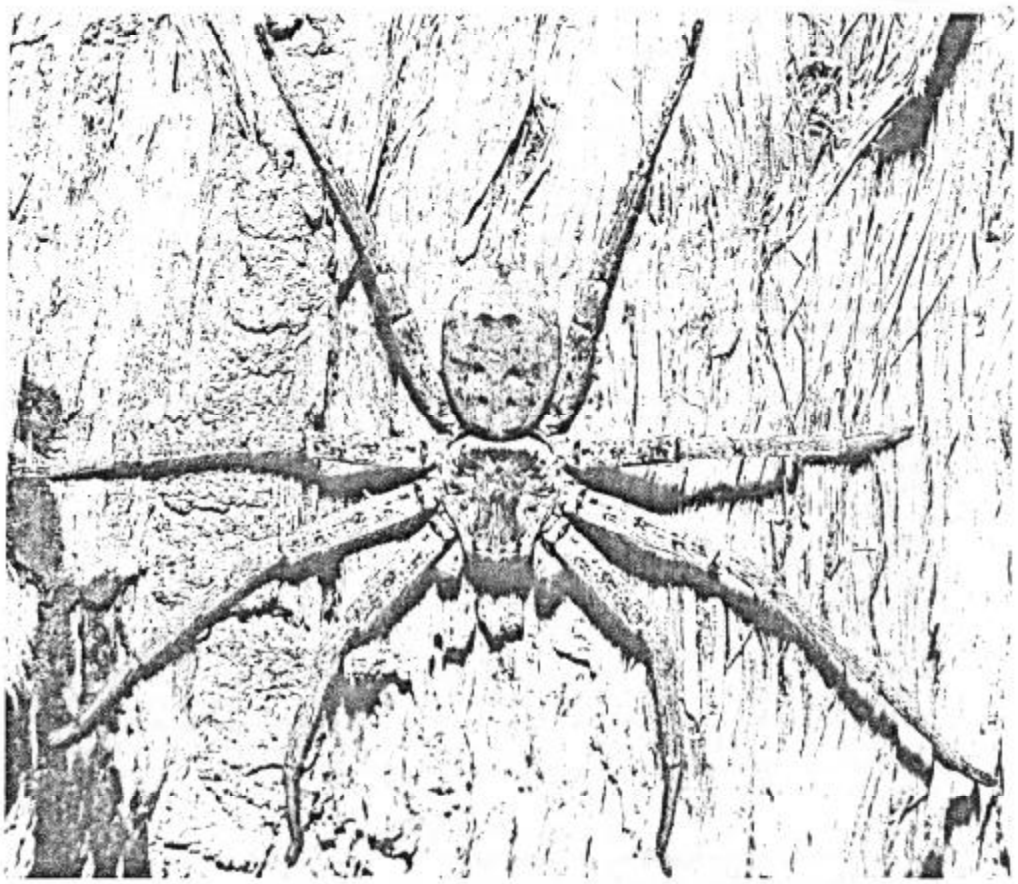
AUSTRALASIAN



ARACHNOLOGY:2

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NEWSLETTER OF THE AUSTRALASIAN ARACHNOLOGICAL SOCIETY

MEMBERSHIP

The Society has now about 60 members, some of which are overseas arachnologists. Membership fees: for Australian members are $2; for New Zealand and New Guinea members Aust$3; and for other members Aust $5. Information concerning membership is obtainable from the Editor, P.O.Box 573, FORTITUDE VALLEY, 4006, Q., Australia.

BOOKS

Dr R.V. Southcott, 5 Taylors Rd., MITCHAM, 5062, Sth Aust., has edited his paper, Arachnidism and Allied Syndromes in the Australian Region, and republished it as a separately bound booklet. He has donated a copy to our newly initiated library. I recommend the booklet to Australian professionals responsible for public enquiries on arachnids. Although no keys are provided, photographs of the commonly encountered spiders and valuable syntheses on the reactions to bites of these spiders are given. The booklet may be purchased from Dr Southcott for $2 (including postage within Australia).

