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BAAT Vol. No.1 1985

Bulletin of the NSW Association of Agriculture Teachers

THE STRUCTURE OF AGRICULTURE TEACHERS ORGANISATIONS

Agriculture Teachers in Australia are organised at National, State and Branch levels. National organisation is administered by the National Agriculture Teachers Association, which holds conferences every two years. The next conference will be in Gatton, Queensland in May 1986.

In NSW, Organisation is administered by the Association of Agriculture Teachers of NSW (AAT). This organisation publishes the Bulletin of the Association of Agriculture Teachers (BAAT) and holds Biennial Conferences. The President, Secretary and Treasurer, and conference co-ordinators are elected at the General Meeting which is held during the Biennial Conference. The officers are usually chosen from the same region or location, and this usually changes each two years. The current base is in Sydney and the officers are:

President	Bob Hindmarsh Dunheved High School Maple Road North St Marys 2760
Secretary	Bruce Ramsay Directorate of Studies Department of Education GPO Box 33 Sydney NSW 2001
Treasurer	Peter Crick Windsor High School Mulgrave Road McGraths Hill 2756
Conference Co-ordinators	Greg McAlpine Leumeah High School
	Ross McGregor James Ruse Agricultural High School
	Angela Rutherford Pymble Ladies College

Biennial Membership: $16.00
Please send subscription to the Hon. Treasurer

Branch organisation is NSW is administered by the following people:

Sydney Branch	President	Bob Hindmarsh
	Secretary	Phil Hurst St Marys High School
	Treasurer	Greg McAlpine Leumeah High School PO Box 587 Campbelltown 2560

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North Coast Branch	Contact	Malcolm Cawsley Kadina High School Goonellabah NSW
North West Branch	Contact	Bob Guest Farrer Memorial Agric High School Via Tamworth
Western Branch	Contact	John Cobby Western Regional Office
Riverina	Contact	Dick Mead Riverina Regional Office Wagga Wagga

Note to Branch Officers:

If you could send a brief resume of your Branch organisation including officers, activities, name and address for contact to the Secretary, they will be included in the next edition of BAAT which is being collated now.

** Contributions to BAAT **

Please send material you would like to have published in BAAT to Bruce Ramsay. Articles of topical interest, reviews of books or materials, research reports and so on are all welcome. The next edition is already being prepared.

Bruce Ramsay
Secretary of NSW BAAT
Editor of BAAT

Directorate of Studies
Department of Studies
GPO Box 33 Sydney 2001
Phone: (02) 240-8744

File: FINANCIAL NEWS AS AT 15/4/85

Report: FINANCIAL ADDRESSES

Surname	Initial	Position	School	Address	City/P.code
Alexander	I.	Master	Yanco Agricultural High School	Main Ave.	Yanco 2703
Anson	R.	Teacher	Wade High School	McCudden, Robb and Poole St	Griffith East 2680
Armstrong	K.	Teacher	Oakhill College	Old Northern Rd,	Castle Hill 2154
Bannerman	S.	Teacher	Pennant Hills High School	Boundary Rd.	Pennant Hills 2120
Bastock	M.	Teacher	Bourke High School	Cnr. Tarcoom, Mitchell Sts.	Bourke 2840
Blythe	G.	Teacher	Jamison High School		Penrith 2750
Bourne	C.	Teacher	St. John's Park High School	Mimosa Rd.	St. John's Park 2165
Bryant	R.	Teacher	Hurlstone Agriculture High School	Roy Watts Rd.	Glenfield 2176
Buckley	D.	Teacher	Elderslie High School	Hilder St.	Narellan 2567
Caldwell	L.	Teacher	Northmead High School	Campbell St.	Northmead 2152
Carlon	I.	Teacher	Duval High School	P.O. Box 751	Armidale 2350
Cartwright	L.	Teacher	Kelso High School	Boyd St.	Kelso 2795
Cassels	C.	Teacher		176 Francis St.	RICHMOND 2753
Craig	M.	Teacher	Temora High School	Anzac St.	Temora 2666
Creek	G.	Master	Umina High School	Veron Rd.	UMINA 2257
Crick	P.	Teacher	Windsor High School	Mulgrave Rd.	McGraths Hill 2756
Cutts	D.	Teacher	Pennant Hills High School	Boundary Rd,	Pennant Hills 2120
Derrick	B.	Teacher	Coolah Central School	Binnia St,	Coolah 2843
Eden	M.	Teacher	Wellington High School	Whiteley St.	Wellington 2820
Elliot	C.	Teacher	Orange High School	Woodward St.	Orange 2800
Finch	D.	Teacher	Billabong High School	Gordon St.	Culcairn 2660
Fisher	B.	Teacher	Ingleburn High School	Oxford Rd.	INGLEBURN 2565
Fletcher	L.	Teacher	Bass Hill High	Arundle Rd,	Bass Hill 2197
Francis	R.	Lecturer	Riverina C.A.E	P.O. Box 588	Wagga Wagga 2650
Gagg	D.	Teacher	Model Farms High School	Gooden Drive,	Baulkham Hills 2153
George	C.	Teacher	Parkes High School	P.O. Box 219	Parkes 2870
Gower	M.	Teacher	Holly Cross College	Victoria Rd.	Ryde 2112
Harms	P.	Teacher	Cabramatta High School	Aladore Ave.	Cabramatta 2166
Hawthorn	B.	Teacher	Oxley High School	Piper St,	Tamworth Nth. 2340
Hemmings	S.	Teacher	Muirfield High School	Barclay Rd.	Nth. Rocks 2150
Hindmarsh	B.	Master	Dutheyed High School	Maple Rd,	Nth. St. Mary's 2760
Hope	S.	Teacher	Moss Vale High School	Narellan Rd.	Moss Vale 2577
Hurst	P.	Teacher	St. Marys High School	Kalang Ave.	St. Marys 2760
Irvin	R.	Teacher	Colo High School	Bell's Line of Road	North Richmond 2754
Jackson	J.	Teacher	Bathurst High School	Hope St.	Bathurst 2795
Jones	P.	Teacher	Colo High School	Bell's Line of Road	Nth. Richmond 2754
Kelly	A.	Teacher	Camden High School	John St.	Camden 2570
Larsson	K.	Teacher	Northmead High School	Campbelll St.	Northmead 2152
Lee	J.	Teacher	Glen Innes High	Edwards Street,	Glen Innes 2370
Logan	C.	Teacher	Orange High School	P.O. Box 654	Orange 2800
Martyri	K.	Teacher	Lisarow High School	Jarrett St.	Gosford 2250
McAlpine	S.	Teacher	Leumeah High School	Junction Rd.	Leumeah 2560
McConnell	D.	Teacher	Kingswood High School	Bringelly Rd.	Kingswood 2750
McGregor	R.	Teacher	James Ruse Agricultural High School	Felton Rd.	Carlingford 2118
McNamara	P.	Teacher	St. John's Park High School	Mimosa Rd.	St John's Park 2165
McQueen	C.	Teacher	Picton High School	P.O. Box 120	Picton 2571
Middleton	J.	Master	St. Marys High School	Kalang Ave.	St. Marys 2760
Miller	P.	Teacher	Hurlstone Agricultural High	Roy Watts Rd,	Glenfield 2176
Muller	M.	Teacher	Maclean High	Woombah Street,	Maclean 2463
Muller	K.	Teacher	South Grafton High		Grafton 2460

