

# Range Assessment Newsletter

Produced by Officers of the C.S.I.R.O. Riverina Laboratory on behalf of the  
N.S.W. Range Assessment Committee

Address: The Editor, Range Assessment Newsletter, C.S.I.R.O., Private Bag, P.O. Deniliquin, N.S.W. 2710

No. 75/2 September, 1975

## EDITORIAL

This is the last issue of the Range Assessment Newsletter. It will be replaced by the Newsletter of the Australian Rangeland Society.

The N.S.W. Range Assessment Committee believes that the Newsletter has served a valuable purpose. It has helped to draw together many people who are interested in Australia's rangelands, and it has served as a forum for the discussion of range assessment philosophy and methodology, which was given a big boost as the result of the Range Condition Workshops at Alice Springs (in 1972) and Fowlers Gap (1973). There has not been a lessening of interest in range assessment, but rather there is now a better appreciation of its place in the total range management scene, and the readership of the Newsletter now represents a much broader view of range management and range science than just range assessment.

There are about 300 names on the mailing list of the Newsletter, and it is hoped that all of these recipients will either join the Australian Rangeland Society or pay the special subscription, in order to receive the new Newsletter of the Society. If you do not take one of these courses of action then you will not receive the Newsletter (see report by Alan Payne in this issue). At the present time, the preferred title for the new Newsletter appears to be "Range Management Newsletter". If you think otherwise, please let your views be known.

The Council of the Society is seeking contributions for the Newsletter from the Membership on the following and related matters:

1. Range assessment
2. Details of proposed experiments and investigations
3. Research problems - asking for suggestions
4. Discursive articles on the nature of rangeland use
5. Administration of rangeland
6. Financial situations as it affects rangeland operators
7. Management strategies for rangeland - in operation or proposed
8. Alternative uses for rangeland
9. Personal pars

All contributions should be sent to Mr. Graeme Tupper, at the above address.

This issue of the Newsletter contains letters to the Editor, a report on the Society by Alan Payne, a preview of the symposium "The Ecology of the Chenopod Shrublands", a preview of the Australian Arid Zone Research Conference 1976, a summary and evaluation of the 5th U.S./Australia Range Science Seminar/Workshop, a report of observations on the effect of wildfire on semi-arid trees and shrubs, articles on overseas rangeland aid programmes in which two of the Society's members have recently been involved, and Instructions to Authors for the Australian Rangeland Society Journal.

The N.S.W. Range Assessment Committee ceases its involvement with the Newsletter with this issue, but will continue to be involved in range management and the development of range assessment techniques. The members of the Committee, viz. Geoff Cunningham, Peter Milthorpe, Bill Mulham, and Graeme Tupper, thank you for your support of the Range Assessment Newsletter.

Next Newsletter. Contributions should reach Graeme Tupper by 1st November to enable mailing by 1st December. The Newsletter of the Society will be issued four times a year.

GRAEME TUPPER  
On behalf of the Committee

#### LETTERS

From - William A. Low, CSIRO Division of Land Resources Management, Alice Springs, N.T.

Comments on title and aims. I can't agree with David Goodall's (75/1) suggestion of "Pastoral" or "Grazing lands" as more appropriate names. Australian tradition is much based on English or European tradition but there is little about the Australian Outback scene that fits that tradition. Pastoral in a world sense includes shepherding, rural, and conventional or idyllic settings, only one of which might be applied to Australian rangeland. Further, the word stems from the French word "to feed", a rather passive term (Websters 7th Collegiate Dictionary). Range refers to grazing or ranging at large. It stems from the French word "to range" and is a far more "active" term. Since the "pastoral" industry of Australia depends on free-ranging animals seeking out feed (even when and if management practices are used to improve the range), it seems far more appropriate for the term range to be used. Its familiarity is marginally questionable now, even though it might have been questioned ten years ago.

I would also suggest that the Australian Rangeland Society alter its name from its present fecal acronym, ARS, to a more militant acronym, ARMS, Australian Rangeland Management Society. ARMS seems more appropriate for a number of reasons (*a la* Harrington, 75/1). Scientists need to ARM extension services with knowledge; extension officers need to ARM managers with management strategies; and managers need to put their ARMS to use in maintaining and guiding a productive rangeland industry.

From - Allan D. Wilson, CSIRO Division of Land Resources Management, Deniliquin, N.S.W.

Your discussion on the name of the Newsletter has been a good one. May I add my support for the selection of "Range Management Newsletter".

From - E. G. Hughes, Clifton Hills Pastoral Company, 81 Waymouth Street, Adelaide, S.A.

