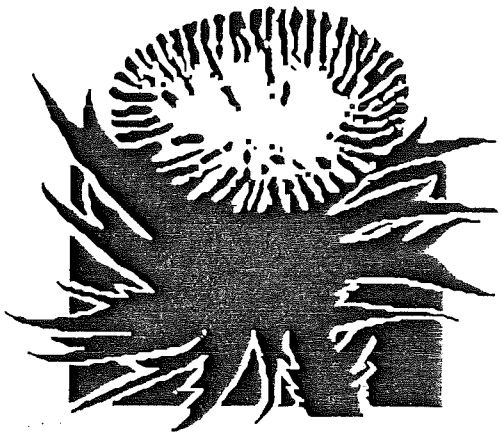

THE WEED SOCIETY OF NEW SOUTH WALES

NEWSLETTER

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CONTENTS:

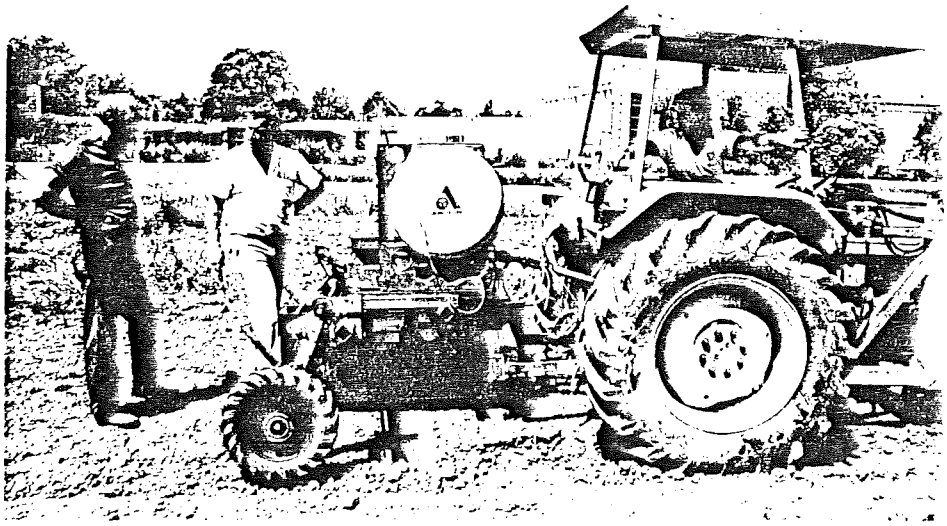
RESEARCH REPORTS

DEVELOPMENT OF A WORKING PROTOTYPE OF AN ACTIVATED-CARBON SEEDER

This project, supported by a Rural Credits Development Fund grant, was undertaken by John Toth, Senior Research Agronomist, Horticultural Research and Advisory Station, Narara. The objective was to design and develop a working prototype of a machine, which accurately sows pelleted seed at pre-determined intervals, covers the seed with soil and delivers measured quantities of a carbon-water suspension immediately above the seed. The purpose of the activated carbon is to render the crop safe from marginally phytotoxic herbicides. If the technique can be successfully applied under field conditions then the range of herbicides available for use in many vegetables and row-crops will be considerably extended. The technique should also remove the expense of hand-chipping troublesome weeds which escape those herbicides which are currently in use.

An engineer (Mr. F. Brown) was contracted to build the prototype; two units, and one functional model were produced. The test units were required to simulate hand sowing and hand application of activated carbon. The unit was required to plug a seed hole, drop a seed in the hole, cover the seed with soil, compress and indent the soil surface above the seed to localise the activated carbon suspension, and to apply 2 mL of activated carbon suspension (0.1g activated carbon per 2 mL water) above the seed.

The objectives were basically achieved but further development is required to reduce the weight of the unit and to increase speed of operation. Field trials will be required to determine the adaptability of the unit to variations in soil type. If the field tests prove successful it will be offered to commercial machinery manufacturers to complete development to a complete sowing unit. The technique and application device are the subject of Patent Application No. 26660-84 held by the N.S.W. Department of Agriculture.



Field Testing of Carbon Seeder - The Engineer, Mr. F. Brown and Senior Research Agronomist, Mr. J. Toth.