File: FINANCIAL MEMBS

Report: FINANCIAL ADDRESSES

Surname	Initial	Position	School	Address	City/P.code
Myers	J.	Teacher	Riverstone High School	McCullock St,	Riverstone 2765
Nash	R.	Teacher	Kinross Woolarci		Orange 2800
Newman	T.	Teacher	Camden High School	John St.	Camden 2570
Wyman	C.	Teacher	Northolm High School	P.O. Box 13	Galston 2159
O'Brien	M.	Teacher	Pittwater High School	Pittwater Rd. and Mona St.	Mona Vale 2103
O'Connor	G.	Teacher	All Saints College		Bathurst 2795
Oliver	P.	Teacher	Blue Mountains Grammar School	Great Western Highway,	Wentworth Falls 2782
Parbery	I.	Lecturer	Botany Department	New England University	Armidale 2351
Peterson	S.	Teacher	Hurlstone Agricultural High School	Roy Watts Rd.	GLENFIELD 2176
Piper	R.	Teacher	Richmond High School	Lennox St.	Richmond 2753
Purnell	S.	Teacher	Hurlstone Agricultural High School	Roy Watts Rd	Glenfield 2176
Ramsay	B.	Consultant	Directorate of Studies, Dept. Ed.,	GPO Box 33	Sydney 2001
Randall	D.	Teacher	Richmond High School	Lennox St.	Richmond 2753
Rawlinson	S.	Teacher	Pittwater High School	Pittwater Rd, Mona St,	Mona Vale 2103
Roberts	P.	Teacher	Duval High School	P.O. Box 751	Armidale 2350
Robey	P.	Teacher	St Paul's Lutheran College	Kleinke Ave.	Walla Walla 2654
Ross-New	P.	Teacher	Kingswood High School	Bringelly Rd.	Kingswood 2750
Rutherford	A.	Teacher	Pymble Ladies College	Avon Rd,	Pymble 2073
Rutherford	P.	Teacher	Pymble Ladies College	Avon Rd.	Pymble 2073
Saunders	R.	Teacher	Moree High School	Bald St.	Moree 2400
Schippers	R.	Teacher	Hurlstone Agriculture High School	Roy Watts Rd.	Glenfield 2176
Scott	J.	Master	Hurlstone Agricultural High School	Roy Watt Rd.	Glenfield 2176
Shepard	B.	Teacher	Dungog High School	Eloiza St.	DUNGOG 2420
Sinclair	A.	Inspector of schools	N.W. Region	North West Regional Office,	Tamworth 2340
Spence	G.	Teacher	Erina High School	The Entrance Road	Erina 2250
Stanford	R.	Teacher	Dubbo South High School	Dalton St.	Dubbo 2830
Statham	M.	Teacher	Narooma High	Prince's Highway	Narooma 2546
Stewart	M.	Teacher	Holy Trinity School		Inverell 2360
Swinden	P.	Teacher	Henry Kendall High School	Faunce St.	Gosford 2250
Thomas	N.	Teacher	Armidale High School	P.O. Box 730	Armidale 2350
Thomas	A.	Teacher	Armidale High School	P.O. Box 730	Armidale 2350
Thornthwaite	S.	Teacher	Galston High School	Galston Rd.	GALSTON 2159
Trickett	S.	Teacher	Billabong High School	Gordon St.	Culcairn 2660
Tucker	K.	Teacher	Terrigal High School	Charles Kay Dr.	Terrigal 2260
Tweedie	W.	Teacher	Riverstone High School	McCullock St.	Riverstone 2765
Udy	P.	Teacher	Galston High School	Galston Rd.	GALSTON 2159
Webb	G.	Teacher	Wyong High School	Alison Rd	Wyong 2594
White	J.	Teacher	Guyra Central School	Marne St.	Guyra 2365
Wilkins	J.	Teacher	Muirfield High School	Barclay Rd.	North Rocks 2151
Woolmer	R.	Teacher	Holy Cross College	Victoria Rd,	Ryde 2112