I was impressed with letters from David W. Goodall and Graham Harrington. As a pastoralist or grazier who administers properties in the arid zone - the term 'Rangeland' takes one back to cowboy stories of quarter section ranches with waving bluegrass. I am at a loss to figure what part of Australia this equates.

I assume natural grass land or bush is the area the Society aims to cover, so that bushlands would be a more appropriate name.

The greatest problem is to bridge the communication gap between the scientist and the grazier.

One views the other as either "an unshaven fat cat who speaks in long words" or an "uneducated but who inherited or stole everything he's got".

The first necessity is to establish dialogue. To do this the scientist would need to promote a sound basis for wanting to break into the bushlands. It is very difficult for the inhabitants to see any area where a scientist could improve their lot.

This is based on the last 30 years when the greatest advances were four-wheel drive vehicles, myxomatosis, L.P. gas, plastic fly ribbons and suspension fencing, all from overseas, while most patriotic properties still have a few broken floats that once spread whale oil on the dam to stop evaporation.

But we bushlanders are a gullible mob. Just mention some new project that will save us work and produce a ton of money, and we will welcome you like long lost brothers.

#### PROGRESS WITH THE AUSTRALIAN RANGELAND SOCIETY

A.L. Payne, Hon. Secretary, Australian Rangeland Society, 54 Broome Street, Cottesloe, W.A.

Since the formation of the Society early this year the Council in Perth has met three times. Council has been most gratified at the excellent response to the call for membership and the interest shown in the Society. Members and intending members will be interested to hear of progress.

#### Membership

Due to sterling efforts by Brendan Lay (Membership Committee) and helpers in other States 106 applications for membership have been received to 10.7.75. All have been approved by Council.

#### N.S.W.

B.M. Alchin	D.R. Green	J.A. Reynolds
J.E. Andersen	J.L. Heiman	G.E. Robards
J.R. Anderson	J.P. Kennedy	G.G. Robinson
P.B. Andrews	T. Langford-Smith	F.C. Ross
W.T. Atkinson	J.W. Lawrie	I.D. Smith
I.H. Auldism	T.R. Lyle	V.R. Squires
P.S. Bell	J.A. Mabbut	R.J. Stanley
D.A. Campbell	J.D. McFarlane	J.A. Taylor
J.L. Charley	F.L. Milthorpe	D.F. Thompson
R.W. Condon	P.L. Milthorpe	G.J. Tupper
R.E. Cooke-Yarborough	T.D. Mitchell	P.J. Walker
M.J.S. Denny	J.C. Newman	R.D.B. Whalley
P.M. Dowling	J.C. Noble	M. Williams
B.A. Ellis	C.J. Pearson	A.D. Wilson

#### Queensland

P. Anning	G.R. Lee	J.J. Mott
E.J. Bowen	D.L. Lloyd	A.J. Pressland
J.R. Childs	W.F.G. Mawson	W.J. Scattini
N.M. Dawson	A. MacQueen	R.G. Silcock
D.R. Faulkner	R.L. McCown	J.H. Wildin
		Central Library (DPI)

#### S.A.

M.H. Andrew	L.P. Lord	G.W. Nicholson
A.E. Bartholomaeus	R.T. MacDonald	H. Pick
R.L. Heathcote	B.H. MacLachlan	R.M. Sangster
E.G. Hughes	A.D. Nicholson	K.H. Treloar
B.G. Lay	D.A. Nicholson	M.D. Young

#### W.A.

K. Fitzgerald	R.A. Love	A.G. Robertson
R.B. Hacker	A.A. Mitchell	R.A. Rummery
K.M.W. Howes	R.C. Murray	H. Suijdendorp
A.M. Holm	A.L. Payne	D.G. Wilcox
R.F. Johnson	R.A. Perry	Surveyor General (Lands & Surveys Department)

N.T.

M.H. Friedel  
P.K. Latz  
W.A. Low

G. Pearce  
C.S. Robinson  
M.A. Ross

B.W. Strong  
M.M. Sallaway

A.C.T.

J.A. Carnahan  
M.L. Dudzinski  
R.E. Oxley  
O.B. Williams

VIC.

A. Mitchell

S. AFRICA

E.R. Anderson

U.S.A.

T.W. Box  
F. Busby  
D.H. Van Der Sluijs  
L.D. White

An interesting observation is that 80 of the 128 people who answered 'yes' for the A.R.S. when circularised in the 1974 Arid Zone Newsletter have not yet applied for membership. We look forward to hearing from them.

Finances

After company solicitor fees and letterhead and envelope costs, current assets in the A.R.S. account stand at \$881.93. With a few more subscriptions and careful planning and execution this will be enough to publish the first copy of the A.R.S. Journal early next year.