A second edition of "American Spiders" by Dr W.J. Gertsch has been reprinted. Despite the title of the book, the author discusses spiders from other parts of the world. I found several chapters especially interesting and the Amerindian legends involving spiders were most enjoyable. I thoroughly commend the book to any arachnologist

American Spiders, second edition, by W.J. Gertsch, Ph.D., 288 pages and index; fully illustrated; published January 1979 by Van Nostrand Reinhold.

PEOPLE

Dr Gordon Gordh, Microhymenoptera systematist who is interested in parasites of eggs of Uloboridae spent Winter 1979 to January 1980 at the Queensland Museum. He will return for 2 weeks beginning August 10, 1980.

Dr Robert Jackson, salticid spider behaviourist, formerly of Virginia, recently of the Department of Zoology, University of Canterbury, New Zealand, visited Australia from December 1979 to February 1980. His visit was part of a joint study with Dr David Blest, Australian National University, Canberra, Robert was fascinated by the Australian spider fauna from Cairns to Canberra, and we shall hear more of this in publications ensuing from his research.

Drs Valerie Davies, Curator of Arachnids, Queensland Museum, Brisbane, Barbara Main, Department of Zoology, University of Western Australia, Nedlands, and Ray Forster, Director, Otago Museum, Dunedin, will present papers at the International Congress on Arachnology in Vienna in July this year.

Robert Raven, (the editor) Ph.D. student of Australian diplurid systematics, and his wife Debbie, will be travelling south by car to Tasmania in July 1980. My apologies to South Australia which must be missed. During the trip, Robert hopes to meet as many arachnologists and collect as many spiders as time permits.

POSTGRADUATE RESEARCH

Mark Harvey, Department of Zoology, Monash University, Melbourne: systematics of the pseudoscorpion genus Synsphyronus and other Garypidae.

Andy Austin, Department of Entomology, Waite Agricultural Research Institute, Adelaide: insect parasitism of spider eggs.

Vince Salanitri, Queensland Museum, Brisbane: intra- and interspecific variation and population dynamics of Stanwellia and other diplurids.

Robert Raven, Queensland Museum, Brisbane: systematics, evolution and biogeography of Australian Dipluridae.

Mark Stowe, Harvard University, Cambridge, Ma., U.S.A.: comparative study of bolas spiders.

Grant Butt, Department of Zoology, University of Canterbury, N.Z.: physiology and Porrhothele.

Simon Pollard,same address:behavioural ecology of Clubionidae.
David Harding,same address:display behaviour of Holoplatys.

Michael Gray,Australian Museum,Sydney:systematics and biology of Atrax.

As well as the above students,several other arachnologists have ongoing research programmes; the following publications reveal some of these studies.

PUBLICATIONS ON AUSTRALASIAN ARACHNIDA FOR THE YEAR 1979 TO PRESENT.

Austin,A.D. & A.D. Blest.1979. The biology of two Australian species of dinopid spider. J. Zool.,Lond. (1979)189:145-156.

Blest,A.D. 1979. The Spiders of New Zealand. Part V.Linyphiidae-Mynogleninae. Bull. Otago Mus.5:94-172.

Forster,L.M.1979. Visual mechanisms of hunting behaviour in Trite planiceps,a jumping spider(Araneae:Salticidae). N.Z. J. Zool.6:79-93.

Forster,L.M.& B.F.J. Manly.1979. A stochastic model for the predatory behaviouron naive spiderlings. Biom. J.21(2):115-22.

Forster,R.R.1979. The Spiders of New Zealand. Part V. Cycloctenidae,Gnaphosidae, Clubionidae. Bull. Otago Mus. 5:1-94.

Forster,R.R. & M.R. Gray.1980. Progradungula, a new cribellate genus of the spider family Gradungulidae(Araneae,Gradungulidae). Aust. J. Zool.27(6):1051-71.

Hickman,V.V.1979. Some Tasmanian spiders of the families Oonopidae,Anapidae and Mysmenidae. Pap. Proc. R. Soc. Tasm.113:53-79.

Laing,D.J. 1979. Studies on the populations of the tunnel web spider Porrhothele antipodiana. Part 2. Tuatara 24(1):1-21.