CONFERENCE REPORTS

11th ASIAN-PACIFIC WEED SCIENCE SOCIETY CONFERENCE
11th November to 5th December 1987, Taipei, Taiwan - Dr. P.W. Michael

More than 450 delegates from 17 countries - Australia (12), Hong Kong (9), Indonesia (29), Japan (105), Malaysia (19), New Zealand (4), Pakistan (1), Phillipines (18), Singapore (9), Sri Lanka (2), South Korea (33), Switzerland (2), Taiwan (155), Thailand (28), U.K. (6), U.S.A. (18) and West Germany (6) attended the Conference. The Conference served as a most useful opportunity for the presentation of a wide range of papers and posters. Although the theme of the Conference was "Weeds and their control in vegetable production" the work presented on other areas of weed control was much more impressive. This goes to show that the theme for conferences is relatively unimportant, the opportunity to cover all aspects of weeds and their control is much more so. I was, however, especially interested in the account of weeds encountered in vegetable production in Sri Lanka.

A highlight of recent Conferences has been the APWSS Best Paper/Poster Awards established in conjunction with Monsanto. First prize for the Best Paper was awarded to A.M. Baltazar, S.K. de Latta and M.A. Llagas for "Activity, absorption and translocation of fluazifop-butyl in rice and in three grass weeds - *Eleusine indica, Echinochloa colona* and *Rottboellia cochinensis*." This work is representative of the fine work being carried out at the National Crop Protection Centre, University of the Phillipines at Los Banos and at IRRI.

Of the three papers which received awards, I found that of Y. Oki, K. Imanishi and K. Nakagawa (from Okayama University) the best. It gave an excellent picture of the history and biology of three aquatic weeds in Japan - *Egeria densa, Elodea nuttallii* and *Hydrilla verticilliata*.

In excursions associated with the Conference, I was pleased to be able to visit the Taiwan Sugar Research Institute and the Taiwan Agricultural Chemicals and Toxic Substances Research institute, both engaged in productive research with outstanding facilities. I was especially impressed with the monitoring of toxic substances carried out by the latter.

The general standard of agriculture in Taiwan is high indeed - a really advanced technology is evident in this very crowded country (population 19.5 millions). Practically all rice transplanting is now done by machine.

A social highlight was the visit to the Taiwan Tea Experiment Station during the Conference where we were treated to tea-tasting and magnificent luncheon. The hospitality given to all delegates was excellent and Dr. Y.L. Chen, Department of Agricultural Chemistry, National Taiwan University and his helpers are to be congratulated on their fine efforts in hosting the Conference.

I am especially grateful to the Weed Society of N.S.W. for granting me financial support to help cover my expenses.

At the meeting of the Executive Committee held during the Conference, Australia's bid (through CAWSS) for the 1993 Conference was gladly received. The next Conference will be held in Seoul in 1989, probably in September. The new President is Dr. D.S. Kim, Research Bureau, Rural Development Administration, Suweon 170, Korea. It is important that Australia prepares a firm submission for presentation at the next Conference and I encourage Australians to attend. The 1991 Conference is expected to be held in Indonesia.

No Executive Committee election was held in Taipei and I am to continue as an Executive

Committee Member until 1989, when an election will take place. It is hoped that CAWSS will field a nominee for the election. It was unfortunate that Dr. Beatriz Mercado, Secretary of APWSS and a Past-President, was unable to attend the Conference because of sickness. It is sad to record that she died in February this year. We honour her contribution to Weed Science and extend our sympathy to her husband (Professor Bonifacio Mercado) and family.

A meeting was also held concerning the fate of the International Weed Science Society, the prime movers being Keith Moody (President) and John Swarbrick. We will hear more of this after John's return from the Pacific Islands.

11th APWSS Proceedings; volume 1 of the 1987 APWSS Proceedings has been published and volume 2 and the symposium on Weed Control in Vegetable Production are expected to be published in June 1988.

If you are interested in obtaining copies of these publications please write to Dr. Y.L. Chen Department of Agricultural Chemistry, National Taiwan University, Roosevelt Road, Sec. 4, Taipei, Taiwan, ROC 10764.

7th INTERNATIONAL SYMPOSIUM ON THE BIOLOGICAL CONTROL OF WEEDS
6th to 11th March, 1988, Rome, Italy - Dr R.W. Medd

One overall impression gained from the symposium is that classical biological control of weeds is becoming more difficult to undertake in spite of the increasing worldwide support in its favour. Sustained commitment from sponsoring bodies rarely eventuates and, as a consequence, biocontrol projects are unduly prolonged because they are understaffed and underfunded. Conflicts of interest in deciding which weeds make suitable targets for biological control has hindered many programmes. Furthermore, the process of gaining import clearance for agents is becoming more stringent, necessitating longer and more costly host specificity testing.

