

RESEARCH INFORMATION NEWS

Department of Conservation and Land Management



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Editorial

As this issue goes to press a number of Research Division staff are leaving on an extended field trip to the Gibson Desert Nature Reserve.

A similar trip earlier in the year was aborted due to heavy rain, it is hoped that the rain has now exhausted itself and that prescribed aerial burning experiments will be successfully carried out during this visit.

This month's edition of the newsletter contains contributions from a number of Research Division staff and also from the Department's Scientific Editor. Thanks to all concerned for their support.

Ed.

	ISSUE	DEADLINE	DISTRIBUTION
DEADLINE FOR NEXT ISSUE	SEPTEMBER '88	23 SEPTEMBER	EARLY OCTOBER



Information from the Research Division Policy Group Meeting

The meeting was held on 1 September 1988 at the Tree Research Centre, Narrogin.

Information from the meeting.

Country Research Centres - a discussion paper on the pros and cons of basing a Research Centre at Karratha, Kununurra or Kalgoorlie was debated. It was agreed that Karratha would be a logical location. A paper will be prepared for Policy Directorate summarizing all discussions on Metropolitan and Country Research Centres.

Five Year Research Plan - Typing of the document is almost complete. It is anticipated that a first draft will be circulated to RDPG within the next few weeks.

Interstate/Overseas Travel Applications - all applications for interstate/overseas travel must be supported by the relevant Program Leader before being submitted to RDPG for approval. Please ensure these applications are forwarded in adequate time as many require Ministerial approval.

At this meeting RDPG supported the following applications for travel:

Bruce Maslin

- Council of Heads of Australian Herbaria meeting
- Workshop - Whose name? What Specimen?

Gillian Perry

- Workshop - Whose name? What Specimen?

T Butcher/R Mazanec

- RWG1

Acting Arrangements - the following arrangements will apply from 6-20 September 1988

Ian Abbott to act for Andrew Burbidge

Tony Start to act for Per Christensen

(Both Andrew and Per will be absent on a field trip to the Gibson Desert)

Technical Staff - Standardized PDFs have been prepared for each level of Technical Officer. These will be circulated for comment among staff.

Criteria Progression Level 6 to Level 7 and Level 7 to Level 8. This issue has been re-raised with the Department and the Public Service Commission because progress has been slow. We are awaiting a formal reply from the PSC to our recent memo.

The formal part of the meeting was followed by an inspection of facilities at the Tree Research Centre and also the CALM, Narrogin offices. An informative field trip was conducted by Paul Brown in the afternoon. The RDPG extend their appreciation to Paul for a most interesting excursion. Paul will shortly be leaving Research Division to take on the role of District Manager at Merredin. Our good wishes go with him.

International Workshop on Conservation Biology and Agriculture - California

Following an invitation by the University of California, Davis, David Coates, Senior Research Scientist at Woodvale, participated in an international workshop on the subject of Conservation Biology and Agriculture at Pacific Grove California on May 22-26.

The organizers indicated that such a workshop was needed to examine conservation biology and modern agricultural production. They based this need on the premise that the new and emerging discipline of conservation biology can play a vital role in effectively identifying and quantifying impacts of agricultural systems on natural biological diversity, and in formulating realistic mechanisms and policies that are essential to achieve a balance between agricultural production and the conservation of biological diversity. It was the belief of the organizing committee that policies and practices can be defined which can result in agricultural systems that enhance conservation of biological resources while ensuring long-term vitality of agriculture.

The aim of the workshop was to develop a consensus regarding the theory and practice of conservation biology; discuss current agricultural production systems in light of these theoretical and methodological concerns; evaluate the opportunities and constraints for biological conservation presented by contemporary agricultural practices; and define an agenda for research on agricultural and conservation practices and policies that will expand on current knowledge and understanding of balanced biological utilization and conservation.

The workshop was organized around five major themes:

- 1 Conservation Biology Theory
- 2 Genetic Resources and Conservation
- 3 Organismal Resources and Conservation
- 4 Habitat Resources and Conservation
- 5 Conservation Biology Policy

Each of these areas was represented by a working group with David being a member of the Genetic Resources and Conservation group. The products of the workshop will be two volumes on conservation biology and agriculture. The first will consist of five position papers written by the working groups and edited by a committee of five University of California, Davis faculty. The second volume will outline a proposed research agenda for conservation biology in agriculture derived from conference activities and responsive to national and international issues and concerns.