Lehtinen,P.T. & H.Hippa.1979. Spiders of the Oriental-Australian region.I. Lycosidae:Venoniinae and Zoicinae. Ann. Zool. Fennici 16:1-22.

Mackay,R.J. 1979. The Wolf Spiders of Australia.9.Pardosa serrata (L.Koch,1877). Mem. Qd. Mus. 19(3):255-9.

1979. The Wolf Spiders of Australia.10.A new species of the genus Flanona Simon. Ibid:231-5.

1979. The Wolf Spiders of Australia.11.A new species from Lord Howe Island.Ibid:237-40.

1979. The Wolf Spiders of Australia.12.Descriptions of some Western Australian species. Ibid:241-75.

1979. The Wolf Spiders of Australia.13.The genus Trochosa.Ibid:277-98.

Main,B.Y. 1979.An unusual method of soil dispersal during burrow excavation by the trap-door spider Anidiops villosus (Rainbow). West. Aust. Nat.14(5):115-7.

Opell,B.D.1979. Revision of genera and tropical American species of the spider family Uloboridae. Bull. Mus. Comp. Zool. 148(10):443-549.

Platnick,N.I. 1979. A new Symphytognatha from New Guinea (Araneae,Symphytognathidae). Bull. Brit. Arach. Soc.4(8):337-8.

Platnick,N.I. & M.U. Shadab.1979.A revision of the spider genera Anapisona and Pseudanapis (Araneae,Anapidae). Amer. Mus. Novit. 2672:1-20.

Raven,R.J.1979. Systematics of the mygalomorph spider genus Masteria(Masteriinae: Arachnida). Aust. J. Zool.27(4):623-36.

Robinson,M.H.& Y.D.Lubin.1979.Specialists and generalists:the biology of some weaving spiders of Papua New Guinea. Part 1.Herennia ornatissima,Argiope ocyaloides,Arachnura melanura (Araneae:Araneidae).Pacif. Insects 21:97-132.

Robinson,M.H.& Y.D.Lubin.1979.Specialists and generalists:the biology of some web weaving spiders of Papua New Guinea.Part II.Psechrus argentatus and Fecenia sp. (Araneae:Psechridae).Pacif. Insects 21:133-164.

Robinson,M.H.&B.Robinson.1980. Comparative studies of courtship and mating behaviour of tropical araneid spiders. Pacif. Insects Monograph 36:1-27.

The editor would appreciate authors sending either the publications or references of further papers involving Australasian arachnids for the Society library.

REQUESTS FOR MATERIAL

1.Any parasites,i.e. Hymenoptera,Diptera & Neuroptera,reared from the egg-sacs or eggs of spiders., If you are collecting spiders and their egg-sacs and you find that the egg masses are parasitized,I would greatly appreciate any material that anyone could send me. The name of the spider,or preferably the specimen would also be appreciated as I am trying to collate host records for Australia.- Andy Austin, Department of Entomology,Waite Agricultural Research Institute,Glen Osmond,5064,S.A.

2.Identifications will be provided for any Australian pseudoscorpions sent to Mark Harvey,Department of Zoology,Monash University,Clayton,3168,Vic.

3.Ph.D. candidate interested in obtaining live individuals (or egg-cases)of spiders of the genera Celaenia,Dichrostichus,Ordgarius,Poecilopachys,Pasilobas,for comparative study of bolas('magnificent') spiders and their relatives:histology & moth attraction.I will reimburse for postage. Should be sent airmail on a Monday in vial-mailing tube combination that prevents crushing of spiders,dehydration (moist newsprint is better than moist cotton which may crush the spiders), and allows spider to breathe.-Mark Stowe,Rm 506,Museum of Comparative Zoology,Harvard University,Cambridge, Ma.02138,U.S.A. Note:Australian members should contact the editor to ensure customs declarations are completed before exporting spiders.

WANTED TO BUY: A copy of McKeown's "Australian Spiders"(Angus & Robertson,1963) for a reasonable price. If you have a copy of this book and you wish to sell it or you see it in a bookstore anywhere,please let me know.-Andy Austin,see above address.

LETTERS TO THE EDITOR

Rather than reprint the full letter,the main content of the letter and its author is given.