Range Assessment Newsletter

This will be the last of the R.A.N. in its present format. It will be replaced by a quarterly Range Management Newsletter or similar title Newsletter. Copy of news and views letters to the editor, research reports etc. should go to Graeme Tupper at Deniliquin by the end of October 1975. The Council would be pleased to have your suggestions for a suitable name for the Newsletter.

Range Management Newsletter

The Range Management Newsletter will be sent free to all members of the Australian Rangeland Society on a quarterly basis.

Libraries, institutions and non-members will probably wish to maintain continuity with the old Range Assessment Newsletter. Copies of the Range Management Newsletter of the Australian Rangeland Society may be purchased for \$4.00 per annum post free.

Enquiries should be made by means of the attached tear off slip.

First General Meeting

All members have been advised of the 1st General Meeting which may already have been held by the time this R.A.N. edition comes out.

The meeting is scheduled for Saturday, October 18 1975 at Deniliquin, immediately after the Chenopod Shrubland Symposium held at the same location. Hopefully the meeting will occupy the full day and, if so, up to 20 abstracts of papers on any aspect of rangeland use will be presented. Papers may be presented in person or by proxy and about 15 minutes will be allowed for presentation and discussion.

Journal

The Society plans to produce a Journal by early next year. Calls for papers, with layout and deadline requirements, have gone out to all members. Full papers which were presented in abstract form at the Deniliquin meeting will be acceptable. The object of the Journal is to develop an Australian approach to all aspects of rangeland science and art. Council intends to see that the quality of the Journal is high but is particularly keen to include

papers on administrative, social and operational aspects of rangeland use as well as scientific papers. Contributions could fall under the following headings or others -

- (a) Scientific research or review papers on any aspect of rangeland use.
- (b) Papers on administrative or social aspects of rangeland use.
- (c) Discussion or case history papers in the operational field of rangeland use.

THE ECOLOGY OF THE CHENOPOD SHRUBLANDS

R.D. Graetz, CSIRO Division of Land Resources Management, Deniliquin, N.S.W.

Over the last five years or so there have been four symposia on topics related to rangeland research and management. The titles of the published proceedings have been:

Studies in the Arid Zone

- (I) The Biology of *Atriplex* (Ed. R. Jones)
- (II) Animal Production (Ed. A.D. Wilson)
- (III) The Mulga Lands of Australia (Ed. W. Burrows)
- (IV) Water in Rangelands (in press)

Copies of I and II can be obtained free of charge from the Librarian of this Laboratory. II is in limited supply.

Number V in this series is entitled The Ecology of the Chenopod Shrublands and it will be held in October of this year. It begins on Sunday October 12th in Broken Hill and after three days of field trips the formal session of presented papers starts in Deniliquin on Wednesday 15th. The titles of the papers to be presented are as follows:

- (1) The chenopod shrublands - present and past distribution (including a new 1:5,000,000 map) Roger Oxley
- (2) Historical aspects of the use of the chenopod shrublands Owen Williams
- (3) Ecotypic variation within *Atriplex vesicaria* and related species Geoff Parr-Smith
- (4) Shrub ecosystems - the ecological problems are stated Derek Anderson
- (5) Aspects of the ecophysiology of shrublands John Marshall
- (6) Ecophysiological studies of shrublands on the Riverine Plain David Williams
- (7) The water relations of two *Atriplex* species in the field Elza Chapman
- (8) Microclimatic and micrometeorological studies and shrub steppe Jim Hasich
- (9) Contour patterning in *Atriplex vesicaria* communities Ian Valentine & Barry Nagorcka
- (10) The Great Basin shrublands of the United States Martyn Caldwell
- (11) Shrub population dynamics in space and in time Sue Barker & Brendan Lay
- (12) Simulation of arid zone grazing situations Ian Noble
- (13) The diet of herbivores on shrublands Dean Graetz & Allan Wilson

- |  |               |
|--|---------------|
| (14) A comparison of sheep and cattle piospheres             | Tim Fatchen   |
| (15) Range condition and animal production in the shrublands | David Wilcox  |
| (16) Economic aspects of the management of shrublands        | Steve Filan   |
| (17) Summary and Synthesis                                   | David Goodall |

Then follows two workshop sessions on Land System Mapping and Range Assessment within the shrublands.

The aim of the symposium is to bring together in a workshop atmosphere those people actively involved in either management of or research in the chenopod shrublands; and to produce through the papers listed above a definitive summary of our knowledge of these lands. To achieve these aims it has been necessary to keep the symposium a closed one with some 50 people only attending. The papers and some discussion will be published by CSIRO as Studies in the Arid Zone No.V, and it is hoped to have the volume printed by June 1976.

