

# Range Management Newsletter

Official newsletter of the Australian Rangeland Society

Editor - Mr B. Foran, CSIRO, P.O. Box 2111,  
Alice Springs, N.T. 5750

No. 80/2  
August 1980

## EDITORIAL

Hullo all! I've added a "by-line" or two to some of the contributions in this newsletter. I'd like to add a touch of humour here and there and perhaps spark some debate among our members. If you don't like the process or if some contributor feels that I've alienated his written word, well write it down on paper and we'll publish it - we'll publish anything as long as it doesn't criticize the Queen and her corgis, or claim that Mal's the biggest flogger in the Western Districts. Any land manager who thinks that the "governmunt min" sit under mulga trees all day drinking tea - they're probably right! - Best to write it down in verse form and we'll run a poetry competition that will rival the halycon days of the old "Bulletin".

This edition features the 1980 Presidential address from Jim (multidisciplinary) Vickery who will soon hand over the boss's job to our new man at Roseworthy (IS YOUR NAME VIC SQUIRES?) I've taken the opportunity to include a very topical address on drought policy by W.F. Mawson - a Queenslander who has dealt with more droughts than most of us. As a society we have to reach some middle ground on drought, so that land manager, land administrator and range scientist can see that their areas of need are catered for. In the next issue I'll publish a fairly novel approach to drought that is being implemented in the N.T. How about a few comments on this paper?

Finally, we still have a problem with our subscriptions. I never know whether I've paid the damn thing or not. I'd certainly like to see some billing system instituted so that we get a "subscription due" notice on the 1st of January and a final notice of "cancellation of membership" on the 1st of July. What do you blokes (and sheilas of course - no sexist comments in the RMN) think?

ALL LETTERS GRATEFULLY RECEIVED BY -

Barney Foran,  
CSIRO,  
Central Australian Laboratory,  
P.O. Box 2111,  
ALICE SPRINGS, N.T. 5750.

Deadline for next issue: September 30th, 1980.

ANOTHER GOVERNMENT BODY?

From: Geoff Rodda, "Nagaella" Station, Broken Hill, N.S.W. 2880.

WHO'S GOING TO PAY THE BLOODY MORTGAGE?

I read with interest the letter of P.A. Keane in March 1980 Newsletter.

In the final paragraph mention is made of "...the possibility of a Government Agency dealing with all Rangelands uses.."

I wonder who would fund it?

The pastoral industry? whose motives seem to be held in some doubt by Mr. Keane, already in this State are rated by a variety of Government and semi-Government bodies who are all set up to cover specific jobs.

The Western Lands Commission - the various Pastures Protection Boards - the Wild Dog Destruction Board and a variety of Shire Councils outside our Unincorporated area, all seem to be operating as very efficient "Rate collectors".

When a "Nature Reserve" or National Park is ordained, the National Parks and Wildlife Service are under no obligation to pay rates on Crown Land, but as the duties of the rating bodies continue and their costs increase it means that the pastoral industry must then pick up the share of costs that had been borne by the previous Lessees. In years of drought and bushfires, inability to pay receives a sympathetic hearing, but those rates are "A CHARGE AGAINST THE LAND" and must inevitably be paid.

So perhaps selfishly, Mr. Keane, if your Government Agency ever comes into being just for once let someone else pick up the tab. I reckon I'm paying my fair share now.

SUBSCRIPTION CHANGE!

From: Geoff Rodda, "Nagaella" Station, Broken Hill, N.S.W. 2880.

BAD AS MR. HOWARD AND THE BOYS

I have a couple of comments to make on Subs as listed in the March 1980 Newsletter received yesterday. Yes, I have sent mine off to friend Casperson.

It seemed strange to me that the subscription rate was set before the Annual General Meeting, which is set for later this month and I may suggest that any increase in the subscription rate may not be the BEST way to induce funds from a waning membership.

Perhaps a \$10 first year sub. for new members may be a thought? as an incentive to join. I have already suggested to one of your predecessors that the use of a "Tear off slip" on the bottom of each Newsletter (space permitting) may be worthwhile - members could carry them in the wallet and pass them on to prospects at the appropriate time.

In my last mail, there were 4 letters looking for money - all for good causes - and it would indeed be a pity if the input (whatever it may be) of any section of your membership was lost for financial reasons.