** PRESIDENT'S MESSAGE **

I would like to thank all of those teachers present at the Biennial Conference who elected me as President and I endorse what has become a very hard working committee. I would also like to express my thanks to the previous committee for their work and inservice organisation. The last four editions of BAAT contained extremely useful information.

In the coming months the committee hopes to continue with the publication of such high quality material. As President of the Sydney branch I am also able to tap into a wealth of teaching ideas and resources from metropolitan centres. With the active involvement of the Agriculture Special Interest group, you will be kept informed of issues affecting all us.

Orange was a very successful conference. The low numbers being largely a problem of funding - in our own time yet! This is just one of several examples of irritating anomalies which have caused concern among many of our members. Difficulties in staffing, and the considerable personal and some financial involvement that for many becomes necessary to ensure students do develop in, and enjoy agriculture is often taken for granted. I believe a time is approaching when we need to examine how the Department of Education and various community bodies might best assist us in establishing and running agriculture in a professional manner in our schools. It is along these lines and with the agreement of the committee, that I intend to proceed.

As you read this magazine it may become apparent that several new avenues are being developed through the help of agriculture teachers' interest in various specialised areas. Hopefully you will find this both interesting and stimulating.

Bob Hindmarsh

ASSOCIATION OF AGRICULTURE TEACHERS OF N.S.W.

MINUTES OF THE 8th BIENNIAL GENERAL MEETING

ORANGE AGRICULTURAL COLLEGE

21.1.1985

President's Report

The President's Report was presented by Leon Zeitch.

Treasurer's Report

Financial Statement of the Association of Agriculture Teachers of N.S.W. for the period 2.5.83 to 15.1.85

Income Trading Account		Expenditure Trading Account	
Balance brought forward 2.5.83	$1 207.44	Affiliations	
Membership fees	$1 860.00	National Agriculture Teachers Assoc.	$ 290.00
Petty Cash	$ 18.00	Joint Council of Professional Teachers Assoc.	$ 145.00
Donations	$ 43.51		
Deposit Error	$ 12.00		
Department of Education Reimbursement 1983 Conference Travel expenses	$ 320.00	Awards 1983 Charles Mulavey Award	$ 50.00
Bank Interest	$ 100.47	Inscription & Photography of Award	$ 29.00
	$3,561.42	1983 Conference	
		Bus Travel	$ 320.00
		Flowers & Presents	$ 120.56
		Reimbursements	
		North Coast Branch AAT	$ 50.00
		Riverina Branch AAT	$ 50.00
		BAAT.Publication	$ 476.10
		Federal Tax on Debits	$ 4.75
		State Duty on Deposits	$ 1.14
		Petty Cash	$ 100.00
		Duplicate Bank Statements	$ 2.00
		Miscellaneous	
		Stamp Duty	$ 5.00
		Phone Calls	$ 34.48
		Travelling Expenses	$ 20.00
		Florists	$ 41.50
		Postage Stamps	$ 16.60
			$1 756.13
		Surplus	$1 805.29
		Total	$3 561.42

Moved Norm Thomas
Seconded John Scott
"The Treasurer's Report be accepted."

Motion carried.

Charles Mullavey Memorial Fund

Balance as at May 31, 1983	$ 823.51
Bank Interest	$ 76.58
	$ 900.09
Less Federal Tax on Deposits	$ .27
Total	$ 899.82

Alan Sutherland Fund

Balance as at December 1, 1984	$ 26.00

Summary

Association Assets

Income	$3 561.42
Expenditure	$1 756.13
Balance	$1 805.29

Trust Funds

Charles Mullavey Memorial Fund	$ 899.82
Alan Sutherland Fund	$ 26.00

Election of Office Bearers

President: Bob Hindmarsh
Nominated Lindsay Cartwright
Seconded Bruce Ramsay

Secretary: Bruce Ramsay
Nominated Peter Crick
Seconded Phil Hurst

Treasurer: Peter Crick
Nominated Bruce Ramsay
Seconded Phil Hurst

Patron: John Lovett

Vote of Thanks

Norm Thomas moved the vote of thanks to the previous executive.

Syllabus Committee Nominations

BSSS: Bob Hindmarsh
Bob Guest

SSB: John Middleton

General Business

Moved: L. Zeitsch. Seconded: Greg McAlpin
"That the Secretary circularise all teachers of Agriculture requesting payment of fees to ensure receipt of BAAT in 1985."
Carried.

Moved: L. Zeitsch. Seconded: Rod Francis
"That the annual membership fees be set at $16.00 with $1.00 of this being allocated to the Mullavey/Sutherland Trust Funds."
Carried.

The Agriculture Special Interest Group

Peter Crick presented to the meeting an article in "Education" on the S.I.G. and summarised the development and actions of the group to date.