AUSTRALIAN ARID ZONE RESEARCH CONFERENCE 1976

Kalgoorlie, W.A. 11-16th July, 1976

The fourth Australian Arid Zone Research Conference arranged under the auspices of the Standing Committee of the Australian Agricultural Council will be held at Kalgoorlie, Western Australia from Sunday 11th to Friday 16th July 1976.

Theme: Assessing productivity and stability in the arid zone.

Aim: The aim of the Conference is to develop criteria for management in the arid zone.

The number of delegates who may attend has been restricted, consequently the Organizing Committee has allocated delegate quotas to departments and organizations likely to be concerned and has issued invitations accordingly. It is hoped that in addition to scientists who are concerned with arid land development, sociologists, economists, land board personnel and pastoralists will participate in this Conference.

The main subjects for discussion at the Conference are:

- Land administration - Assessment and Management
- Effects of Present Systems of Land Use
- Factors Causing Change in Productivity and Stability
- Methodology of Assessment
- Problems of Implementation and Practical Application of Techniques for Better Assessment and Management of Arid Lands

SUMMARY AND EVALUATION OF

5TH U.S./AUSTRALIA RANGE SCIENCE SEMINAR/WORKSHOP

WATERSHED MANAGEMENT ON RANGE AND FOREST LANDS

Boise, Idaho, June 1975

by Harold F. Heady

All participants considered that the Workshop was successful. They mentioned such items as excellent papers, enlightening discussion, new information, up-dating of ideas, thoughtful questions, new friends, and new understanding of interdisciplinary jargon as reasons for the success. This summary concentrates on the evaluations and discussions because they showed the problems of past work and suggested future needs.

Clearly, hydrologic engineers in both countries use too little of the information from land management disciplines and nearly all range scientists in both countries insufficiently consider the impact of their work on hydrologic characteristics of watersheds. Field practices by both water engineers and range scientists needs integration. Four members (two Australians and two Americans) of the Workshop met separately and determined to undertake a joint two-country program aimed at supplementing engineering practice with land management information. Rangeland management professionals would do well to include more watershed information in their practices.

Watershed models will increasingly show great promise to improve research and to aid in prediction of events, to answer the "what if" questions about climatic inputs and managerial alterations of range landscapes. Modelling and simulation techniques serve to co-ordinate information, to show relationships, and to indicate relative value of both available and needed information; the type of analysis required for a full understanding of environmental impacts. This Workshop was not organized to analyze modelling and simulation in great detail, but discussions frequently indicated that much would be gained by having the next Seminar/Workshop on the subject. It should be expanded to include all the multiple uses (livestock, recreation, water, wildlife, wood products, etc.) and organized to emphasize environmental impacts of land manipulations and uses. Such a Workshop would be timely because of changing public views on natural-resource values and statutory requirements for analysis of environmental impacts.

Subjects to which discussion returned on several occasions included: (1) Movement processes of water and nutrients in soil, plants, vegetation and watersheds; (2) the need for short-time-interval measurements of evaporation from soil and plants; (3) the complexity of evapotranspiration; (4) the mechanics of subsurface flow of water; (5) precipitation variability within small distances on natural landscapes and the associated uncertainty of watershed measurements; (6) the physical and chemical restrictions to infiltration of water into soil; and (7) problems of water quality, runoff, and ground water after strip mining. These subjects identify major needs in watershed research. Perhaps, determinations of changes in water regimes caused by manipulations of vegetation, animal, and soil for land management purposes are more important than any of them. The impacts of land treatments upon water budgets is poorly known.

The 5th Workshop was highly successful: cross-disciplinary bridges were constructed; unanswered questions pointed to future needs; and many participants in both countries were stimulated to improve their own programs. The next Workshop should concentrate on modelling, multiple uses, and environmental impacts.

#### OBSERVATIONS ON THE EFFECT OF WILDFIRE ON SOME SEMI-ARID TREES AND SHRUBS

W.E. Mulham, CSIRO Division of Land Resources Management, Deniliquin, N.S.W.

There has been much conjecture as to the role of wildfire in the maintenance of the floristic composition of semi-arid vegetation in Australia in pre-settlement days, as well as to the value of fire as a tool for manipulation of present day condition.

