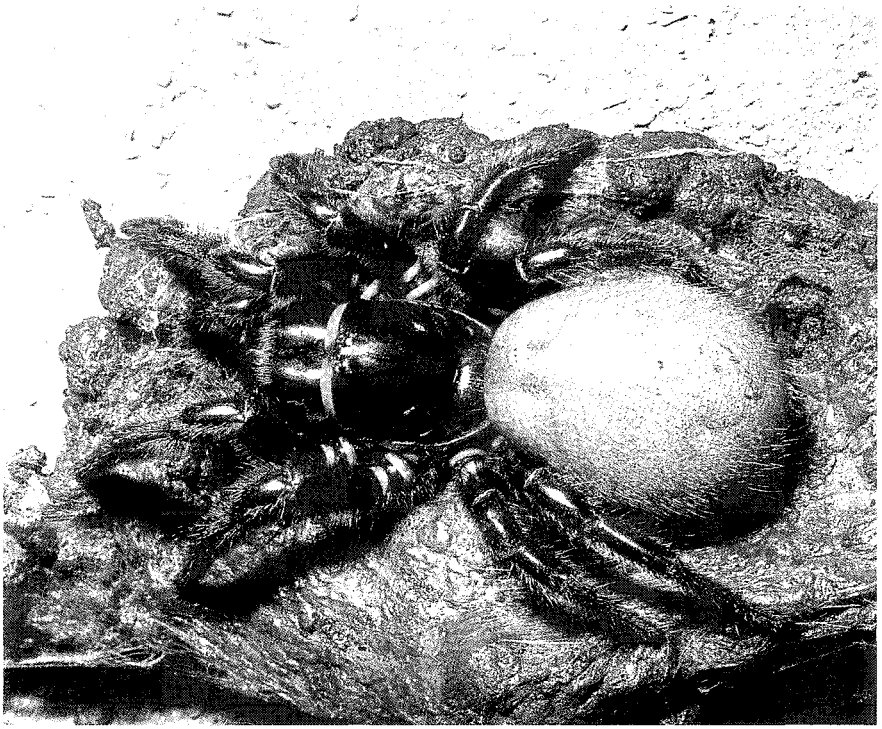
FIRST AID. The drill is –

- Grasp the bitten site tightly whilst a compressive bandage is prepared.
- Immediately apply a *tight* compressive bandage to cover as much of the bitten limb as possible (90% of bites are on a limb).
- Splint the bandaged limb so that movement can not occur.
- Keep the victim at rest.
- Write a note about the time, circumstances of the bite and First Aid given, and attach this to the victim.
- The most experienced First Aider should remain with the victim whilst transport is being organised.
- Seek medical aid.
- If respiration fails, commence expired air resuscitation. If the heart stops, cardiopulmonary resuscitation must be commenced.



PREVENTION OF SNAKEBITE

The Australian Death Adder, Acanthopis antarcticus, in typical pose. Virtually all cases of adult snakebite are preventable by not handling snakes and by wearing sensible footwear.



PREVENTION OF SPIDER BITES

The Australian Tree Funnel-web Spider, Hadronyche, found in eastern Australian States and in South Australia.
This female specimen is from Cooroy, Queensland.

DELIBERATE HANDLING OF SPIDERS IS ASKING FOR TROUBLE.