## XIV INTERNATIONAL GRASSLAND CONGRESS

From: L.R. Humphreys, Australian & New Zealand Representative,  
International Grassland Congress Continuing Committee.

### TRIPS FOR THE BOYS or HAVE YOU BEEN NICE TO YOUR BOSS RECENTLY!

Further to my last circular letter of the 7th December, 1979, I am writing to remind scientists that the deadline for the submission of summaries of papers to be offered at the XIV International Grassland Congress is approaching: summaries should be forwarded to reach the XIV International Grassland Congress, Agricultural Sciences Centre, University of Kentucky, Lexington, Kentucky, 40546, U.S.A. by May 1, 1980.

It is important that Australian and New Zealand research in pasture science be well represented in the proceedings of the Congress and I do hope that you have been able to encourage your staff both to submit papers and plan attendance at the Congress.

## SHRUB DEATHS

From: Bruce Auld, Agricultural Research Centre, Orange, N.S.W. 2800.

### NASTY WOGS EAT BASSIA

I would like to add my experiences with galvanised burr *Sclerolaena* (or *Bassia*) *birchii* to the continuing correspondence on shrub deaths.

The Chenopodiaceae seem particularly liable to root invasion by insects (Chadwick, Aust. Naturalist II : 233, 1957). This may be because of the characteristic anomalous secondary thickening in this family. Consecutive layers of woody xylem and phloem together with conjunctive tissue are probably a more attractive environment than woody xylem alone.

As well as some species noted by Chadwick I found an undescribed termite (Aust. Insect Collection Series 14636) causing deaths by attacking roots.

A root rot, *Fusarium oxysporum* (F-1278 Syd. Uni. Plant Path. Coll.), was also isolated from plants exhibiting vascular wilt in the field which later died as soil moisture became limiting (Auld, Weed Research 16 : 323, 1976).

Galvanised burr depends on a single tap root for survival in droughts. Damage to this by insects when soil moisture is adequate produces no above ground symptoms. However, damage produced over a long period, perhaps by different insect species or diseased may produce large numbers of simultaneous deaths in a drought. This is often observed in this genus.

It is also interesting to note that some of the apparent differences in morphology in this species are due to insect attack (Auld and Martin, Proc. Linn. Soc. N.S.W. 100 : 167, 1975).

## BROKEN HILL BRANCH ACTIVITIES

The Branch has been involved with several recent functions. The Scrub Control Seminar was attended by 140 people and was voted by all present an outstanding success. It is hoped that the proceedings from this meeting will be published in the Australian Rangeland Journal soon.

The Branch has also co-operated with teaching bodies in providing educational facilities not normally available to isolated grazing communities. A three-day Bookkeeping course was run in conjunction with Yanco Agricultural College, and a Rural Welding course run by the Broken Hill Technical College is currently in progress. This is run on one full day each fortnight for 3 months. Both courses have been well supported and successful.

## FIELD DAY - KINCHEGA NATIONAL PARK

From: Roger Stanley, Box 459, Broken Hill, N.S.W.

### DRY SANDWICHES, HOT BEER & FLIES

Kincheega National Park will be the venue of a Field Day on Thursday, September 25, 1980, organised by the Broken Hill Branch of the Australian Rangeland Society and the National Parks & Wildlife Service, for the benefit of district pastoralists.

The Field Day will take the form of a guided tour of Kincheega, coupled with talks at several stops, on management and research activities on the park.

Field Day participants should gather at the Lake Speculation gates, off the Broken Hill-Menindee road, at 9.00 a.m. Central Standard Time (9.30 E.S.T.) where an introductory talk, on the concept of national parks, will be given. The car convoy will then proceed down the western side of Lakes Menindee and Cawndilla, stopping to inspect and discuss techniques and results of rabbit and pig control programmes.

Lunch (bring your own) will be had in a picnic area on the shores of Lake Cawndilla. The tour will then proceed to one of the camping areas along the Darling River, where the subject "People Management" will be considered. This is a subject which is often overlooked by the layman but is very important in national parks which have many thousands of visitors each year.

Historic Kincheega woolshed will be the final point of inspection. Here the subject of kangaroo research and management on the park will be discussed and, if time allows, fire management will also be considered. Following general discussion the Field Day will finish at around 4.00 p.m.