Moved: Greg Anson. Seconded: Rod Francis
"That the AAT propose the concept of splitting the Secondary Science second list into Science, Science/Ag. and Ag. lists.
Carried.

1987 Biennial Conference

Moved: B. Ramsay. Seconded: L. Zeitsch
"That the 1987 Biennial Conference of Agriculture teachers be organised by the Sydney Branch in the Sydney Region and that the joint co-ordinators be Angela Rutherford, Ross McGregor and Greg McAlpine."
Carried.

Moved: Norm Thomas. Seconded: John Scott
"That the Department of Education consider teachers of proven competency in Agriculture teaching placed on the Special List and with formal training in Agriculture be eligible for promotion to the position of Agriculture Master."
Carried.

Moved: R. Anson. Seconded: P. Hurst
"That a special grant be made available to finance 3 unit research projects."
Defeated.

Moved: Leon Zeitsch. Seconded: Lindsay Cartwright
"That the Executive write to Regional Directors thanking them for support in the past and looking forward to assistance in the future."
Carried.

Meeting closed at 10.15 p.m.

BRUCE RAMSAY
HON. SECRETARY

ORANGE AGRICULTURE CONFERENCE

Sunday 20th - Thursday 24th January 1985

This year's biennial Conference for Agriculture Teachers was held in the scenic surrounds of the Orange Agriculture College. Some 50 delegates from all regions of NSW were in attendance. These numbers were down on the previous Conferences due to some regions only funding one delegate. It is hoped that this problem of funding may be solved in the future so that a greater number of teachers may attend.

Monday opened with an address by Mr Rob Napier, Principal, Orange Agriculture College, followed by a series of talks and discussions on both the Senior and Junior Agriculture Syllabuses by Rob Pearce of the UNE and David Rowlands. On Monday night the Biannual General Meeting of NSW Agriculture Teachers Association was held. The Committee for next year is -

Bob Hindmarsh - President - Dunheved High School
Bruce Ramsay - Secretary - Directorate of Studies
Peter Crick - Treasurer - Windsor.

It was also moved and accepted that the next Biennial Conference will be held within the Sydney region and an organising committee has been formed in this regard.

Tuesday consisted of a series of lectures on Soil Conservation and Development in Horticulture which were found to be most interesting. The afternoon programme consisted of a series of workshops on Animal Breeding, Programming and Evaluation, Horticulture and Computers in Agriculture, with the Conference dinner at night.

Wednesday was excursion day to Manildra Field Station to view some of the work of the officers of the Soil Conservation Service, followed by the visit to Cudal Angora Goat Stud, lunch at Mt Canobolas and a visit to an orchard.

Thursday's programme of lectures ended at lunch enabling delegates time to travel home.

A note of thanks goes to John Cobby, Lindsay Cartwright and all members and speakers of the Conference for their time and effort.

GREG McALPINE

THREE UNIT AGRICULTURE

WRITING THE RESEARCH PROJECT REPORT

Phil Crampton

The report should contain the following sections:

1. TITLE: eg "The effect of planting density on the economic production for radishes."

2. ABSTRACT or SYNOPSIS: This is a brief, concise summary of the problem you have under consideration and the conclusions reached in your research (both literary and experimental). It could also contain a brief indication of possible further research into the problem.

3. ACKNOWLEDGEMENTS: Acknowledge and thank people for the assistance they gave. These people could include fellow students, Department of Agriculture Officers and people in private firms, eg Thank you to A. Helper for assisting in recording insect numbers.

4. CONTENTS: List of contents and page numbers.

5. INTRODUCTION AND BACKGROUND TO THE PROBLEM: Here you should give detailed reasons for your investigation, ie How you came to investigate your particular problem.

6. REVIEW OF LITERATURE (Literary research): This should give the state of knowledge on the problem under investigation prior to your experiment. Authors should be acknowledged when you quote them or their ideas, eg Lovett (1981) found that allelopathy.... Photocopies of graphs and tables in published work that are relevant can be usefully included provided their source is acknowledged, eg The table below shows results obtained by Milthorp and Swan 1982.

   NB All authors and articles listed here must be in the bibliography so that the reader of the report can easily refer to these works if he wants to.

7. DESCRIPTION OF EXPERIMENTAL PROCEDURES: This is a description of the design of the experiment. It should detail:-

i)how the experiment was set up and carried out
ii)how and what measurements were taken and
iii)biometrical techniques used to analyse results

Photographs taken as you go through the experiment are most useful. Dates and time periods should be shown. Explain how the experiment was randomised, eg each treatment was allocated to a plot by putting the treatment numbers and plot numbers on cards in separate hats and drawing one from each hat at a time.

8. PRESENTATION OF DATA: Results can be presented as tables, graphs, diagrams, photographs, pressed specimens, etc. All data should be included both raw and calculated data. Make summary tables, graphs, etc. that summarise your results into a form that can be easily identified by the reader as showing what happened in the experiment.

eg Table 1. The number of seeds germinating in each plot.

Plot No	No of seeds germinating out of 100	Species	
1	96	Wheat	(This is raw data)
2	98	Wheat	
3	85	Barley	
4	92	Wheat	
5	80	Barley	
6	78	Barley	

Table 2. The germination of Wheat and Barley as a Percentage.