SEMINAR SERIES 1989



The current system of alternating research seminars at Como and Woodvale every two weeks has been operating for three months.

I invite all members of Research Division to comment on how well this has worked. Any suggestions as to how next year's series should be organized are welcome. Please send comments to Jeanette Gilmour at Woodvale. She will collate them for RDPG to consider.

Ian Abbott.

Seminar

Friday 7 October 1988

ECOLOGY OF THE BLACK-FOOTED TREE-RAT IN THE KIMBERLEY AND THE "TOP END" OF THE NORTHERN TERRITORY

Presented by Dr Gordon Friend

The Black-footed Tree-rat (*Mesembriomys gouldii*) is one of three very uncommon species of large, semi-arboreal tropical rodents which inhabit the wet-dry tropical regions of the Northern Territory and Western Australia. In the Northern Territory a relatively dense population was studied by live-trapping between September 1980 and January 1983. Twenty-four males and thirty-two females were recorded in 182 captures over 2,900 trap-nights. Peaks in abundance were a reflection of increased trappability together with influxes of immature animals following breeding pulses in an otherwise non-seasonal reproductive pattern.

Data on population dynamics and habitat preferences suggest a relatively non-social behavioural pattern, with populations restricted to structurally diverse tall open-forest where understorey plants with fleshy fruits are common. This accords with the limited data on diet, and it seems that a geographically but not temporally restricted food resource may explain the patchy distribution and non-seasonal breeding pattern recorded.

Recent data on habitat preferences and movements using radio telemetry in the Kimberley support these hypotheses.

**Venue: Wildlife Research Centre
Ocean Reef Road
Woodvale**

Time: 3.00pm

SEMINAR

Thursday 15 September 1988

Uraba lugens in South Australia: Biology and performance in relation to Nitrogen Nutrition

Presented by Dr Janet Farr

Two main hypotheses exist on the relationships between food quality and quantity to insect performance and past population dynamics.

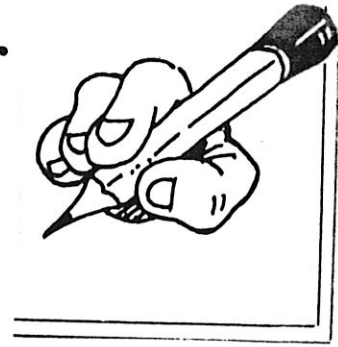
1. Plants are usually an adequate sources of nitrogen for herbivores (Fraenkel, 1953, 1959).
2. Plants are generally inadequate sources of nitrogen for herbivores (White 1978).

Uraba lugens Walk. (the gum leaf skeletonizer moth) is an oligophagous insect, feeding and performing differentially on a wide range of *Eucalyptus* species. Outbreak populations of *U. lugens* have been recorded in all Australian states. These hypotheses are therefore discussed in relation to the biology and performance of *U. lugens* fed fresh and artificial diets and the variation of chemical components within the insect food plant. The implication of these results in relation to the potential for insect outbreak is also discussed. It is considered that nitrogen is not a limiting nutrient for insect herbivores but may be rendered more "assimilable" by the impact of environmental stress on the plant's capability to produce chemical defense against insect attack. Mention is also made of the life cycle of the South Australian form of this insect and comparisons are made with the Western Australian form of *U. lugens*.

Venue: Training Centre
CALM SOHQ
50 Hayman Road
COMO

Time: 3.00pm

A Word from the Scientific Editor



Select the correct verb form for the following sentences

1. A number of native cats (was, were) trapped during the study.
2. The number of native cats trapped (was, were) greater than expected.

Does the word number take a singular or plural verb?

It is apparent that some difficulties arise in connection with the use of the word number so I have been prompted to explore the issue in an attempt to resolve the difficulty!

Well, here is what some of my sources say.

Nouns of multitude - such words as army, fleet, Government, company, party, pack, crowd, number, majority, may stand either for a single entity or for the individuals who compose it, and are called nouns of multitude (or collective nouns). They are treated as singular or plural at discretion - and sometimes, naturally, without discretion. (Fowler 1968).

If a group of words, especially a partitive group, conveys the idea of plurality, ... the verb is in the plural, even though the governing noun is singular, but the verb is singular if the group conveys the idea of oneness. (Partridge 1973)

... difficulty arises with collective nouns that are followed by a partitive genitive. A number of people, books, towns are or is? Here the force of attraction is at work. If a plural noun follows the of, the verb is almost inevitably ... made plural by attraction. (Treble and Vallins 1969).