The combined effects of European man, his livestock and the rabbit, together with the efficiency of today's fire fighting techniques have reduced what was a relatively frequent occurrence to a once in a lifetime event. In some vegetation types it is possible that never again will there be sufficient ground fuel to support a fire of any magnitude. This has been brought about by heavy long-term grazing, with a subsequent loss of surface soil and a dramatic increase in unpalatable shrubs, strong competitors for moisture and nutrients. However, large tracts of semi-arid woodland remain in which, despite the presence of shrubs, the amount of ground vegetation becomes sufficient under a particular sequence of climatic events to carry a fire of considerable intensity. Such a sequence occurred in 1974, in the summer of which wildfires swept across 8,000,000 ha of western New South Wales.

A study was initiated at the CSIRO Riverina Laboratory to assess the effects of these fires on some of the trees and shrubs within the fire areas. As soon as practicable after the fire had passed, a numbered metal tag was affixed to each plant within a defined sampling site. Details recorded included plant species, height, degree of burn suffered and apparent intensity of burn in the general area (i.e. ground or crown fire). Whilst the main emphasis was on shrub species regarded as weeds, e.g. Turpentine (*Eremophila sturtii*), Budda (*E. mitchellii*), Punty Bush (*Cassia* spp.) and Narrow-leaved Hopbush (*Dodonaea attenuata*), other more useful species were included as the opportunity

arose. Among these were Rosewood (*Heterodendrum oleifolium*), Emu Bush (*Eremophila longifolia*), Mulga (*Acacia aneura*), Yarran (*A. homalophylla*) and Wilga (*Geijera parviflora*). Details were recorded on some 3600 plants on a range of sites from Pooncarie to Louth. The performance of these plants will be followed at 3-6 monthly intervals, with final observations to be recorded in late 1976.

This method of tagging in the wake of the fire had obvious deficiencies, not the least of which being that there could be no assessment of the number of seedlings destroyed. However, it was considered that this lack was outweighed by the problems involved in attempting to record in the supposed path of the fire! The data, obtained from established plants, will demonstrate the relative resistance of the various shrub species to wildfire and should provide information on the potential of controlled burns for manipulation of tree and shrub components.

#### DOES AID REALLY HELP?

Mike Young, 340 Gilles Street, Adelaide, S.A. 5000

(Mike Young has recently returned from Ethiopia where he worked in the Relief and Rehabilitation Department of the Society of International Missionaries. His title was Agricultural Director of Tigre Province and Eritrea, with the task of devising agricultural programmes which would help prevent repetitions of the recent famine. Mike is currently enrolled for the Master of Agricultural Science Degree at Adelaide University).

For many years the Danakil Desert of Ethiopia and the Afar nomads have lived together playing a cyclic game of take and take. The Afar take their food from the desert and then the desert takes lives from the Afar.

The desert begins - healthy, understocked and underpopulated. In these conditions the Afar thrive, they accumulate wealth - more goats, cattle, sheep, camels, wives and children. Slowly they destroy the desert. The desert dies, the animals die and the people die. This death gives the desert a chance to revive.

In the early 1970's the world looked over the desert at the Afar. It saw a tribe of people weak from hunger and dying; dying because the desert had failed. In a state of shock the world sent in sacks of grain, doctors, medicine and, worse still, livestock to replace those which had been destroyed by the desert. But the world did not send a new desert!

With the aid of medicine and food from abroad, the Afar recovered rapidly. They returned to the desert with their new herds and a new lease on life. They sincerely believed that Allah would send rains that would bring the grass. After all, he had already sent them aid!

Famine comes to the Afar whenever the desert is overpopulated. The desert rejects the Afar to give itself a chance to live again. Yet, we try to return these rejects to the desert. How often do we have to be shown that the desert cannot support them?

Morally, we feel obliged to keep these people alive. I wonder: should we be as ruthless as the desert? Are there any alternatives? Most of Ethiopia is suffering from famine, so there is no place to relocate the Afar. Tribal disputes also prevent them from living in harmony with other tribes. There is no place for them but the desert. They must be taught to manage the desert - to live in harmony with it.

Attempts are being made to introduce waterspreading. But suitable sites are few and the physical work required is alien to the people. This will definitely not save the desert. Unfortunately, once the desert is dead the Afar, as a tribe, must also perish.

A dilemma is apparent; either we let some Afar die today or we create a desert waste and destroy the Afar of tomorrow. What is the value of a life today compared with a race tomorrow?

Over the years the Afar have evolved an elaborate code of ethics and laws which have enabled them to survive in harsh conditions. Outside interference is upsetting their customs. While apparently solving immediate problems, we may be destroying the Afar's own social mechanisms of survival and co-habitation with the desert and we are not replacing them with new and better ways of life.

The costs of aid may well be far greater than the benefits which we bring to a tribe stricken with famine. It may well be better to leave the Afar to themselves until we have a better understanding of their relationship with their desert.