In addition to these administrative obstacles, biological control of weeds faces many important scientific challenges. The science of biocontrol is young and there are few solid rules. Theories that develop are quickly overturned or modified, largely because there are rarely commonalities among programmes and since collectively around the world there are more failed than successful biocontrol programmes. Also, many unsuccessful programmes are undocumented, adding to the difficulty of building scientific foundations.

One consequence of these difficulties and the resultant stagnation in programmes has been a noticeable increase in background studies, particularly of insect ecology, surveying flora/insect associations and to a lesser extent into the ecology of target plants. This shift in activity is probably worthwhile since it may eventually help in building a better scientific basis to biological control.

Few plant ecologists are engaged in biocontrol projects; more are definitely needed. There can be many benefits from studying the behaviour of target plants, particularly if the studies precede the search for agent candidates. An understanding of a plant's population dynamics helps to identify the more exploitable weaknesses, allows the level of impact required to achieve population control to be calculated and helps to define the type of agent required. Without questioning the validity of this pragmatic approach, a caution emerged that no stone should be left unturned in the quest for agents. Realisation that effective agents can arise from "new" associations (where an agent, for whatever reason, has never been associated with the target) and the (still somewhat fanciful) prospects for engineering agents means that no possibilities should be ignored.

Plant studies also provide a baseline from which to measure the performance of released agents.

Impact assessment is less likely when these data are unavailable, and in turn this stifles the development of the science as indicated above. Furthermore, since it is virtually impossible to determine the eventual impact of an agent prior to its release, models can be used to predict likely performance provided reliable biological data are available. It was encouraging for me to meet with the few others adopting this approach.

On an optimistic note, the future prospects for using pathogens as bioherbicides are most encouraging. This field is advancing rapidly with projects underway on woody, aquatic and terrestrial weeds as well as my own on weed seeds. Two products are being marketed, several projects have products that will soon be marketed and still others have patented organisms.

In synthesising the events of the meeting it became very clear that some misconceptions about biocontrol need erasing from public expectations.

* Successes, like that with prickly pear are exceptional; so it is can provide the ultimate solution in a majority of cases.

* Researchers now appreciate that the best results do not arise from using biological means of control alone. Instead, optimum effects are obtained from integrating biological with other control means.

* Biocontrol programmes are methodical and costly undertakings so only important weeds can be considered - biocontrol is not a panacea.

For the above reasons, bodies engaged in biocontrol need to be firmly backed by committed organisations that fully appreciate all the ramifications involved.

SEMINARS

Two seminars were presented by overseas speakers after the 105th Executive Committee Meeting of the Society held on June 6th at the University of Sydney. We were disappointed at the poor roll-up of Society members, particularly those from the Sydney region. This has been a problem in the past and it may be better to hold future seminars at AVRC Orange and thus enable more country members to attend.

PROSO MILLET (*Panicum miliaceum*). A MULTIFACETED WEED PROBLEM

Professor Paul Cavers
Department of Plant Sciences,
University of Western Ontario,
London Ontario, Canada.

Proso millet is a major weed of grain growing regions of North America. This species has become a successful weed largely due to extreme biological variations within populations. Paul presented some aspects of the weed's biology and discussed their implications for control. He is currently a visiting scientist involved in studying seed banks of *Carduus* and *Onopordum* species with Dr Richard Groves, Division of Plant Industry CSIRO, Canberra.

Proso millet has been used as a crop for over 10,000 yrs and is still the third most important crop in the USSR - being used for Russian black bread.

Proso millet has become an Important weed in North America of summer crops such as corn and soybean in particular. It has a very short growing season requirement and so can compete with

crops at high latitudes. There are seven biotypes of the weed in North America - ranging from a non-weedy crop type to the black seeded form, the most agressive and invasive weed type. The non-crop types could be regarded as wild races of the genotpye. Such wild races are seen in many other crops such as oats, sorghum, sunflower, barley and soybean. Currently only the black type occurs in Western Ontario, six of them are distributed in Quebec and two or three in Manitoba.