Collective nouns are those that denote a collection of persons or things ... Certain difficulties of number arise in connexion with them. Should a collective noun be considered singular or plural? If this matter, as in others, the fashion of grammar changes. (Treble and Vallins 1969)

Does that resolve the difficulty or does it create more confusion and raise more questions? What is a partitive group, or a partitive genitive? And how do we decide whether the idea of plurality or singularity is being conveyed? When does the rule of attraction apply and what is it anyway?

And just as we had decided that the word number was a collective noun we find that number is now felt not as a collective noun but as a component of a compound numeral. (Partridge 1973)

Fortunately, Fowler provides the solution very simply, saving hours of further research looking for answers to these questions.

When the word number is itself the subject it is a safe rule to treat it as singular when it has a definite article and as plural when it has an indefinite. (Fowler 1968)

Correct answers

1. A number of native cats were trapped during the study.
2. The number of native cats trapped was greater than expected.

And finally, some advice from Fowler for all who wish to avoid the difficulty entirely.

This use of a number of in the sense of more than one but not a great many is idiomatic, but the almost absurd vagueness of the expression if interpreted literally makes careful writers prefer an adjective such as some, several, many, numerous; this has the advantage too of leaving no doubt that the verb must be plural. (Fowler 1968)

I think I'll opt for Fowler's suggestion.

Some native cats were trapped during the study.

More native cats than expected were trapped.

References

Fowler, H.W. (1968). A Dictionary of Modern English Usage. 2nd Edn, rev. by Sir Ernest Gowers. O.U.P. London.

Partridge, E (1973). Usage & Abusage : A guide to good English. Penguin.

Treble, H.A. and Vallins, G.H. (1969). An ABC of English Usage. O.U.P. London.

Marianne Lewis
Scientific Editor



RESEARCH METHODS NOTE NO. 2

by David Ward

DIFFERENT TYPES OF DATA

Opinions vary, but the consensus among scientists is that there are four main scales of measurement - NOMINAL, ORDINAL, INTERVAL and RATIO.

The weakest of these is NOMINAL, where symbols such as letters or numbers are used simply as labels for classifying objects. Examples are colours, shapes, or groups such as mammal, bird, reptile, amphibian, fish. When numbers are used as labels it is easy to forget that they are only labels, and to perform calculations such as finding the mean. For nominal data of course the correct measure of central tendency is the MODE. Other statistical tests which may be used are the chi-squared and various tests based on the binomial expansion. The usual measure of association is the nonparametric Contingency Coefficient.

The next level of measurement is the ORDINAL or RANK scale. This occurs where the experimental units are not only different, but also can be placed in a rank relationship. A simple example is:

private < corporal < sergeant

The correct measure of central tendency for ordinal data is the MEDIAN. Correlation coefficients suitable for ranked data are Spearman's and Kendall's Coefficients. It is emphasised that parametric tests such as t-test, ANOVA and regression should not usually be used on rank data. If they are, the results are unreliable. Non-parametric tests may be valid.

The next step up the ladder is to INTERVAL scale. This is essentially a mapping onto the number line, so that both order and distance between units of data are involved. The interval of the number line used is, however, arbitrary, so that no true zero exists. Examples are both the Fahrenheit and Celsius temperature scales. The units and zero points are both arbitrary. We could just as well use the freezing point or mercury as a zero point. Also, 100 degrees is 75 degrees hotter than 25 degrees, but not four times as hot. However, parametric tests can be confidently applied to interval data provided other assumptions such as normality and homoscedasticity are met.

The final scale of measurement is the RATIO scale. This is similar to the interval scale, but has a true zero, and so we can validly compare ratios between observations. An obvious example is age, where a 50 year old is twice as old as a 25 year old. Another example is mass. All statistical tests are applicable to ratio data.

At the outset of a research project, the scales of measurement should be clearly defined, for this will affect the range of statistical techniques available.

A reference to the subject is "Nonparametric Statistics for the Behavioral Sciences" by Sidney Siegel.

GROUND PARROT STUDY

Allan Burbidge of the Wildlife Research Centre, Woodvale, has recently received a grant of \$22,000 from the World Wildlife Fund to assist with a project to determine micro-habitat preferences of the Ground Parrot in the Fitzgerald River area. As these birds are very secretive, a major aspect of the project will be to carry out radio-tracking of individual birds. Much of the field work will be done by consultant biologist Doug Watkins, who has previously studied the Ground Parrot on the South Coast.