District pastoralists and their families should not miss this unique opportunity to inspect the facilities and activities of the National Parks and Wildlife Service on Kincheega National Park. The date again is Thursday, September 25, 1980 at 9 a.m. C.S.T. See you there.

## RANGELAND REGENERATION IN W.A.

From: H. Suijdendorp, Officer in Charge, Department of Agriculture,  
Carnarvon, W.A. 6701.

### WHY DON'T "GOVERNMENT MEN" LOOK OUT THE OTHER WINDOW SOMETIMES?

Recent contributions to the Newsletter have been largely occupied in reporting death and destruction of Rangeland vegetation. It is therefore a pleasure to report an instance where this trend is reversed.

The area along the De Grey River in the north west of Western Australia has been blessed by some very good seasons. Some stations already recorded between 600 and 700 mm so far in 1980 which is more than double the annual average rainfall.

In addition, there have been changes in livestock. Sheep gradually disappeared and the last went 5 years ago. Their place was taken by cattle. As a result, dingo control relaxed and the wild dogs made severe inroads in the Kangaroo (mostly euro) and goat populations.

Because of good prices for cattle, their numbers were kept at reasonable levels. The outcome of all these factors combining in the last few years was that:-

1. Pastures were regenerated with a larger component of grass in spinifex pastures.
2. Buffel grass which until now was confined to water courses was found scattered through the spinifex country.
3. Man made claypans which were created early this century, were covered by a layer of silt which was quickly colonised by perennial grasses of all descriptions. Silt was derived from large hummocks topped by spinifex scattered on the claypans.

## AUSTRALIAN RANGELAND SOCIETY BUSINESS

### WHAT THE ADELAIDE MOB DO WITH THEIR TIME AND YOUR MONEY

Minutes of the 5th Annual General Meeting held in Adelaide on 15th May, 1980, will be printed in full in the next issue of the R.M.N. This will include the Treasurer's report, with an audited accounts statement and comments by him on costs and membership numbers.

Highlights from the 23rd Council Meeting held in Adelaide in July will also be included.

The President's report follows in full, and is a comprehensive summary of what the Society has achieved in the past year.

PRESIDENT'S REPORT TO THE ANNUAL GENERAL MEETING  
ADELAIDE, 15 MAY, 1980.

From: James Vickery, Dept. of Lands, Adelaide.

Fellow Councillors and Members,

The year under review began with the Society's Second Biennial Conference in Adelaide exactly twelve months ago.

This Conference was attended by some 80 members from most Australian States, and the reduced attendance, (as compared to previous events), was considered very satisfactory in view of the unrestrained economic climate which has emerged in recent years. The Conference features a one day pre-conference tour and a 2 day post-conference tour into the arid rangelands, and those who attended expressed their satisfaction and enjoyment of a successful conference despite the late change of venue. The conference resulted in a credit balance of \$200 following sales of proceedings.

Your Council has met on four occasions throughout the year and these meetings have comprised the full Council with the obvious exception of the Past-President Dr. Bill Burrows, who for various reasons has been unable to attend personally from his remote Queensland location. However, on occasions he has been involved in telephone discussions.

During 1979, 2 volumes of the Australian Rangeland Journal have been published and your Council has co-operated with the Editorial Board and Committee in an exchange of minutes to better co-ordinate this section of the Society's functions.

The Range Management Newsletter has of course maintained regular contact with and between members under the tutelage of Dr. Tim Fatchen at Roseworthy College. Dr. Fatchen has done an excellent job and has now handed over Newsletter editorship to Barney Foran in Alice Springs.

Following a membership poll at the last Conference, and further responses via the Newsletter, a Society Emblem has been selected from a design of Roger Oxley. It should soon be seen on Society publications and letterheads etc.

As a consequence of continuing escalation of costs your Council has found it necessary to increase Society subscriptions for 1980 to \$20 for Australian members and \$A25 for overseas subscriptions. Unfortunately, a high proportion of members were unfinancial at the commencement of the year but considerable recovery has now been made, with the assistance of the newsletter, and this effort will continue. Actual current membership details will be covered by the Treasurer in his report.