Paul took the attributes of De Wet (1975) that differentiate between crop and weed characteristics to evaluate the weed potential of the seven biotypes of Proso Millet.
Seed size. Smaller in weedy biotypes than in intermediate and in turn crop biotypes - in accord with De Wet's notion.
Seedling vigour. After 17 days seedling biomass was 0.028g in the black seeded weedy type, whereas in the less weedy and crop biotypes seedling biomass was 0.08g. Again in accord with De Wet's notion that weedy types have less vigour.
Seed dormancy. In accord with De Wet weedy types have greater dormancy than crop types.
Fragility of Inflorescence. Weedy types shattered easily compared with greater seed retention in crop types.
Synchrony of development in populations. Generally more tightly synchronised in crop types.
Dispersal. Weeds are better adapted for dispersal. There was little difference between millet biotypes in this regard although the black weedy type has slightly sticky seeds which may assist dispersal.
Resistance to Herbicides. De Wet states weeds are more resistant to herbicides but in millet intermediate crop types (e.g. "golden") are least affected ie. more resistant whereas weed types are more susceptibe to herbicides. Note that the golden type does have some seed dormancy, and is spreading - so it seems to have more potential as a weed.

Because of the many weed types of Proso Millet the Canadians have had to carefully devise control strategies that involved use of rotations. **Notes by Dick Medd.**

CHANGING WEED FLORA IN RELATION TO WEED PROBLEMS IN DENMARK

Dr Jens Streibig
Senior Lecturer in Weed Science,
Royal Veterinary & Agricultural University,
Copenhagen, DENMARK

Jens observed that weed problems are more severe in Australia than in Denmark. Agriculture is much more intensive in Denmark which has only 2.6 m ha of arable land. High input agriculture has been practised since the turn of the century and is influenced by EEC policy with subsidies for animal and crop production of 35%. High crop yields are achieved, for example average wheat grain yields are 7-10 t/ha.

Surveys of weed sociology and ecology have been carried out using uniform techniques since before the advent of herbicides. The Raunkier technique was used. The untreated plots on Farmers' Union Extension Service experimental fields were sampled. In the most recent survey, 466 fields representing 17 crops were sampled. In these 217 weed species were recorded, of which 71 were considered common enough for analysis. The most common weed species included *Stellaria media, Poa annua, Agropyron repens, Chenopodium album and Polygonum convolvulus.* Cropping systems were classed as summer annual, winter annual, perennial crops and grass leys.
Weeds were grouped in frequency classes of 0-20, 21-40, 41-60, 61-80 and 81-100%. *Stellaria media* was more frequent in short cycle crops and the reverse was true for *Poa annua.* The 17 crops were classified according to weed flora using cluster analysis. The crop had a pronounced effect on the weed flora and the greatest differences were between annual and perennial/biennial

crops. Factor analysis was used to demonstrate the gradient of weed species between crop types.

The frequency of weed species was examined in relation to edaphic factors including pH, CEC, OM, P, Ca, Mg, K, Na and EC. Crop type, region and year were also considered. Multiple regression was used to relate weed frequency to edaphic factors. Stable soil properties through the season were included in regressions. The most frequent weed species were not favoured by particular soil conditions. No soil physical properties were measured and these would be expected to have greater effects on weed frequencies than soil chemical properties.

Since the advent of herdicides (1946) there has been a trend of increasing wheat yields and declining weed frequency. However this must be considered in relation to other trends; arable land has increased from 48% in 1950 to 70% in 1970, nitrogen inputs have increased from 63 to 187 kg/ha during the same period. Other factors such as drainage and liming have influenced frequency of weeds such as *Rumex* and the role of herbicides is difficult to assess.

During his stay in Australia Jens carried out analyses on survey data collected by Dr Ron Amor in Victorian wheat crops. In the survey, 64 weed species were recorded. Factor analysis showed a regional gradient; Mallee, Wimmera, Lake Bolac and Hamilton. This could be closely related to rainfall but confounded by other differences between regions such as cropping practice. **Notes by Bob Martin.**

MEMBER'S NEWS

TRAVEL GRANTS

Applications for Travel Study Grants by Dr R. Medd and Ms D. Lemerle were considered at the 104th Executive Meeting on 29th April and each was granted $500. Dr. Medd's application was for support to attend the 7th INTERNATIONAL SYMPOSIUM ON THE BIOLOGICAL CONTROL OF WEEDS held from the 6th to 11th March, 1988 in Rome, Italy. Dick has presented a seminar to the Society and has submitted a report on the Conference which appears in this issue of the newsletter.

Ms Lemerle's application was for support to visit Dr. John Caseley at Long Ashton, Bristol UK and to attend the EWRS International Symposium on Factors Affecting Herbicidal Activity and Selectivity, which will be held from September 6-8th 1988 at Wageningen / NL.