When the world sends aid it must be sympathetic to the desert's resources. For when the desert lives, the Afar live.

#### RANGE CONDITION STUDIES AS AID

Graham Harrington, CSIRO Division of Land Resources Management, Deniliquin, N.S.W.

The key phrase in Mike Young's article "Does Aid Really Help?" (in this issue of R.A.N.) is, "to live in harmony with it" ("it" being the desert environment). I have recently returned from Afghanistan where I assisted in changing the emphasis of a "development" project, aimed at the nomads, from experimentally introducing new management practices to a study based on range and human ecology. Unfortunately it was only the emphasis that was changed, partly due to lack of personnel suitably qualified to cover all aspects of human ecology, partly because "development" on the western prototype is extraordinarily difficult to negatively advertise (provided it does not involve wearing mini-skirts). Perhaps all development schemes should bear the insignia "Western culture is a health hazard".

That remark should not be taken too seriously, for the traditional practices in most semi-arid parts of the world have proved to be a considerable health hazard. The recently formed EMASAR has as its aim to co-ordinate and promulgate Ecological Management of the Arid and Semi-Arid Rangelands of Africa and the Near and Middle East, a form of management which has been signally lacking up until now.

In Afghanistan the range can be divided into continuously and summer-grazed categories. The summer grazing is found on the high centre of the country and the majority of the precipitation falls as snow; it is the snow and low temperatures which drive the nomads to the plains in the north, west and south of the country where they compete with the resident herds for crop residues and a very depleted range. Large scale stock deaths in recent years have demonstrated that it is the carrying capacity of the winter ranges which controls the size of the national herd, and this is supported by the relatively high perennial component in the summer-grazed plant community compared with that of the winter.

"Pristine" range sites are non-existent in Afghanistan, and it is probable that most of the country has been greatly affected by man for over 2000 years. Under such conditions range condition becomes an entirely relative thing. Nonetheless a Dyksterhuis type approach proved useful in assessing range condition classes. The most leniently grazed areas proved to have the highest perennial plant cover and the longest species list. A scheme was set up whereby the actual grazing intensity will be assessed on a monthly basis, for areas in different range condition and, coupled with observations on the response to exclosure, it is hoped to establish the safe carrying capacity *by season* within rough limits. The practical implications of this are supremely important. It is extremely likely that the dangerous practice of introducing new watering points will be indulged in the future. This can be done in an uncontrolled fashion and so increase the area currently overgrazed or it can be used as a tool for attracting herds away from over-grazed sites and eventually for controlling numbers and season of grazing on the range. Such a scheme is highly ambitious, difficult to operate in such terrain, and might have many unforeseen social side-effects.

It is easy to criticise aid and development schemes, but what is often not realized is that social and economic change is now taking place in most societies in the world, irrespective of government policy. Governments only have the choice of ignoring or attempting to direct such changes. In the case of the Afghan nomads there was considerable evidence for a move towards a more sedentary existence. Nomads were buying cropped land in some areas when villagers fell on hard times and were forced to sell, and repeatedly I received grumbles from the nomads about the hard way of life and their relative disadvantage to villagers when it came to medicine, education and influence with the administration. Also, cropping appeared to be swallowing up much of the traditional grazing, possibly due to the widespread availability of medicine causing a population increase.

The ravages imposed by continuous grazing does not make one optimistic for the future of large scale settlement of nomads unless it receives considerable planning and organization. Like Mike Young I really wonder whether we are not merely postponing the day when the environment imposes its own limits on the population and in doing so ensuring that those limits are greatly reduced. In this particular case I was concerned to establish whether the range is still deteriorating or whether it has settled into equilibrium with the herds using it. If it is in equilibrium, the chances of improving on the current system (where herd size is a direct reflection of the preceding seasonal climate) are slim.

---o0o---

#### FOOD PRICES TOO HIGH?

A Day in the Life of a Big City Couple. The housewife spends \$20 to get her hair fixed and tinted, puts on \$2.50 worth of makeup to cover the ravages of a \$50 night of entertainment, slips into a \$50 dress that covers her from the lower third of her chest to 4 inches below her seat, puts on a \$20 pair of shoes, a \$100 coat, goes out of her \$30,000 home, gets in a \$5,000 car and in trying to avoid scraping their \$3,000 boat, she bumps into the \$400 lawnmower, and drives eight blocks to the supermarket.

Later she comes home, turns on the \$700 color TV, sits in a \$180 recliner, and watches herself on the national news network protesting the high cost of food.