Species	Germination Percentage	
Wheat	95.3	(This is derived data)
Barley	81.0	

NOTE: All tables and graphs should be clearly headed and labelled so it is obvious to the reader what they are about without having to refer to what you have written.

9. DISCUSSION OF RESULTS: All the possibilities the results show or could show should be examined and discussed. Explanation of odd or unexpected results can be made. Why didn't you obtain the result you expected.

10. CONCLUSIONS: There are three sections:

i) the conclusions reached from your data and literary research, eg the plant spacing that optimised production for radishes was found to be 2cm within rows and 15cm between rows. This confirms conclusions reached by Ironside in 1983.

ii) recommendations based on your results, eg lambs for meat should be castrated if they are to reach market weight in minimum time.

iii) suggestions for further research into the problem, eg further research could be carried out into the effect of companion planting on cabbage white butterfly infestations of cauliflowers.

II. BIBLIOGRAPHY: List all authors quoted directly or indirectly in the report. State the name of the article or book, page numbers, Journal name and volume, publisher, and date of publication, eg A book - Blake, C.D. (Ed) "Fundamentals of Modern Agriculture" pages 210-212. University of Sydney Press 1968.

eg A Journal Article.
McIntyre, G. "Streamlined management spurs higher cotton profits", FARM Sept. 1984 pages 66-69.

*** GENERAL POINTS

1. Report should be written in the third person, ie do not use I, we.

2. Do not mention the school's name or your teacher's name.

3. Suggested order of writing up the report
   i) Introduction and background
   ii) Review of Literature
   iii) Description of Experimental Procedure
   iv) Presentation of Data
   v) Discussion of results
   vi) Conclusions
   vii) Abstract Synopsis
   viii) Bibliography
   ix) Acknowledgements
   x) Contents
   xi) Title

SAMPLE ANSWERS 3U PROJECTS

Given the length of the great majority of the projects it would be meaningless to duplicate projects as submitted by students. The purpose of this document will be to show the style and content of projects that scored what could be regarded as good marks.

This document should be read in conjunction with the Higher School Certificate Agriculture Examiner's Report.

BASIS OF ASSESSMENT

As stated in the Examiner's Report the projects were assessed according to the extent to which the Project Report fulfils the objectives specified in the syllabus. This concept was further developed by the examiners to provide a basis for assessment.

A list of criteria was drawn up. While no particular mark value was assigned to each consideration, it was the student performance in satisfactorily completing each section that determined the final mark.

OVERALL

A project that scored the majority of the marks available was generally

- well presented
- of agricultural importance
- one that had a clear aim, with the experimentation and conclusion well linked to that aim
- one that used the data gathered in a clear logical manner with appropriate use of biometrical techniques.

SOME EXAMPLES

Examples listed as "A" refer to projects regarded as excellent and gaining the majority of marks, "B" middle of the range and "C" as representing project reports that gained a limited number of marks.

Passages marked "...." are direct copies from reports.

"A" An investigation of Allelopathy through Experiment.
This student in a very clear aim set out to determine the effect of leachates of Castor Oil plant (Datura stramonium) upon germination and plumule elongation in wheat.
The whole project was clearly related to this aim. The experimentation and data gathered based on this aim lead to a very clear logical conclusion.

"B" Comparison of Food Compositions of Different Protein Sources and their Respective Effects on Egg Production during the Winter Laying Period.
This was fairly typical of the projects that scored marks around the middle of the range of marks available.
These projects showed many signs of a lot of work and thought by students. However such a broad aim appeared to handicap the students as they attempted to design experiments. Often the range of data gained was bewildering in its scope and complexity. This invariably led to a lack of a decisive conclusion.

"C" Some students presented no real aim. These projects were really long essays with a very broad heading e.g. Artificial Insemination. These invariably lead to poor experimentation and sweeping statements in the conclusions.

SPECIFIC SECTIONS OF THE REPORT

Each section of the project report will be considered.

1. ABSTRACT/SYNOPSIS

"A" The aim of this study is to test and investigate the residual affect of Strazine, used as a pre-emergent herbicide on a winter cereal, wheat. Strazine was applied at the rate of 2L/ha and was quite effective in controlling the weeds wild oats, ryegrass, oats, and wild mustard. However, Strazine had an adverse affect on wheat. Germination was not significantly hindered, however, at the above rate, six weeks after germination, the wheat showed scorching and eventually death.

"B" Usually not much more than an expanded version of the content table.

"C" Not given. However one student in quite a lengthy "summary" outlined how a genetics experiment was to be conducted with four mice. Unfortunately a cat ate the mice before they could breed!

2. ACKNOWLEDGEMENTS

Very few candidates realised what was required. The subject rules (Administrative Circular No.96) required acknowledgement of the extent of assistance. This was particularly the case where more than one student had worked in collaboration on experimentation and data gathering.

The examination committee has prepared a new set of subject rules that should make this requirement clear.

"A" "Thanks must be due to: Mr ...., District Agronomist and representative for the NSW Dept. of Ag. who aided me with literature, plot layout and soil tests.

: Mr ...., the Agricultural Master, who advised me on presentation of work and review of literature."

Most of these students, although not specifically asked for, listed their sources of information as a bibliography e.g.-

"Quirke et al (81) Livestock Production Vol.8
Hafez, ESE, Journal Agr. Science. Cambridge Vol.42.1952".

3. CONTENTS

A simple table of contents with page numbers is all that is required.