As a result of willing assistance by Robin Lamacraft of C.S.I.R.O. Society membership is now computerised and is accessible via SIRONET. This facility will aid future recovery of arrears and the transition of membership roll and detail to other States and Councils. Robin's efforts in this regard and also C.S.I.R.O. co-operation are genuinely appreciated.

Following a suggestion and an offer by Ray Perry, Chief, Division of Land Resources Management, CSIRO, your Council sought membership views on the theme and form of the next Society Conference as a combined event with the Australian Arid Zone Conference. These suggestions have since been accepted and submitted to the appropriate authority for evaluation and refinement.

During the year your Council has considered a draft constitution for the International Rangelands Congress, and also initiated a Ways & Means committee to consider and report upon the feasibility of this Society convening the International Rangelands Congress in 1988 in Australia. In this connection the Council wish to record its appreciation to Owen Williams and Alan Wilson for their suggestions, participation and readiness to assist.

The Society now has Branches in Adelaide, Broken Hill/West Darling, Upper Darling, and New England, all of which appear to be extremely active. Arrangements are currently in hand to provide financial support from Society funds to these Branches on the basis of \$2.00 per financial member to assist and promote Branch activities.

In recognition of the outstanding personal contribution so freely given by Malcolm Howes in the production and publication of the Journal, Council has awarded Malcolm an Honorarium of \$1,000 which is felt to be an all too modest recompense for many hundreds of hours work and effort over a 3-4 year time interval. Council wishes herein to record its appreciation on your behalf of Malcolm's work in this essential area.

In addition Council has determined lesser honorariums of \$100 and \$50 to the Treasurer and Secretary respectively, in recognition of their onerous tasks which they have performed unstintingly and assiduously during the past year.

Your Vice President Dr. Vic Squires attended the annual Conference of the U.S. Society for Range Management in March this year. Dr. Squires provided fares from his own sources, and Council determined to provide accommodation expenses to the extent of \$215 in support of Dr. Squires' attendance at an event convened by our overseas counterpart.

It is anticipated that a report of this experience may appear in a future Rangelands Journal in guest editorial form.

Council has noted and discussed during the year a view expressed by a previous Council that Society management should now be permitted to reside in each State for a two year term in the interests of general Society consolidation and stability. Your Council supports this concept which will ultimately require constitutional amendment for its enactment.

However, it has become apparent that this proposal can be temporarily and fortuitously achieved at this point in time without such amendment. Our current President-elect, Dr. Vic Squires is shortly to accept a post and relocate to Roseworthy College in South Australia.

This fact, together with the nomination of Dr. Margaret Friedel from Alice Springs as Vice President, the absence of N.T. nominees for the offices of Treasurer and Secretary, and the agreement of our present Treasurer Keith Casperson, and Secretary Martin Willcocks to continue in office, enables the fortuitous enactment of the proposal without constitutional infringement. The new Council will undoubtedly consider the need for constitutional amendment during the coming year as a means of permanent adoption of the proposal.

It is with deep regret that I record the untimely death of an active and esteemed member, Dr. Bob Stefanson, who together with his 9 year old son Alain lost his life in a tragic boating accident in June 1979. Bob Stefanson was a stalwart in organizing the 1979 Conference and the sympathy of Council and Society membership was extended appropriately to his widow and surviving son.

In conclusion 1979-80 is seen as having been a year of consolidation by the Society and I believe benefits will flow from the retention of the executive in South Australia during the next year which will precede the next Biennial Society and Arid Zone Conference.

My appreciation is extended to the Council Members and officers for their efforts and support and on their behalf may I also express our joint thanks to other members such as Tim Fatchen, Barney Foran, contributors to the Newsletter, Ray Perry and other officers of C.S.I.R.O. and other Government Departments for all their help and support rendered during the past year.

Finally it is with great pleasure that I welcome Dr. Margaret Friedel to the Council as your Vice President and Dr. Vic Squires as your President for the next year. I have sublime confidence that under their tutelage and guidance the Australian Rangelands Society will continue to grow, consolidate, and fulfill its aims.

## RATIONALISING OUR APPROACH TO DROUGHT

By: W.F. Mawson, Assistant to Director General, Department of Primary Industries, Brisbane.

TEXT OF AN ADDRESS AT A BEEF AND GRAIN SYMPOSIUM ORGANISED BY THE AUSTRALIAN SOCIETY OF ANIMAL PRODUCTION (QLD. BRANCH) AT DALBY, QUEENSLAND ON OCTOBER 27, 1979.