Could help me with any information or literature or even observations on competition between different species or densities of spiders from members of the Society.-Chris Huxley,Univ. of N.S.W., & 37 Bass Drive,Baulkham Hills 2153,N.S.W.

Apart from suggesting you undertake standard searches through biological abstracting journals under the key words you use,the best I can do is print you request.-Ed

I would be interested to know how new species are classified and officially given their names,and with what equipment and techniques people use to photograph and study specimens, and methods of preservation etc.-Jeff Kupke,F1,3 Cherry St,Pearce, 2607,A.C.T.

The naming of new species basically involves three processes:(i)checking the literature to see whether a recent publication treats species in the group concerned; (ii)if such a work exists,check your spider against all the characters used by the authority in the paper;if the work does not exist,the original specimens upon which each species in the group is based,the holotypes,must be checked against your spider; (iii) describe,figure and name the spider and submit the paper for publication in a scientific journal. Usually step (ii) is abbreviated,but the most important aspect is that you must be experienced in taxonomy. Briefly, that is the oversimplified process. Numerous books have been written on your first question. Photographic tips will appear in later newsletters,and methods of preservation ,etc, are in this newsletter.-Ed.

Could you let me know of any studies giving lists of desert spiders,apart from Barbara Main's Wongan Hill's survey.-Owen Nichols,20 Abercairn Way,Lynwood 6155,W.A.

The following references are pertinent,and I add the reference you refer to since some east coastal arachnologists may not be aware that a new species was described in it.-Ed.

Hickman,V.V. 1944. The Simpson Desert Expedition 1939. Scientific Reports No.1. Biology,Scorpions & Spiders. Trans. R.Soc. S.A.68(1):18-48.

Hogg,H.R. 1896. Araneidae.In,The Report of the Horn Expedition to Central Australia.Part 2. Zoology.pp.309-56.

Main,B.Y. 1977. Spiders.In,The Natural History of Wongan Hills.Western Australian Naturalists Handbook No.11.

Strand,E.1913. Spiders of Central Australia. Zool. Jahrb. Abt. f. Syst.Jena 35: 599-624.

I suggest that keys to families,genera,etc. should not be included in the newsletter but printed separately by the Society -Andy Austin.

The newsletter will be available for purchase as a separate :membership in the

Society is not necessary to receive it;if availability is your main concern. I have already begun making some of these keys but the task is enormous and it could be years before all groups are completed. My thought was that as keys to groups were completed, they could be included in the newsletter. At a later stage,theycould be coalesced and formally published. I will be interested to hear from other members about which is most preferrable. However,the Australian species list of spiders must be a separate article.-Ed.

APOLOGIES FROM THE EDITOR: In the previous AA, I stated that Australian arachnology was worse off than Australian entomology. Murray Upton,Manager, Australian National Insect Collection,Canberra,has kindly corrected this error. In fact,only 50% of Australia's insect fauna is described, and there are far fewer entomological taxonomists per taxon than arachnologists.

In response to numerous questions concerning methods of preservation of spiders,I prepared an article for the newsletter. However,David Rentz,C.S.I.R.O., Division of Entomology,Canberra has also submitted a similar article,although his aim is more ambitious than most:to retain life colour in preserved specimens.

SOME IDEAS ON THE PRESERVATION OF SPIDERS

by D.C.F.Rentz,CSIRO,Division of Entomology,P.O.Box 1700,CANBERRA,A.C.T.

The 'eye appeal' of any kind of collection can be a valuable asset in tempting interested persons to make such collections. Spiders have an exceptional amount of eye appeal in life,but nothing can be more discouraging than to see them once they are preserved:they seldom resemble their living counterparts;and they become distorted,shrivelled and discoloured. Virtually all textbooks on spiders provide no information on the life-like preservation of spiders. Even the latest contribution to the book market in Australia recommends preservation in 70% alcohol. With such treatment,most spiders lose most of their life-like characteristics.