4. INTRODUCTION AND BACKGROUND

"A" In a project titled "the effects of liveweight and age on the onset of first oestrus in Border Leicester X Merino ewe lambs" the introduction and background was well described.

The student commenced with the statement -

"It has been realized for a number of years that production in the sheep industry may be improved by getting ewes in lamb at 7-9 months of age. Many farmers have not tried to join ewe lambs at this age because of a number of recognised problems."

A summary of the remainder is as follows -

(i) Problems - managerial
- nutritional

(ii) Benefits - more lambs per ewe
- chance to cull earlier
- fewer lambing problems
- chance for increased rate of genetic improvement

(iii) Factors affecting successful joining of ewe lambs
- management
- nutritional
- seasonal

(iv) Factors considered in beginning this project
- considerable research but very little in this region
- other methods of increasing fertility
- commercial aspects.

"B" Most students in this category gave rather general discussions that did not clearly indicate -
. what the problem was,
. why they are conducting research into that problem,
. what had been done to date,
. considerations determining the design of their experiment.

5. REVIEW OF LITERATURE

This was a section of the project that really descriminated between "good" and "weak" projects. Students submitting projects that gained the majority of marks were able to write fluently and concisely quoting authors and abstracts from journals etc. Other students were content to summarise various journals, books, etc. Project reports in the lowest "C" category usually restricted themselves to summarising relevant sections from the commonly available agriculture texts.

"A" Writing about the release of growth inhibitor into the soil by certain plants: "Although it has been known for many years that certain plants inhibited the production of adjacent field crops, for example, the toxic effects of walnuts on tomato and alfalfa plants (Rice, 1974,6), allelopathy has only been studied extensively as a biological phenomenon in the last twenty years of recorded experiments. Until recently it was assumed that plant interactions were the result of physical competition for light, water and nutrients (Klein and Miller, 1980,44).

"C" "After planting the first lot of wheat in the May school holidays I went to two libraries in Sydney and Rydalmere. There I found a lot of detail of experiments on wheat".

Then followed a list of titles of fertiliser and wheat trials with a conclusion "people are researching wheat yields all the time".

6. DESCRIPTION OF EXPERIMENTAL PROCEDURES

In attempting to describe a "good" project under this heading the reproduction of a student's report would be unduly lengthy and probably meaningless. However all good descriptions had most if not all of the following -

- the procedures were a logical continuation of the previous work
- the student sought biometrical advice at this state
- a realisation of scientific method. Students were able to describe the various variable. Some were able to describe the variables that they could not keep constant
- the methods of conducting the experiments were clear and logical
- clear description of how data was gathered or observations made.

"A" This student in a project on the effect of lime on wheat yields in acid soils described the procedures including nearly all the above factors under the headings -

(a) Experimental Design - variation of Latin Square

(b) Experimental Procedures

(i) pH testing
(ii) land preparation
(iii) lime application
(iv) seeding of experimental area
(v) collection of data and analysis.

"B" In a project on the influence of soil pH on nutrient availability a student described very fully the actual experimental techniques under the headings:

- Making nutrient solutions
- Mixing up solutions in liquid form
- Altering pH of solutions
- Procedure
- How the plants were grown.

Details of masses and volumes used was scrupulously recorded in minute detail. Despite this, and pages of data, no mention was made of any biometrical technique employed.

7. PRESENTATION OF DATA

This varied greatly between different reports and it would be difficult to select one method of reporting data. Good reports included appropriate use of graphs, photographs, tables and detailed observations.

"A" While this section varied greatly in length between projects, length was not a determiner of mark value. A "good" data presentation occurred in the project on Strazine summarised below:

Germination results -

Control Weed) ..... 8 plots
Wheat) .....

Stazine Weed) ..... 8 plots
Wheat) .....

Means and standard deviation for each group was then calculated. A t-test was then carried out.

As well 4 lines of observation on plant health was recorded.

"B" This category proved the most difficult in attempting to generalise student's responses. Many gave abundant data much of which was not related to the aim, nor used in the discussion.

8. DISCUSSION

The most important consideration here is the ability of the student to use the data obtained as a result of the research conducted. Many students could only repeat material written in the introduction. A feature of many "good" discussions was that they were quite brief. (Lengthy discussions often missed relevant points).

Features of a "good" discussion included:

- relationship between results and the aim of the experiment
- variables that proved difficult to control
- other variables not originally taken into account, that affected the results
- a clear understanding of the biometrical analysis conducted on the data.

"A" In this project the data showed no significant difference between the control and the treatment. However the student then described 10 other factors that may have affected the result. These factors were all based on careful, recorded observations.

"C" "Some interesting results have arisen out of this study. These include the outcome of the comparison between rations and economies of scale. These shall be discussed in detail later on."

In two pages only 3 sentences attempted to justify the broad statements made alone. The detailed promise was not forthcoming.

It would appear that many students thought that the more points they discussed the more marks they would gain.

9. CONCLUSION

The conclusion of a project report is probably the easiest section to evaluate. In all "good" reports it:

- was clearly linked to the aim
- derived directly from the results
- contained recommendations concerning the problem studied
- contained suggestions for further research.

"A" "From the results determined in the trial, lime applied at 3 tonnes/ha produced the best results in increasing wheat dry matter yield in acid soils. It is best to apply lime 6 weeks before sowing to allow the lime to react with the soil to raise pH and improve early crop performance.

Further investigation in the field ...." then followed two realistic areas in which future research could be conducted.