TELL AND SHOW OR DO AND SHARE?

As I get older and grumpier I am beginning to make a simple initial classification of things and people into those that are genuine and those that are phoney, and this general classification is applicable to environmentalists and their activities. Last weekend I went with an open mind to a workshop at Yanchep National Park run by Professor Steve Van Matre of Aurora University. The theme was "Earth Education" and I came away convinced that both the man and his ideas fall squarely into the genuine basket.

Judith Harvey attended a later session, but I was disappointed not to see more researchers there, since it seems to me that research and education are simply different sides of the same coin of knowledge. We need a certain amount of education in order to carry out research, yet our research is sterile unless we effectively communicate our ideas and findings to others. Professor Van Matre has some clear views on effective education and two of his points may be useful to researchers trying to communicate results. They are:

Concentrate on understanding processes rather than on knowing names.

Do and share rather than tell and show.

I'm not going to tell you any more about the teaching process - you can do it for yourselves.

If you are interested in finding out more about Earth Education contact Carmel Staniland (285) or Gil Field (287) - they may be able to help you share your research findings with non-scientists of all ages through vivid learning activities. The hunger is there....

David Ward

SCIENTIFIC AND TECHNICAL PUBLICATIONS

The following have been approved for submission for publication this month.

Author(s): A A Burbidge and P J Fuller
Title: Numbers of breeding seabirds on Pelsaert Island, Houtman Abrolhos, Western Australia
For submission to: Corella

Author(s) A A Burbidge, K W Dixon and P J Fuller
Title: Nature conservation values of vacant Crown land at White Wells, Shire of Dalwallinu, Western Australia
For submission to: CALM Technical Report

Author(s): B L Rye
Title: A new species of *Pimelea* (Thymelaeaceae) from South-western Australia
For submission to: Nuytsia

Author(s): K F Kenneally
Title: *Grevillea donaldiana* (Proteaceae), a new species from the Kimberley Division of Western Australia
For submission to: The Western Australian Naturalist

Author(s): A A Burbidge and D J Pearson
Title: A search for the Rufous Hare-wallaby and other rare mammals in the Great Sandy and Little Sandy Deserts, Western Australia
For submission to: CALM Technical Report

The following Wood Utilization Research Centre Reports have been published.

No. 3
Author(s): G K Brennan and B R Doust
Title: Moisture content of jarrah logging residues

No. 4
Author(s): J D Clarke and G K Brennan
Title: Small jarrah sawlog and residue log harvesting trials near Harvey, WA

No. 5
Author(s): G K Brennan
Title: Splitting of WA Sheoak (*Allocasuarina fraseriana*) logs stored under water spray or dry stockpiled.

Anyone requiring a personal copy of these Reports can contact Graeme Siemon at Como Research Centre (ext. 302).

RESEARCH PROJECT PLANS

The following Research Project Plans have been approved this month.

- No:* 6/88
Title: *Seasoning - pre-drying regrowth eucalypt timbers from green to below fibre saturation point (F.S.P.) using a batch kiln*
Officer in Charge: *Gary Brennan*
- No:* 20/88
Title: *Operational - scale testing of the effectiveness of the single autumn fire in controlling jarrah leafminer*
Officer in Charge: *Ian Abbott*
- No:* 21/88
Title: *Sawn recoveries from crown logs of P. radiata*
Officer in Charge: *Allan Thomas*
- No:* 39/88
Title: *Survival of Uraba lugens walk on different food plant species*
Officer in Charge: *Janet Farr*



Philosophy Corner.....

"A research scientist with a new problem should go to the laboratory first"

"Wouldn't it be better if he first went to the library to see what has already been done in the field?"

"Most certainly not!"

"Why"

"Because whatever is in the literature will only prejudice the researcher and inhibit the application of the scientist's own fresh ingenuity to the problem."

"But I take the other stand. The research worker who does not go to the library first will waste much time repeating work already done and reported by others."

Who is correct?

FOOD FOR THOUGHT

"What we call science today is merely a haphazard collection of disconnected scraps of knowledge, most of them useless, and many of which, instead of giving us absolute truth, provide the most bizarre delusions, presented as truth one day and refuted the next."