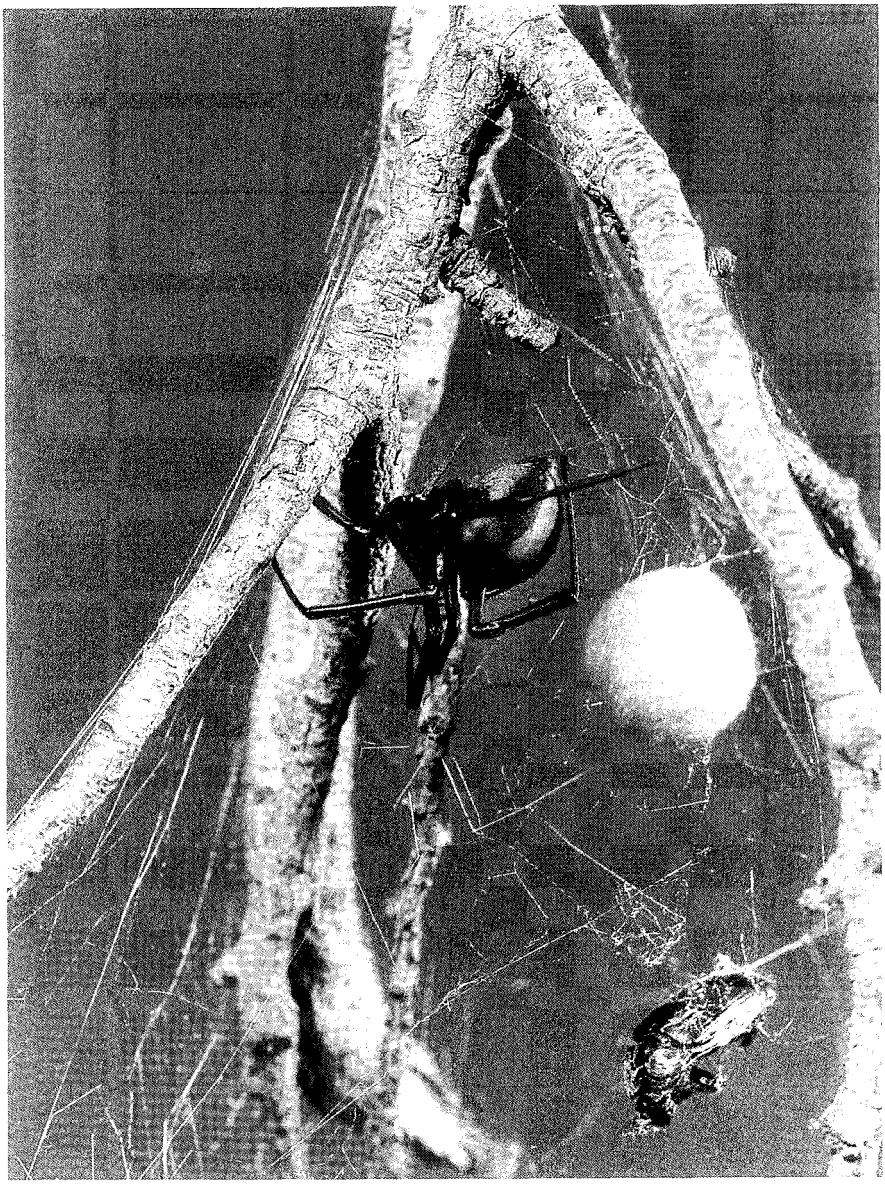
SPIDER BITES AND SCORPION STINGS

Robert Raven and John Pearn

All spiders possess venom, a necessary weapon for them to kill and catch prey. Most spiders can deliver a bite which produces local symptoms, and spider bites are common. Fortunately, only three Australian spiders are a real medical problem. The Red-back Spider (*Latrodectus*) is very common, and although it does not kill humans, it can cause serious envenomation. The Funnel-web Spiders are dangerous and although not widespread, are potentially lethal. The Sydney Funnel-web (*Atrax robustus*) is found only in the Sydney region. The Tree Funnel-web Spiders (*Hadronyche*) are found in many parts of Eastern Australia, and in South Australia. The third potentially dangerous spider, the Fiddle-back (*Loxosceles*), an introduced species, is fortunately uncommon. Australian scorpions are found throughout the country, They should be treated with respect, but unlike their Asian and South American cousins they never cause fatalities.

PREVENTION. Most spider bites cannot be prevented and occur in the course of normal activities of gardening or work. Most spiders live and hunt in dark recesses, under logs and in decomposing foliage – always look before plunging one's bare hand into favorite spider haunts. Although most spiders will not bite humans, even if provoked, handling them deliberately is asking for trouble. Red-back Spiders should be discouraged from houses, especially where there are children. It is important to remember that most spiders are friends, harmless and useful, and form an important part of the ecosystem in which we live.

FIRST AID. If there is any doubt that a bite has been caused by a Funnel-web Spider, a compressive bandage and splint should be applied, and medical aid sought. All other spider bites should be treated with simple ice packs, and simple pain killing tablets (e.g. (paracetamol, codeine, or aspirin). If generalised symptoms occur – dizziness, fainting, nausea, abdominal pain, sweating, tremor – medical aid must be sought.



THE RED-BACK SPIDER (Latrodectus sp)

This spider is the most frequent cause of bites requiring medical attention in Australia. All spiders have venom; the best prevention is not to handle them.

TOXIC FUNGI – Toadstools and Mushrooms

Tony Young

In Australia mortality rates from eating toxic mushrooms are very low. The symptoms are usually more or less severe stomach pain, vomiting and diarrhoea. Although many species have gastro-intestinal irritants, a good number of cases involve the species *Agaricus xanthoderma* and *Chlorophyllum molybdites*. Serious poisonings involving liver or (rarely) kidney damage are fortunately uncommon, but the genera in these cases are almost always *Amanita, Lepiota,* or *Cortinarius*. A number of species contain hallucinants.