The Weed Society Prize, for the best Weed Science Student at the University of Sydney was awarded to Ms Parsons.

NEW MEMBERS

Applications have been received and accepted for the following new members;

Mr. John Cameron, Product Manager, Schering, Sydney

Dr. John Hosking, Entomologist - Biological control of weeds, Department of Agriculture, Agricultural Research Centre, Tamworth.

Mr. Malcolm Turner, Research Contractor - Herbicide development in field crops and horticulture, Agropraisals Pty Ltd, Cobram, Victoria.

FOR SALE - CAWSS CONF. PROCEEDINGS

Proceedings of the 6th, 7th and 8th Australian Weeds Conferences are available for sale through the Weed Society of N.S.W. If you would like to purchase copies please contact **Leon Smith P.O. Box K287, HAYMARKET N.S.W. Phone (02)2175040.**

COMING MEETINGS - WORKSHOPS

NO-TILLAGE PROJECT TEAM MEETING, MOREE 3/4 AUGUST 1988

This meeting is being organised by W.L. Felton in association with the Weed Society of N.S.W. The meeting will commence at 12.30 pm on 3rd of August and will conclude at 4.00 pm on the 4th. The tentative programme includes the following; Reviews of tillage research in Australia, Northern N.S.W. and Queensland, tillage practice in relation to soil erosion, herbicide developments, equipment limitations, extension problems and integration of research and adoption. The meeting will conclude after inspection of a long-term tillage field experiment which was commenced at Croppa Creek in 1981. A dinner will be held on the evening of 3rd August and the guest speaker will be Dr. K.P. Sheridan, Director General, Department of Agriculture, N.S.W. The meeting will be limited to 60-70 active participants. For further information contact **Warwick Felton, Department of Agriculture, Agricultural Research Centre, R.M.B. 944 Tamworth 2340 Phone (067)679300.**

HERBICIDES REGISTERED AND UNREGISTERED IN VEGETABLE CROPS

A proposal for the above workshop by the S.A. Department of Agriculture has been supported by Standing Committee on Agriculture and Plant Production Committee. It will probably be held at St. Marks College North Adelaide in November 1988 and will extend over three days. It is estimated that costs including accommodation will be $50 per day. The workshop will be a forum to consider registered and unregistered use of herbicides in vegetables and ways to regularise the situation. Environmental effects of using herbicides in intensive vegetable production are also likely to be considered. The organisers wish to attract delegates who are familiar with herbicide use in vegetable or related horticultural crops; those who are familiar with the procedures for herbicide registration, particularly the consideration of residue levels; those familiar with agricultural chemical legislation in the States and those who are familiar with environmental aspects of herbicide use in vegetable production. Those interested should contact **Tony Biggs, Principal Horticulturist (Vegetables), McKell Building, Haymarket (02)2175027.**

FELLOWSHIPS, AWARDS AND GRANTS

AUSTRALIAN ACADEMY OF SCIENCE AND CHINESE ACADEMY OF SCIENCE EXCHANGE PROGRAMME, 1989/90

Proposals, excluding conference attendance, in any field of natural science will be considered. Proposals must focus on Academia Sinica institutes and may be short-term (3-6 weeks) lecture tours or fact-finding visits or longer-term visits to carry out collaborative research projects or

field studies. The Academy provides an excursion international air fare and Academia Sinica provides living and travel costs in China. No stipends or allowances are paid. For further details and application forms contact **International Exchanges Officer, Australian Academy of Science, GPO Box783, Canberra, ACT, 2601.**

AUSTRALIAN ACADEMIES AND ROYAL SOCIETY SCIENTIFIC AND TECHNOLOGICAL EXCHANGE PROGRAMME WITH THE U.K. 1989 PROGRAMME

Available to Australian residents who are of at least post-doctoral or comparable status. Applicants should propose a collaborative research project, or a specific activity, which has been developed in consultation with an appropriate host scientist in the UK. The expected outcome of the research project should be of value to Australian science or technology. Successful applicants will receive from the Academies a grant-in-aid contribution to the cost of a personal return excursion air fare to the UK. The amount provided towards living costs will normally cover a period less than six weeks. For further details and application forms contact **International Exchanges Officer, Australian Academy of Science, GPO Box783, Canberra, ACT, 2601.**

CONFERENCE - WORKSHOP CALENDAR

July 26-28 1988 — **Farmsafe 88,** University of New England, Worksafe Australia, Department of Primary Industries and Energy.
Contact: Robyn Wolstenholme, Conference Co-Ordinator, Phone (067)733088, Fax. (067) 73 3204 University of New England, ARMIDALE NSW 2351

Aug. 3-4 1988 — **No-tillage Project Team Meeting,** Moree N.S.W.
Contact: Warwick Felton, Department of Agriculture, Agricultural Research Centre, R.M.B. 944 Tamworth 2340 Phone (067)679300.