After that she starts putting away the things she bought at the supermarket after the demonstration was over. There is a carton of cigarettes, a fifth of scotch, a six-pack of beer, two cartons of soft drinks, hairspray, deodorant, aspirin, razor blades, paper towels, toilet tissue, light bulbs, dog and cat food and litter, panty hose, detergent, shampoo, rinse, and \$16.48 worth of food items, with 50% of the cost of that being for pre-cooking, pre-mixing, plastic, foil, cardboard, and paper.

That night her husband attends a local meeting to map strategy for a demonstration for a substantial raise in pay, shorter hours, more hospitalization, and better retirement pay.

He drives there in the small \$2,000 foreign import, not so much for the reason that it is more economical and better in traffic, but because when his wife came home in the bigger American-built car, as she turned into the drive, a wheel fell off, as it was still new enough that all the defective workmanship hadn't been corrected yet.- Butler Party Line, via Kansas - Oklahoma Section Newsletter of the Society of Range Management.

---o0o---

#### THEN TOO

Getting out a publication has its problems. If we print jokes, some readers call it kid stuff. If we don't, others say we tend to be too serious and technical.

If we don't print every word of every contribution, we don't appreciate them. If we run them verbatim, the book is filled with junk.

If we change the other fellow's copy, we're too critical. If we don't, we are reproved for slipshod editing.

If we clip items from other publications, we're too lazy to write them ourselves. Like as not, you'll even say we borrowed this one. You're absolutely right..... we did!

## INSTRUCTIONS TO AUTHORS

### THE AUSTRALIAN RANGELAND SOCIETY JOURNAL

#### 1. LENGTH OF PAPER

Papers should not exceed 5000 words

#### 2. FORM OF PAPER

We intend publishing the journal by an offset printing process. To maintain uniformity throughout the publication, the instructions must be followed. Use white bond paper using an electric typewriter with a carbon ribbon. Use a clear "open" typeface (Elite - 12 symbols to the inch). Do not use erasures. We suggest you use chalk-backed correcting paper (e.g. Tipp-Ex) or white correcting fluid (Snopake or Liquid Paper).

Two typewritten copies of the paper, complete with tables and figures in the desired position, should be submitted. The paper should be in single spaced typing on one side of International (A4) size paper (21 cm x 30 cm) with a 25 mm margin on the left hand side of each page and 20 mm at top and bottom. If you do not have International A4 please type to the dimensions of A4 and when the paper is finally accepted we will send you sheets of A4.

Number each page in pencil on the reverse side, not on the face. Type tables in the text where they occur (also in single spacing). Draw the figures in the text where they are required, with the legend typed under each one.

The typescript should be made up of the following parts in the sequence shown.

- (a) Title and author's name, with name and address as a footnote. Footnote should be placed at the bottom of the text with a horizontal line drawn between them and the text. Do not have a separate title page. The above details should be at the top of the first page, followed immediately by the Summary and Introduction.
- (b) Summary. If it is divided into paragraphs, these should not be numbered.
- (c) Body of paper set out under appropriate headings and can include Introduction, Materials and Methods, Results, Discussion, Acknowledgements and References.

#### 3. HEADINGS IN THE TEXT

The heading for the Summary should be centred, in lower case type, except for the first letter, and underlined (or in italics). Each main heading, i.e. Introduction, Materials and Methods, Results, Discussion, Acknowledgement, References, should be centred, typed in capitals and preceded by the appropriate Roman numeral. There should be a full stop after the numeral but not after the heading.

Sub-headings should be centred, in lower case type, underlined and preceded by the appropriate lower case letter enclosed in brackets. Lesser headings, if required, should start on the left hand side, be underlined, on a separate line and preceded by small Roman numerals in brackets. There should be no full stop at the end of a heading. Indent the start of each paragraph.

#### 4. UNITS

Results should be presented in metric units according to the Systeme International d'Unites (see Royal Society Conference of Editors (1968), "Metrication in Scientific Journals", (The Royal Society : London), International System of Units (Australian Academy of Science)).

#### 5. TABLES AND FIGURES

Tables and figures should be as simple as possible and the same results should not appear in both.

## Tables

Each table should be in single spaced typing and placed in the text where it occurs. The number of each table should be centred, in capitals and with no full stops; this should be followed on the next line by a title which should be comprehensible without reference to the text. Except for the first letter of the first word, the title should be in lower case type, underlined with no full stop at the end.

Each column (or row) heading has only the first letter of the first word in capitals. The dimensions of the units are shown only in the headings (in brackets), not in the body of the table. Where the measure of variation is presented as a separate column or row, + should not be repeated before each value. There should be no vertical ruling between columns.