PREVENTION. Rules for eating fungi are difficult to formulate because there are good eating species which break every rule; the intending consumer has to recognise the poisonous species just as the difference between edible lettuce and poisonous oleander leaves is known. However, for those people who must eat wild fungi, the possibility of poisoning can be greatly reduced by noting these simple rules –

(a) If the fungus is being eaten for the first time, always eat very little to allow for possible allergy reactions, and always reserve a specimen for later identification, just in case something has gone wrong!

(b) Never eat any obviously old specimens that are "past their prime", we would never do this with meat, and fungi can be just as devastating in their effects.

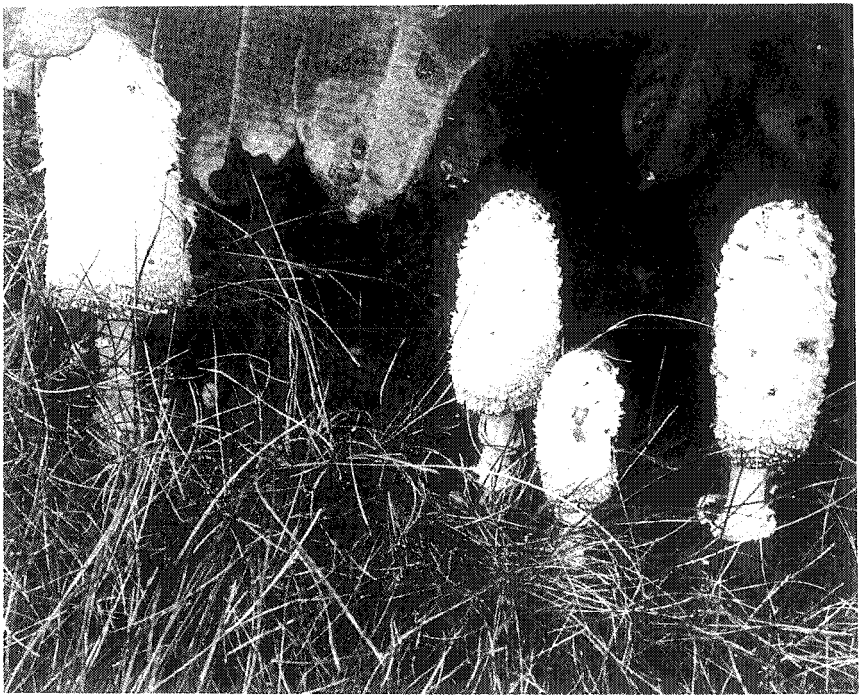
(c) Never eat any specimens with either pure white or green tinted gills.

(d) Reject any specimens which are growing on dung.

(e) If the mushrooms have a strong smell of iodine, disinfectant, or an odour suggestive of hospital medicines when either broken or during cooking, they should be discarded.

(f) Never eat mushrooms in the button stage unless they are gathered in the middle of wide grassland, and when cut in half, they clearly show pink gills.

(g) All true puffballs are edible.

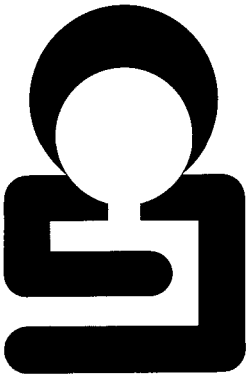


THE "SHAGGY CAP" OR "LAWYER'S WIG" – Coprinus comatus –
an excellent eating fungus distributed throughout Australia.

NEVER experiment with eating fungi unless an expert has declared it as safe.
NEVER eat specimens which are unidentified, are old, have either
pure white or green gills, have a strong odour,
or which are growing on dung.

FIRST AID. If ingestion of a toxic species has occurred, the best immediate treatment is to induce vomiting with any suitable medication. Gastrointestinal irritant species will usually cause vomiting fairly quickly and will then empty the stomach quite effectively by themselves, but some do not and only cause symptoms about two or three hours later.

- Seek medical aid in every case of mushroom poisoning.
- Hospital treatments will include intravenous rehydration, halting of the vomiting and diarrhoea, and the use of dialysis if kidney and liver damage have ensued.
- If a patient is hallucinating, induce vomiting if this has just started.
- Stay with the patient in darkened quiet surroundings (giving verbal reassurance) whilst medical aid is sought.



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