Being a professional entomologist involved in the study of Orthoptera (grasshopper,crickets,and allies),I have faced the problem of preservation of soft-bodied species. Certain crickets,such as cave and camel crickets (Rhaphidophoridae,king crickets (Stenopelmatidae),and certain katydids (Tettigoniidae) become little more than shrivelled bits and pieces when pinned. Alcoholic preservation more often than not darkens and distorts the specimens, But recently,while I was working for the California Academy of Sciences in San Francisco,Dr Stanley Williams,a scorpion specialist,showed me a technique he uses for the liquid preservation of spiders,scorpions and other arachnids. It gives such remarkable results that I now use it for all soft-bodied orthopteroids which cannot be routinely pinned. Perfect preservation is the reward: structure,colour,and pattern are preserved as in life. Results are so impressive that I now designate liquid-preserved orthopteroids as holotypes as the condition warrants it.

The miracle mixture is called Pampel's Fixative (formula given below). In the field,specimens are collected directly into the fixative where they should remain for 8-12 hours (or maximally overnight). The specimens are then transferred to 70% ethyl alcohol for permanent storage. The fixative may be used several times before it loses its qualities. During the first 30 minutes or so, the legs can be outstretched or positioned as desired for subsequent examination. A piece of polyethylene foam and some bracing pins are useful in positioning larger specimens. After about an hour or so,the legs tend to become rigid in position,but they can be moved with care. The bodies of spiders and scorpions do not distort or rupture ;blacks,greys,and browns are preserved perfectly;greens, yellows, and some reds fade eventually;but in all other respects,the specimens are life-like. The only precaution is to ensure that the fixative and specimens are not permitted to overheat in the sun and turn reddish brown;this does not occur normally unless the vial or collecting kit is left in the sun.

Since Pampel's Fixative preserves spiders so perfectly,I have continued to collect spiders when I am in the field looking for Orthoptera. As a result,the Australian National Insect Collection has a growing collection of well preserved,but as yet unstudied, spiders and relatives.

I would be interested in hearing the views of arachnologists on this

preservation technique. Perhaps there are better ways to get the results we want. It would be most helpful if they could be presented in this newsletter so that amateur and professional alike could benefit from them.

PAMPELS FIXATIVE

Glacial acetic acid	4 parts
Formalin (full strength)	6 parts
Ethanol (70%)	15 parts
Distilled water	30 parts

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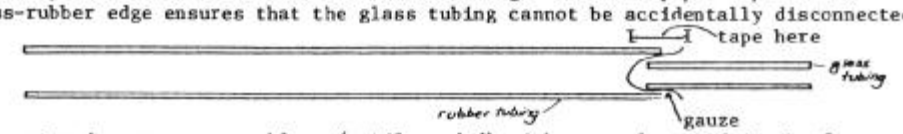
THE COLLECTION, GENERAL HANDLING AND PRESERVATION OF SPIDERS

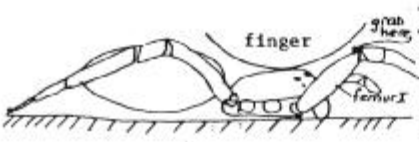
Robert J. Raven

Since the first time I clumsily man-handled a *Dolomedes* into a jar of preservative, I have experimented with many ways of collecting spiders. Forceps were of limited value with large slow-moving spiders (of which there are few). Then I tried glass or plastic vials and plastic bags. The bags were most useful for the short term storage of large pisaurids or sparassids, but large burrowing mygalomorphs, like *Selenocosmia*, cannot be trusted for too long because they gradually claw a hole in the bag and escape to the consternation of all. Fast, small spiders were the main problem. Vials were too delicate, and the spider can be accidentally squashed by the rim when the vial is placed over the spider. Also, using a vial, irregularities in logs or rocks provide escape routes for the spider. So, when Dr Valerie Davies, Curator of Arachnids, Queensland Museum, introduced me to the pooter, I saw the solution to my biggest problem. The pooter, of myrmecological origins (with thanks to Dr Bob Taylor), consists of a length of rubber or soft plastic tubing (bore: about 8mm; wall: about 1mm), a piece of cotton gauze, and a short length of glass tubing about the same cross-section as the rubber tubing. The glass tubing is open at both ends which have been heated to remove sharp edges. The gauze is placed over one end of the glass tubing which is then pressed into one end of the rubber tubing. Adhesive paper tape at the glass-rubber edge ensures that the glass tubing cannot be accidentally disconnected.