---

At the onset, I should like to make it clear that I speak as an individual and as a member of the Society.

When I heard of the theme for today's consideration I thought, "Well, I'll certainly be part of the famine side". However, I do not propose to become too despondent about that.

Another thought that occurred to me when first approached was the hope that we would have experienced useful rain by this time. It is always more comfortable to talk about drought when it is not pressing in upon you. However, present circumstances do provide a reminder that once or twice in every decade we can expect substantial drought in some part of the State.

Now let us ask ourselves - *What is the nature of the subject matter?*

I think we would all agree that "rational" is related to reasoning - a reasoned logical base for action. My dictionary also gives a definition used in economics stating that to rationalise is to "reform an industry by making production balance consumption and by co-operation of rival producers and of capital and of labour". The co-operation between producers and the rest of the community provides the key to the definition which I believe to be appropriate to the subject today.

But such a definition also implies that the community and the producer have common objectives because rationality is related to objectives - in fact it is presumptuous to accuse people of being irrational if you are unaware of their objectives. One could not expect that the major objective of the Queensland community and beef producers would be to combat drought - in fact to many citizens drought is not much more than a headline in the papers - if it becomes newsworthy - or if the price of beef rises as a result. So let me repeat - rationality of behaviour can only be judged in the light of knowledge of an objective - point one - and the second point is that we as a community don't have a common perceived objective in this context.

Having said that, it follows that I shall have to state my objectives if I am to be seen as rational in this matter. So I have set an objective for my approach to the subject and it is this - "the maintenance of the productivity of our grazing lands over the long term". I do not believe this to be inconsistent with the objectives of most graziers - provided they can continue to get a living in the meantime - nor is it inconsistent with the needs of the present and future communities since it means a continuity of supply of the high quality food which we take for granted today. So now that I have told you my bias in that matter we can proceed to a definition of "drought".

There are probably as many definitions of drought as there are people speaking of drought, but I do not propose to enter into



any major discussion at this point. A definition that I think can serve our purpose is "a marked reduction from the historical median rainfall". For practical purposes this is considered on a short-term or seasonal basis. I am aware of the modifications brought about by such factors as the intensity and frequency of falls, but do not wish to pursue those aspects here.

Let me now define the boundaries within which I propose to confine my subject.

While this is a beef and grain symposium I intend to concentrate on drought in the pastoral areas where, in general terms, cropping is not feasible without irrigation. I would remind you that of the 155 million hectares taken up in rural holdings in Queensland, there are just over 2 million in crops and about 6 million under sown pasture and introduced grasses. On that basis we have something like 147 million hectares of native pastures used for the grazing industry - the majority of which are unlikely to be cropped in the foreseeable future. These are the lands which produce most of our beef cattle at the present time, and I submit, will become of greater importance as we move into the next century.

Perhaps we can for a moment consider some characteristics of these grazing lands. Overall, the environment is a harsh one - with high spring and summer temperatures, variable rainfall - often of very high intensity. Evaporation rates are very high and scorching winds pick up surface soil which becomes unprotected by vegetation. The high intensity rain storms and the concentration of water also remove surface soil as well as causing stream bank erosion. In practical terms, the preservation of a vegetative cover is one of our best defences against land degradation.

Droughts are common - due either to a failure or partial failure of "wet season" rain and/or the delayed onset of the following wet season rain. It is a reasonable question to ask what can be done to provide moisture. Irrigation, of course, is an answer which readily comes to mind but few would raise it as a general solution. The availability of a suitable water supply, cost and management of major schemes are factors precluding irrigation from serious consideration over a wide area at this time.

Cloud seeding - or rain-making as some people like to call it - is sometimes raised as a treatment for drought. I think even its most ardent supporters do not claim that cloud seeding can break a drought - one of the great handicaps usually being the absence of suitable clouds to seed.

Interested parties periodically raise the matter of the use of long-term drought predictions in order to mitigate drought effects. I have yet to see convincing evidence that long-term drought predictions are sufficiently accurate to be used in planning strategies for I consider that a very high degree of predictive accuracy is necessary if they are to be useful for planning purposes. In practical terms, I think we are all aware of the "hit and miss" nature of summer storms whereby one or more properties in an area receive useful rain while others in the vicinity miss out. These seem to be the product of local cloud formation which may well be independent of a general weather pattern.