"C" "Although this research project is small let's hope it is successful and can enable the properties involved to operate and employ their resources at peak efficiency."

FINALLY

It must be stressed that although the above information suggests an "ideal" it was not necessary for a student to include all items to gain maximum marks.

A short concise work with all aspects clearly linked together would gain most of the marks available.

PHIL CRAMPTON

SAMPLE 3 UNIT LITERATURE REVIEW - MONOGASTRIC DIGESTION

There has been very little done in the way of research concerning lupins and monogastric animals. The growing popularity of the commonly grown variety Lupins angustitontius or narrow-leafed lupins will become more evident when sheep and cattle farmers begin to look for a grain which is regarded as a protein concentrate, (it has a protein percentage of between 28-34%), and one with little risk of acidosis or grain poisoning, (it has a crude fibre content of 13-17%).

Lupins have been manufactured and incorporated in feed for poultry and pigs before but the direct feeding of grain Lupins (either crushed or soaked) has not been analysed. It has been fed satisfactorily to pigs up to levels 30% of rations but if this is economically viable is yet to be determined.

To understand how the lupins and the commercial pellets normally used are converted by the pig into energy it is necessary to analyse the pig's digestive system.

Monogastric Digestion:
Within a few hours of being eaten, food is transformed into flesh and blood. This transformation is so complete that it cannot be accomplished before food has undergone a drastic breaking-down process known as digestion.

Digestion begins in the mouth, where chewing reduces the food to fine texture, and saliva moistens it and begins the conversion of starch into simple sugars by means of an enzyme, salivary amylase. The food is then swallowed, passing through the pharynx and down the muscular oesophagus, or gullet, to the expanded muscular pouchlike section of the gastro intestinal tract, the stomach. Specialized cells in the stomach secrete digestive enzymes and gastric juices, which act on the partially digested food. The stomach secretions include the enzyme Pepsin, which acts on proteins; hydrochloric acid, essential for the action of pepsin; and an enzyme, gastric lipase, which begins the breakdown of fats. The gastric juices of young animals contain, in addition to those just mentioned, the enzyme Perin which acts on milk. Some foods, including simple sugars, are absorbed directly through the stomach wall and do not remain in the stomach. Most food, however, is not absorbed in the stomach and passes into the duodenum in the form of a thich liquid called chyme.

As soon as the chyme enters the duodenum, digestive juices pour forth. There are three sources: the liver secretes bile which is then stored by the gall bladder, and the pancreas secretes pancreatic juice. These two secretions enter the small intestine through a single duct situated a short way down the duodenum; the third secretion is produced in the lining of the small intestine and is called the intestinal juice. They are all produced at the same time and as they are alkaline they neutralize the acidity of the Chyme. Under these conditions the enzymes of the three secretions are able to exert their catalytic influence.

The pancreatic contains enzymes which enable it to help in the digestion of three main types of nutrient. The endopeptidases trypsin and chmotrypsin among others, carry on the degradation of proteins begun by pepsin in the stomach; they complete the breakdown of proteins into peptones. Pancreatic amylase is another enzyme in the pancreatic juice which converts starch to maltose. Finally, pancreatic juice which converts start to maltose. Finally, pancreatic lipase brings about the partial hydrolysis of some fat molecules converting them into simpler substances which can be absorbed.

The bile has no enzyme action but contains salts which convert fats (which are liquified by the warmth of the stomach) into a fine emulsion of tiny oil droplets which may then be acted upon by the lipase of the pancreatic juice.

The intestinal juice contains a number of enzymes, chiefly maltase, lactase and sucrase, which break down the double sugars maltose, lactose and sucrose respectively into simple sugars that can be absorbed. In addition to these, a group of exopeptidases, called erepsin, continue the breakdown of proteins begun by the enobpeptidases pepsin, trypsin and chymotrypsin. The exopeptidases attack the ends of the chain-like peptone molecules until they are broken down into small units called dipeptides containing only two amino acids. Finally, another group of enzymes called dipeptidases break down the dipeptides into free amino acids which can be absorbed.

The digestive process is almost complete after the food material has been in the small intestine for some time. The most complicated of all nutrients, the proteins, have been converted by stages into amino acids; all carbohydrates, except cellulose, have been broken down into simple soluble sugars, while fats have been emulsified and partly split into simpler substances called fatty acids and glycerol. However, as will have been realized, the digestive system is distinct from the rest of the body, being separated from it by the walls of the digestive tube. Before nutrients can be utilized by the body they must pass through these walls and into the bloodstream, by the process of absorption.

The walls of the long small intestine are formed into folds and ridges and thus have an enormous surface area. The digested food is present in the small intestine for about three or four hours and it is well mixed by the peristaltic movements of the walls it comes into intimate contact with - the absorbing walls of the intestine. The absorptive process involves both diffusion and active transport.

The products of protein and carbohydrate digestion, namely amino acids and simple sugars, are certainly absorbed by both diffusion and active transport, but the mechanism of fat absorption is a subject of some controversy. It seems safe to say that some fat is absorbed undigested in an emulsified form and that the minute fat droplets pass directly through pores in the intestinal wall; also that some fat is absorbed in a partially hydrolysed state and some is absorbed as fatty acids and glycerol.