The pooter is worn as a necklace (until needed) with open glass end in the free rubber end. In the pursuit of a swift *Supunna*, the necklace is deftly opened, the rubber end is placed in the mouth; while the glass end in the hand frenziedly tracks the spider, you suck air and a bit of dust. Once caught, the spider is sealed in with the finger and discharged into a vial or collecting tube by blowing down the rubber tubing. *HOWEVER, BEWARE THAT YOU DO NOT GET OVERLY ZEALOUS WITH YOUR POOTER ON DRY POWDERY GROUND OR ON CAVE FLOORS COVERED WITH BAT GUANO.* The former will give you a parched throat; the latter could give you a dangerous lung complaint. The pooter may be used as a tourniquet. However, Dr Struan Sutherland, Head, Immunology Research, Commonwealth Serum Laboratories, now recommends a restrictive bandage in the case of snake and spider bites. The pooter may also be used to dislodge large and obstinate sparassids by blowing into the crevice that hides the spider.

Spiders that are not considered dangerous, such as *Heteropoda*, can be collected by hand. The spider must be immobilised by gently but firmly pressing its cephalothorax onto the surface. The distal end of the first femorae are then grasped with the fingers of the free hand. The spider is unable to bite but getting it into your vial is tricky. (DO NOT USE THIS METHOD WITH MYGALOMORPHS OR ANYTHING THAT THAT YOU KNOW CAN BE DANGEROUS, e.g. *Olios*.) The femorae must be released quickly over a broad-mouthed container. Otherwise, the spider's legs will catch the rim of the container and you will have problems. I use this method to



catch lycosids,some sparassids,clubionids,zodariids and most other sizeable hunters.

Bigger spiders,like *Dolomedes australianus*,are different and advantage must be taken of their size. The collector must be calm and without fear (spiders, like bees, seem to recognize fear). The open palm is quickly placed over the the spider which will struggle. The hand should then be quietly closed around the spider. Your finger will then cause the spiders legs to bunch up so causing the spider to be pushed into the back of the palm . In this position the spider cannot bite you. The spider can be quickly released into a plastic bag and then transferred to a jar of preservative to die. Large agressive sparassids,like *Delena*, do not succumb readily and often an escaping spider must be subdued by spraying it with a pyrethrin insect spray and collected with large forceps.

The remaining methods are adapted from entomologists and if I am too brief an entomological friend may help in clarification.

The most fascinating spiders are to be found in the litter of forests, and there are three main ways of getting them. With gloved hands , the soil is almost scraped as a large handful of leaves is scooped up and placed into a bag or sieve. The bag is then carefully emptied onto a white sheet and the scurry-spiders pootered up. When using a sieve (of about 7-15mm mesh), the portion that passes through the sieve is kept for later and more careful sorting while the portion remaining above the sieve is quickly examined for larger spiders. The final sorting of the sieved litter should not be unduly delayed because larger spiders,ants and centipedes will prey upon smaller spiders, and heat may also take its toll. Alternatively ,the leaf litter may be placed in a Berlese Funnel and left. However,I find the Berlese Funnel slow,'sterile', and uninteresting. Also ,using Berlese Funnels,the spiders which come through the sieve are killed and you have no option of keeping any alive for later study. In a recent trip to the Northern Territory,by hand-sieving and sorting litter I collected more spider species than 2-4 Berlese funnels of leaf litter from the same area yielded. So,as well as being more interesting and giving you the option of keeping spiders alive,good litter sieving and sorting can give a higher species diversity.

Two further methods involve dislodging spiders from vegetation. These are beating and pyrethrum spraying. Using the first method,a calico sheet (1x1m) supported by a + frame of aluminium is held beneath tree branches while the branch is struck with a stout piece of wood or metal. The spiders fall out of the tree onto the white calico and can be pootered up. Alternatively,an umbrella may be inverted under a branch to serve the same purpose as the calico which is called a beating tray. Using the second method, a white plastic sheet is placed on the ground beneath the branch or tree. Often, this sheet must be anchored to the ground using rocks or pegs;otherwise,a sudden gust of wind may get under the sheet and spread your catch across the ground. The tree or branch of leaves should then be lightly sprayed with an insect spray, like Mortein. After at least 30 minutes the spray will have have done its job and many spiders and insects will be spread across the plastic sheet. It is most advisable to brush the catch together with about a 2-3 cm spread paint brush;using the pooter on the spiders is very dangerous because the insect spray will still be very strong in the air and on the catch. I am most grateful to Geoff Monteith for introducing me to this method. Often,you will find that entomological friends will be very interested in the catch using the spraying technique ;so do not ignore the insects.