I do, however, see an important place for short-term predictions, or expectations if you prefer, based on rainfall probability data from the Meteorological Bureau and will be referring to that aspect at a later stage.

I am therefore taking the view that, for the time being at least, we have the problem of dealing with drought as it approaches closely and as it arises and that is how I believe the organisers

of this symposium intended it to be treated today. This leads me to a consideration of present measures of drought relief - but first perhaps I should comment on the question of why, when drought is a recognised feature of the environment, the community should provide relief measures anyway.

The argument is used that no concessions or assistance are provided to the proprietor of the corner store when a shopping complex appears half a kilometre away and ruins his business or to the service station proprietor when a new road diverts all traffic away and leaves him without customers.

Firstly, I would point out that these are market factors rather than a natural disaster factor such as drought. We are all still aware of the market factors which affected the beef industry from 1974 - 1978 - a period over which very little drought relief was justified or provided. Secondly, the grazier is managing natural resources of the State which in my view - and regardless of the form of tenure - are needed to support future generations. The managers are stewards of these resources for the comparatively short time they are under their management while the community or State has an ongoing interest. We need a greater community awareness - a realisation that we can so easily erode our national capital resources. Not perhaps in one great spectacular event but by an insidious change in a loss of vegetation and the intrusion of sand and scald.

Obviously the manager of these lands has to accept responsibility for his management - after all he is the one enjoying the return or standing the loss as the case may be - but it is in the interest of the community at large that incentive be provided to encourage conservative management in order to maintain productivity.

Historically, we have settled people on these lands as a matter of developmental policy. Determinations of property size have had to be made and this creates problems of the length of the planning horizon. Unless there are considerable opportunities for diversification and intensification of enterprise - which do not exist in the semi-arid environment - it is inevitable that block sizes which were regarded as adequate 20 years ago will be marginal or worse today.

Now you may say, and I will agree, that we need to increase property size where technological advances and opportunities for diversification are not sufficient to raise incomes to acceptable community standards. Through the Department of Lands, the Rural Reconstruction Board and private trading, an increase in the size of some properties is being achieved. This is necessarily a somewhat slow process, often due to the unavailability of suitable additional areas. Given the merit of this approach, I query whether in fact we can just keep on increasing property size if only because of the social and economic effects. This is becoming something of a digression but what I want to suggest is that a possible alternative to ever increasing property size is to subsidise the cost of certain inputs to units of efficient size. When drought conditions prevail, relief concessions act in this manner, albeit as a special case.

Primary producers whose incomes are heavily dependent on climate inevitably live in an atmosphere of uncertainty and with greatly fluctuating incomes. If left completely to the vagaries of market forces and weather conditions, only the big and the lucky are likely to survive and it's hard to be lucky all the time. In the process, the consumers can expect to pay highly variable prices for the product of the area. So I would claim that drought relief assists, in the longer term, to stabilise prices of primary products to the benefit of both producers and consumers. It also helps to maintain some stability in terms of services provided in country towns.

I want to turn now to our capacity to cope with a drought situation. In so doing I think that we are in a much better position than we have been in the past. Within the last 30 years significant changes have taken place. I can do no more here than draw your attention to some of these:

- 1) There is now a substantial market for lean beef; thus widening the range of animals which can be sold for slaughter. We also have greater abattoir capacity.
- 2) The construction of beef roads and availability of road transport facilities provide for faster and more flexible cattle movements.
- 3) The availability or potential availability of rainfall probability information provide the best yet basis for rainfall expectancy in the short-term.
- 4) The means of rapidly disseminating market and other information by radio and TV networks are now at hand.
- 5) We also now have a greater awareness of alternatives and the nature of the economic issues involved.
- 6) The development of a relevant body of knowledge of animal husbandry in the areas of:
  - (a) growth rate patterns of beef cattle under various conditions
  - (b) quantification of nutritional requirements of different classes of cattle under specific grazing conditions
  - (c) awareness of the energy cost to the animal in collecting low quality roughage
  - (d) the role of nitrogen supplementation and the conditions attached to the successful use of it under grazing conditions
  - (e) survival rations for animals under yard conditions
  - (f) the rapid change in palatability and digestibility which occurs with approaching maturity of sub-tropical grasses species.