## Figures

Each figure should be drawn in Indian ink in the correct place in the paper. All lines in the figure should have a thickness of 0.4 mm and the symbols used to indicate determined points should be approximately 3 mm diameter. Symbols should be used in the following order of preference:-

o, ●, Δ, ▲, □, ■, x, +

The key to the symbols should be in the legend, not on the face of the figure. Lettering or numbering to appear along the axes of the figure should be typed on the drawing or on the accompanying overlay. The second and third copies may be photocopies of the original and should include all lettering and numerals.

The numbered legends should be typed under each figure. Each legend should be comprehensible without reference to the text and should include a key to the symbols used. Full stops are used after the Arabic numeral and at the end of the legend, e.g.,

Fig. 3. Changes in the live weight of sheep grazing different pastures

o \_\_\_\_\_ o, lucerne at 7 sheep/ha; ● \_\_\_\_\_ ●, lucerne at 5 sheep/ha

## 6. PHOTOGRAPHS

Photographs can be reproduced at a cost to the author of \$2 per print. Prints should be black & white, glossy finish and of high contrast. The maximum acceptable size is 12.5 mm x 7.5 mm (5 x 3 in.).

Authors must leave sufficient space blank in their manuscript for the photographs to be inserted. The legend for each photograph should be typed below the space left vacant for it and should also be lightly written in soft pencil on the back of the photograph.

## 7. REFERENCES

References should be kept to a minimum. In the body of the text, references should be restricted to authors' names, followed by year of publication. They should conform to the example.

A complete list of references cited in the text must be given at the end of the text, arranged alphabetically. In the list, authors' names, year of publication, title of the paper, name of journal, abbreviated in accordance with the "World List of Scientific Periodicals", 4th Ed. and Supplements (Butterworth : London), volume number, and page numbers should be given in that order.

For example:-

SCHMUTZ, E.N., HOLT, G.A., and MICHAELS, C.C. (1963) Grazed class method of estimating forage utilization.  
J. Range Mgmt. 16: 54-59

When the reference is a book, author's names, year of publication, title of book, name of publisher, and place of publication should be given in that order.

8. OTHER COMMENTS

Standard nomenclature and abbreviations should be used. All special terms or abbreviations must be defined at their first occurrence. Spelling should be according to the Concise Oxford Dictionary.

When numbers occur in the text, figures should be used with units, e.g. 3 g, 5 years, 6 ha (except when beginning a sentence); otherwise words, except when 10 or more, e.g. nine plots, seven sheep, four times (but, with decimals, 3.5 times), 11 steers, 27 samples.

9. GENERAL COMMENTS

Recently (1972), The Australian Journal of Experimental Agriculture and Animal Husbandry has published "Notes for Contributors". The Council urges all contributors to read these notes and particularly the section on "General Comments on Writing" on pages 2, 3 and 4, and the one on "Structure" on pages 5 and 6. Another good guide for intending authors is an editorial entitled "For the Good of the Cause" in the Journal of the Australian Institute of Agricultural Science, 38: 147.

The Editor wishes to make a special plea that authors submit their manuscripts for scrutiny and criticism by their colleagues.

Authors who are unable to meet the above conditions should apply to the editor for assistance in preparing the camera-ready copy of their papers. Consideration will only be given in cases where it is impossible for the author to meet the requirements.

Membership form for The Australian Rangeland Society. Detach and send, with cheque to Mr. K. M. W. Howes.

THE AUSTRALIAN RANGELAND SOCIETY

Mr. K. M. W. Howes, (Hon. Treasurer),  
Australian Rangeland Society,  
CSIRO,  
Private Bag, P.O.,  
WEMBLEY, W.A. 6014.

Dear Sir,

I . . . . .  
of . . . . .  
. . . . .  
. . . . . State and Country

apply for membership of the Australian Rangeland Society and agree to be bound by the regulations of the Society as stated in the Memorandum and Articles of Association in existence from time to time.

I enclose fifteen dollars (Australian currency) being my subscription for the year 1975.

Signature . . . . .

Date . . . . .

Date of Approval of Council . . . . .

Entered in Register of Members . . . . .

Date . . . . .

Signed . . . . .

Signed . . . . .

(Members of Council)

Mr.K. M. W. Howes, (Editor),  
Australian Rangeland Society,  
CSIRO,  
Private Bag, P.O.,  
WEMBLEY, W.A. 6014.

Dear Sir,

I wish to receive the Range Management Newsletter and enclose my <sup>cheque</sup> bank draft for \$4.00 <sub>money order</sub>  
Australian currency, being for one year's subscription.

My address is: . . . . .

. . . . .

. . . . .

. . . . . Post Code