Aug. 9-11 1988 — **Conservation Farming Conference,** Dalby Queensland.
Contact: John Wilcox, Director, Conservation Farming Information Centre, P.O. Box 838, Dalby, Qld, 4405. Phone (074)624 044.

Sept. 6-8 1988 — **EWRS International Symposium on Factors Affecting Herbicidal Activity and Selectivity,** Wageningen / NL
Contact: Mrs. E.J.L. Joltke-Staal, Int. Agric. Centrum, P.O. Box 88, NL-6700AB Wageningen / NL

Sept. 14-16 1988 — **VIIIth International Symposium on the Biology,Ecology and Systematics of Weeds,** Dijon (FRANCE)
Contact: Secretary de I'ANPP, 149 rue de Bercy, 75595 PARIS Cedex 12 (FRANCE)

Sept. 18-23 1988 — **Pesticide Application Technology,** Course at Q.A.C., Gatton. Full cost $850-$900.
Contact: Plant Protection Department, Q.A.C. Gatton Qld. Phone (075)620281.

Nov. 13-17 1988 — **Reducing Uncertainty in Environmental Risk Assessments,** Society of Environmental Toxicology and Chemistry (SETAC) 9th annual meeting at Arlington Virginia.

Contact: SETAC, P.O. Box 4352, Rockville, MD 20850, USA

Nov. 21-24 1988 — **The Brighton Crop Protection Conference-Pests and Diseases 1988** will be held at the Brighton Metropole and the Brighton Centre.
Contact: Mrs. R.A. Bishop, Frank Bishop (Conference Planners) Pty Ltd, 20 Bridport Road, Thornton Heath, Surrey CR4 7QG. Phone 01-683 0087.

Nov. 28 1988 — **Weed Society of N.S.W. Turf Field Day and Annual Dinner**
Pennant Hills Golf Club
Contact: Mike Barrett, 14 Kedron Ave, Beecroft NSW 2119. Ph. (02)875 3087.

April 4-6 1989 — **Comparing Laboratory and Field Pesticide Performance** a residential symposium tobe held at the University of Kent, Canterbury.
Contact: Dr. C.R. Merritt, International Centre for the Application of Pesticides, Cranfield Institute of Technology, Cranfield, Belford MK43 OAL.

April 1989 — **EWRS 4th Mediterranean Symposium,** Problems of Weed Control in Fruit, Horticultural Crops and Rice. Valencia (SPAIN).
Contact: Mrs. Amparo Caballer, IVIA, Apartado Official, E-46071 Moncardia (Valencia) SPAIN

June/July 89 — **Integrated Pest Management** Workshop combining researchers, consultants etc. with field emphasis at Q.A.C.
Contact: (075)620281.

Sept. 5-7 1989 — **Prospects for Amino Acid Biosynthesis Inhibitors in Crop Protection and Pharmaceutical Chemistry.** A residential conference to be held at Churchill College, Cambridge.
Contact: L.G. Copping, Dow Research, Letcombe Laboratories, Letcome Regis, Wantage, Oxon, OX12 9JT.

Sept. 11-15 1989 — **Nature Conservation-The Role of Corridors.** A conference/workshop to be held at Busselton, WA. Conference fee $200.
Contact: Miss P. Hussey, Roadside Vegetation Conservation Committee, P.O. Box 104 Como WA 6152.

SUBSCRIPTION REMINDER

Subscriptions for 1988 are now due. As at 3rd June 1988, Geoff Jacobs has received 15 individual subscriptions, 79 have paid for 1987 and there are 45 in arrears. Annual subscriptions for individual members are $12.00.

Please cut off and return this section to:

Geoff Jacobs,
Honorary Treasurer
c/- DuPont (Australia) Ltd.,
168 Walker Street,
P.O. Box 930,
NORTH SYDNEY NSW 2060

Please find enclosed payment to the Weed Society of N.S.W. being subscriptions for;

Current year (1988)	$	.....
Arrears for 1987	$	.....
Total Due	$	.....

Name:.....**Address:**.....

.....**Postcode:**.....