All these factors add up to greatly increased opportunities to use a range of approaching-drought or in-drought measures appropriate to the circumstances of the particular drought. For although all droughts have, by definition, a common cause, the circumstances surrounding them may - and usually do - differ markedly from time to time.

The main causes of these variations are:

- (a) duration of the drought itself
- (b) extent of the area affected
- (c) availability of a market for sale stock
- (d) availability of agistment and fodder - and also the cost of same
- (e) availability of suitable (by which I mean "adapted") animals at the conclusion of a drought for restocking
- (f) future market prospects of a possible alternative or complementary enterprise.

Turning now to Commonwealth measures designed to mitigate income effects of drought there are taxation provisions which allow income from the forced sale of stock to be spread over five years. Alternatively the profit from a forced sale may be excluded from assessable income in the year it was derived and applied to reduce the cost, for income tax purposes, of replacement stock for up to five years.

The Drought Bonds Scheme, which sought to employ a principle of money conservation - probably the most flexible of all conservation type measures - has been superseded by Income Equalisation Deposits with the same end in view. However, recent other changes to taxation provisions in relation to averaging an off-property income seem to have had the effect of thwarting the aim of this type of scheme to some extent.

The type of drought relief measures which have been offered in recent droughts at the State level comprise freight concessions on the transport of fodder; freight concessions on stock to and from agistment, to forced sale or slaughter and for restocking after drought. At a later stage in drought, low interest loans for carry-on purposes and for purchase of animals for restocking have become available. The only transport concession which is available prior to the declaration of drought applies to rail freight on fodder purchased and stored in anticipation of drought. The concession is payable when the fodder is actually used to feed drought-stricken stock. Comparatively little use appears to have been made of this measure up to date.

A criticism which is made of existing measures is that they do not benefit the better managers who take action before the drought reaches a stage where a declaration is made. As a corollary, waiting for relief measures to apply tends to discourage timely action and thus lowers its effectiveness.

Although it may be thought that the availability of the concession on fodder stored in anticipation of drought counters this criticism, in practice this is not quite the case. While the feeding of special classes of animals - or larger groups for a short period - has a place as a drought mitigation measure it seems to be rather unlikely that we shall again see the attempt at feeding large numbers over an extended period. Such a situation occurred in 1965 when extensive grain feeding of sheep was undertaken. The result was a massive loss of both sheep and money, besides damage to the vegetation.

On ecological grounds the most appropriate drought relief measure in pastoral lands is to reduce the grazing pressure - in other words remove some stock, either by sale or agistment, when drought is believed to be imminent.

After years of work by the D.P.I. in the Charleville region it is now becoming clear that invasion of woody weed species into some types of mulga lands is resulting in a loss of grazing capacity. Soil erosion and scalding of some of the alluvia is having a similar effect. So we now do have some evidence of degradation of which the principal cause is believed to be excessive pressure on the ground vegetation. This often occurs following a run of good seasons when stock numbers build up and are then not adjusted rapidly enough at the approach of drought. The presence of "top-feed", that is, the leaves of forage trees, does permit the holding of animals long after the ground vegetation would support them and this can mean great pressure on the ground vegetation in mulga lands compared to say, the Mitchell Grass downs.

From the stock owner's viewpoint, disposal of above normal stock numbers seems to be a measure of major significance. Results from a comprehensive survey following the 1964-66 drought certainly indicated that stock disposal was preferable to feeding under the circumstances of that particular drought.

Now let me turn of proposals. These relate to three areas: Firstly - and this is a general measure not necessarily related to drought declarations - the provision of incentives to stock owners and property managers to instal sufficient fencing and water facilities to effectively manage and utilise both plants and animals. Accessibility of water supplies is an important aspect. Provision for control of fire is also required if we are to manage pasture to the best advantage. These incentives could be provided through

the taxation system, as they have in the past, or by means of special financing arrangements.