Another very productive method is the use of pitfall traps. These are invaluable for the collection of males which are so seasonal in their occurence. The traps I have used with considerable success are about the size of a 750g (1 lb.)honey jar but are made of plastic and the lip extends inward thus preventing ready escape . The traps are buried in the ground so that the lip is level with the ground surface and then about half filled with preservative. The traps should be examined weekly or fortnightly;if you wait any longer leaves and soil dug up by marsupials will fill the trap or the preservative will deteriorate and allow the animals to rot.

Unquestionably,night collecting with a head torch is most exciting. In time,

you will learn the type of nights that spiders prefer. Remember to keep notes on anything unusual;they will be most useful when the spider is identified. The eyes of most spiders,but not mygalomorphs, reflect light and the reflection is best seen when the torch is very close your eyes. However, your neck will soon tire from all the twisting. You will then turn your whole body rather than simply twisting your neck. The danger of getting lost is then increased and the narrow beam of light from your headtorch will compound that danger;you should therefore always carry a spare bulb or even a Penlite torch as an auxillary and most important,carry a compass.

PRESERVATIVES

For Pitfall Traps: 3 parts 10% formalin
2 parts isopropyl alcohol

If available ,5mls of propylene phenoxytol per litre of solution will be beneficial.

General fixative: 5 parts glacial acetic acid
80 parts ethyl alcohol,absolute
15 parts distilled water
1 parts glycerol (optional)

The spider should be left in the fixative for at least 24 hours and then transferred to 70% ethyl alcohol.
Although not generally advisable,a 50:50 mixture of methylated spirits and water will keep the spider in reasonably good condition.

The disadvantage with the pitfall trap solution is that the leg-joints become very hard and brittle;however,the solution is slow to evapourate and the isopropyl alcchol ensures that the spiders do not float. The general fixative is very good and the leg-joints remain supple. Moreover, the general fixative has been found to be very good for spiders that are to be sectioned.

POSTAGE OF SPIDERS

Live spiders should be placed in a sealed vial with a piece of damp lightweight spongy material. In the wet season, a hole in the vial lid is beneficial. Inside the vials,there should just sufficient space for the spider to move;of course, the spongy material should not be able to move or it will crush the spider. The vial should then be placed in a strong cardboard box filled with spongy packing.

Preserved spiders should also be placed in a sealed vial,but if they are very minute they should be placed in a microvial. It is not advisable to use cotton wading to bung the vial because ,when wet,the wading will act as a ram and the spider could be badly damaged. Vials should ideally be full of preservative and well sealed. Then,it is safer to place the sealed vials into sealed plastic bags least the vials break and saturate the packing and box with alcohol.

RESTORATION OF DRIED MATERIAL

Inevitably,some of your precious collection may be neglected and the spiders, etc. will dry up. The flexibility of the leg-joints and the condition of the carapace and sternum may be restored by immersing the dried material in a warm to hot solution of 0.03% tri-Sodium Orthophosphate for about four hours. During that time the solution will cool;however,this is not a problem. Depending on the initial condition of the material, the carapace may remain cleared.

Material which has dried and is rotting can be hardened by gaseous formalin fixation. Into a lid or similar container,two layers of tissue paper should be placed. The rotting specimen is then placed upon the tissue paper, and two more sheets of tissue paper spread over the specimen. Then, a weak solution ,about one tenth full concentration,of formalin is gently poured over the paper. Ensure that all of the paper is wet. Using a plastic bag or another lid,seal the container. Leave the sealed container for about 2-3 hours and the specimen will have hardened. Placing the container in the sun may accelerate the fixation.