Before our distinguished scientists demand to know what uneducated fool wrote that, I should reveal that it was Leo Tolstoy, in his essay "What is Religion?".

And the Lord spoke unto Moses, saying:

"There is both good and bad news. The good news is that plagues shall smite your Egyptian oppressors. The Nile shall be turned to blood and frogs and locusts shall cover the fields, the gnats and flies shall infest the pharaohs people and their cattle shall die and rot in the pastures, and hail and darkness shall visit punishment upon the land of Egypt! Then will I lead the children of Israel forth, parting the waters of the Red Sea so that they may cross, and thereafter strewing the desert with Manna so that they may eat."

And Moses said "O Lord, that's wonderful! But tell me, what's the bad news?"

And the Lord replied, "It will be up to you, Moses, to write the environmental review and management program."

.....

Have you Heard.....

Giulia Maranta, Clerical Officer at Dwellingup Research has recently become engaged to a former Dwellingup Research Officer, Pete Somerford.

Stephanie Moran from the Library at Woodvale has also recently become engaged.

Congratulations to Giulia and Stephanie

Congratulations also to Richard Mazanec, Research Scientist at Dwellingup Research and his wife Anna on the birth of their son, Peter.

Thank you...

Joanna (Tippett) and Ross Young wish to thank everyone for the flowers, cards and good wishes which greeted us soon after Susan's arrival on 2nd August. We heard that Marg Wilke was the most excited harbinger of our news. The flowers from Como were very pretty with many pink orchids in the arrangement. Thank you.

Joanna

PROMOTIONS

Clete Mathews from the Wildlife Research Centre, Woodvale has recently received a promotion to the Health Department. Clete has been appointed to a Level 4 position within the Budgeting and Financial Planning Services Branch of the Health Department. Clete is due to start his new position within the next few weeks. The Research Division wishes him luck in his new Department.

Michelle Pree from the Manjimup Research Centre recently returned from Long Service Leave to find she had been successful in being promoted to Administrative Assistant within the Manjimup Research Centre. Congratulations are also extended to Michelle on her new appointment.



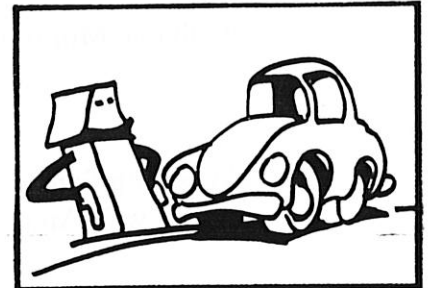
The Dark, Ominous World of Performance Appraisal



Government vehicles : How to recognize them

They have the following features rarely found in privately owned vehicles:

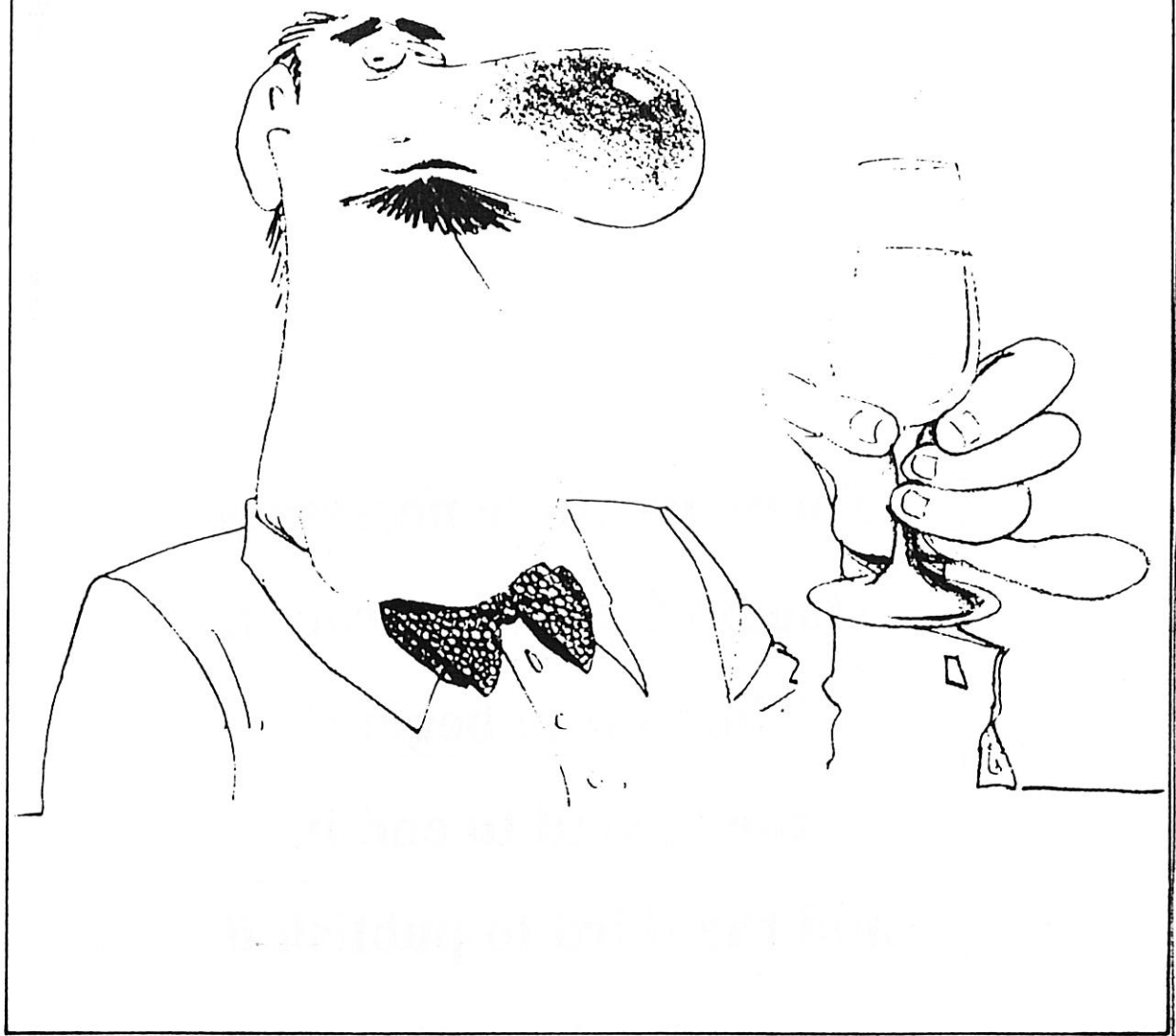
1. They travel faster in ALL gears, especially reverse.
2. They accelerate at a phenomenal rate.
3. They enjoy a much shorter breaking distance.
4. They can take "ramps" at twice the speed of private cars.
6. Battery, water, oil and tyre pressures do not need to be checked.
7. The floor is shaped just like an ashtray.
8. They do not require to be garaged at night.
9. Can be driven up to 100kms with the oil light flashing.
10. They need cleaning less often, especially inside.
11. The suspension is reinforced to allow carriage of concrete slabs and other heavy building materials.
12. They are adapted to allow reverse gear to be engaged whilst the car is still moving forward.
13. The tyre walls are designed to allow bumping into, and over, kerbs.
14. Unusual and alarming noises are easily eliminated by the adjustment of the radio control.
15. No security needed. May be left anywhere, unlocked, with the keys in the ignition.
16. They can be driven on roads only suitable for 4 wheel drive vehicles at high speed.
17. Mechanical servicing is only required prior to disposing of the car.
18. On rough gravel roads, specially designed scoops distribute rocks and other debris at windscreen level on to following cars. Best results are obtained at high speeds.
19. Special exterior features pacify other road users when being passed on right corners, over double lines and when cutting in on a line of slower moving cars.
20. Brass tags make it mandatory for all other road users to avoid these cars at all times.



**There are three necessary
stages of useful research.**

**The first to begin it,
the second to end it,
and the third to publish it.**

Faraday, 1821



** DO YOU ENJOY THE OCCASIONAL DROP OF WINE, BUT WOULD LIKE TO BROADEN YOUR KNOWLEDGE AND EXPERIENCE? IF SO, YOU MAY BE INTERESTED IN BECOMING A FOUNDING MEMBER OF THE WILDLIFE RESEARCH CENTRE WHITE & RED CLUB (W.R.C. W.R.C.).

** OUR INAUGURAL MEETING IS PLANNED FOR WED. 5th OCTOBER ~ 4.30 PM.

(FURTHER DETAILS LATER)

PLEASE LET ME KNOW A.S.A.P. IF YOU'RE INTERESTED IN JOINING!!

*P.S. NON-WOODVALE STAFF ARE WELCOME TO JOIN !!

GORDON (12 SEP 85)
405 5121