Secondly - and this applies to approaching drought - the co-ordination of a flow of information relating to drought. In D.P.I. there is currently a small section which maintains an ongoing monitoring of selected rainfall centres and general industry conditions. As soon as there was evidence of the likelihood of approaching drought I would see this developing into what may be termed a "drought watch" agency. Its functions would be to provide up-to-date information on either a regional or State basis. Among the aspects I would see of importance here are:

- 1) Rainfall events, trends and probabilities and other relevant climatic data
- 2) Soil moisture status where possible
- 3) Stored and stock water situation
- 4) Availability of areas for agistment
- 5) Availability of fodder supplies for purchase
- 6) Abattoir capacities
- 7) Market prices and trends for different classes of stock
- 8) Drought relief concessions available

To provide such a service the agency would obviously need the support of all interested parties. The major ones involved are the grazing industry, transport, stock agencies, marketing and financing authorities.

This is simply designed to provide the stock owner in a drought area with relevant information on which to base his management decisions. The manager, of course, will have to use this information in the light of the state of his property and stock and his financial position. Drought adds more uncertainty to an already highly variable enterprise and I believe that the final decision must always be with the individual stock owner. One would always hope for a decision which protected the natural resources of the property but people have different attitudes towards the taking of risks and they won't all make the same decision nor will their circumstances be necessarily the same. For instance, it would be quite undesirable for all managers to attempt the same type of stock movement at the same time. In the first place, it would prove impracticable, and in hindsight, it may well prove to have been a wrong decision anyway.

Thirdly, and here we are moving into an in-drought situation, the declaration of a situation of "potential" drought. In order to simplify what I have in mind I would like you to consider areas of predominantly summer rainfall. By say, April each year, the summer rainfall will be known and we can expect little plant growth until next spring/summer. Hence the on-property forage supply until the next wet season is the standing pasture.

Based on rainfall probabilities and the size of the standing forage reserve it would be possible to make an assessment of expected conditions until next wet season.

A "potential" drought situation could be brought about by an ineffective wet season resulting in low pasture production with only small paddock reserves to carry over to next season. Should that be the case a situation of "potential" drought could be declared - say for example, in May.

From this point one of two situations will emerge. In the first case, rainfall will follow its expected pattern and drought conditions develop say in September, when an actual drought declaration would be made. Should this occur, managers who had adopted nominated drought relief measures from the date of the potential

declaration would be entitled to concessions retrospectively. In effect this places concessions on the movement of stock from the property, for example, in a similar category to the current measure of concessions on fodder stored in anticipation of drought. But instead of fodder in it is cattle out.

On the other hand, the season may develop atypically with useful winter or spring rain with the result that the drought does not eventuate. In this case, no declaration of drought is made and no concessions become available.

Such a proposal would answer the criticism that good managers are, in effect, penalised by the present system. It still leaves the decision-making with the stock owner but it means that the community is providing some support to him to act in time to prevent damage to the land resources.

Fair questions that might be asked are would it work, is it worth the effort, is it practicable from an administrative viewpoint.

In my view such a scheme would work provided that it was carefully explained in terms of objectives and was allied with a program of information on what we know of land management of pastoral lands. You probably don't all know that for the past ten years the Development Planning Branch of D.P.I. has been spear-heading a land use study of western pastoral areas. All land zones are classified and described and provide a basis for the development of management systems. The Department of Lands has a large volume of information at the property level while the Charleville Pastoral Laboratory is rapidly reaching the stage of drawing its research into a management pattern of land types within its area. Then, of course, there is the large amount of knowledge contained in the experience of graziers. So our knowledge is rapidly accumulating and on a broad basis we shall also soon have the benefit of Landsat imagery. Already plans are in hand for the monitoring of identified sites for which we shall have ground truth for comparison with the Landsat picture.

We are not going to achieve the type of approach I have outlined without additional effort but I think that measures of drought relief should move along with the knowledge and opportunities that are now available.

If you say I am confusing drought relief measures with management techniques of semi-arid pastoral lands, I would be inclined to reply that it is difficult - not rational if you like - to do otherwise when drought is a common characteristic of that environment.

We can expect that droughts will always be with us - I am claiming that today we have, and are further developing, greater knowledge and better facilities to mitigate their effects.

I have outlined the approach we might take and the reasons for so doing. As one who has had a close association with pastoral beef production in this State for many years and who is concerned about maintaining the productivity of our grazing lands, I believe we should be taking more positive steps towards more informed management of our native pasture resources, and this includes the use of appropriate drought relief measures.