About four hours after a meal has been eaten any food that has not been digested and absorbed in the small intestine passes through the ileocaecal valve into a wider and shorter tube called the large intestine. No new enzymes are produced by the body during this stage but the large intestine is a rich source of bacteria and a small amount of digestion occurs, such as that of Vitamin K, which is absorbed.

The main function of the large intestine is to remove water from the fluid mass; this process continues as the fluid passes along, so that by the time it reaches the end of the tube it is a semi-solid form known as faeces - which is passed out of the body.

Thus the dry matter of 28-34% crude protein and
5- 7% crude fat (oil), and
the carbohydrate of 6% starch and various other minerals of Lupins, plus the 16% protein of the commercial pellets are utilized.

The Housing System of a piggery itself includes several areas:

Equipment -

Before the pig purchase is made it is essential that the housing for them is constructed and ready to receive them. Their behaviour is one of escape. This should be warm, dry and free from draughts.

Lighting -

Natural light is not essential to a piggery but it must be light enough to inspect the stock properly.

Hygiene -

All the floors, ceilings, walls and pens must be thoroughly washed down with a good disinfectant. The floor should be washed down (especially if it is concrete) every 24-48 hours. A slatted floor system allows easy manure disposal. It must be noted that, if given the right environment, a pig is a clean and intelligent animal.

Bedding -

The small pig keeper does best to use straw both for the muck-passages and for the sleeping quarters in his pig houses. Barley straw is ideal as it is softer and more absorbent than other cereal straws.

Feeding -

It may be stating the obvious but it is a simple fact that no animals will perform well unless they are fed well. Until a few years ago most pigs were fed on an ad. lib system, i.e. they were fed as much as they could eat. This led to the laying down of a lot of fat on the carcass.

Today farmers are changing to controlled or rationed feeding. This means giving the pig a carefully balanced diet of protein, carbohydrate, vitamins, and minerals, rationed out in specific quantities to ensure that the animal will put on lean meat with only a minimum of fat. Remembering too that the pig kept in the best environmental conditions will need less food than one that is not. A pig kept in a well insulated house will not need to eat to keep warm and so the food taken in will be converted to meat more economically.

How to Feed -

One method of feeding pigs is simply to put the feed on the floor and allow the pigs to forage for it. Obviously if there is any dung or urine on the floor this system is unhygienic and should not be used, but even if the floor is quite clean there is one great drawback - waste. Inevitably the pigs will tend to walk in the food and it will stick to their feet. One system favoured is to put the feed into a properly constructed adjustable feeder which allows you to regulate the speed at which the feed comes out and so prevent all wastage. As the cost of feed accounts for some 80% of the total pig-keeping expenditure, the more cut downs on waste the better.

If housing and stress factors such as pests and diseases are minimised it may be expected that the feeding trial I am to undertake will produce positive results. I expect that the ratio of 85% commercial pellets to 15% Lupin grain will be the best, as it has the advantage of greater protein concentration than the control.

I believe it will work better than the 70% commercial pellets to 30% Lupin grain ratio because the Lupins will have added too much cellulose concentration to the feed to be better than the other ratio. (Lupins have 25% cellulose in its carbohydrate composition).

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Supplied by -

JOHN SCOTT

** COMPUTERS IN AGRICULTURE **

There must be many programmers with "pet" disks around the state. What I have provided, courtesy of an inservice course, is an evaluation sheet for programs. What I would like to do is to find out from you the names of programs you have found:

a) extremely useful
b) good
c) a disaster

By returning the enclosed sheet(s) on your software the association may form a central reference for programs. Such evaluations may be forwarded to those teachers requesting information. Software is often too costly to experiment with. Also enclosed is an outline of some programs available on request from the association. Please include a blank disk with your request.

If you are experiencing problems with common programs such as Apple works, PFS, interconversions of such, farm plan etc don't hesitate to contact our committee. At present the Sydney branch computer group is Apple based though some Microbee and TRS-80 help is available.

Contact: Bob Hindmarsh
Dunheved High School

SOFTWARE EVALUATION COVER SHEET

PROGRAM TITLE _____

AUTHOR _____ PUBLISHER_____

SOURCE _____ RELATED PACKAGES_____

COST _____

COPYRIGHT: none[ ] limited [ ] licence [ ]

describe_____ copy manual [ ]

DATE/VERSION _____

DATE OF EVALUATION __/__/ EVALUATED BY_____

PACKAGING adequate [ ] describe_____

SUPPORT MATERIALS none [ ] brief [ ] comprehensive [ ]

teacher's manual [ ] student worksheets [ ]

other [ ] describe _____

HARDWARE REQUIRED computer_____ memory_____ K

printer [ ] disk [ ] colour monitor [ ]

other [ ] describe _____

OPTIONAL HARDWARE printer [ ] disk [ ] colour monitor [ ]

other [ ] describe _____

OTHER REQUIREMENTS_____

RELATED PACKAGES _____

MINI EVALUATION GUIDE & CHECKLIST
- For computer disks - forward information to Bob Hindmarsh

CONTENT

OBJECTIVES: CLEARLY STATED WORTHWHILE AND RELEVANT Y/N/NA

CONTENT: ACCURATE AND APPROPRIATE Y/N/NA

APPLICABILITY: RELEVANT AND USABLE IN DIFFERENT WAYS Y/N/NA

TEACHING STRATEGY: METHOD APPROPRIATE AND UNBIASED Y/N/NA

COMMENTS: _____

_____

PROGRAM FEATURES

INPUT: ERROR TRAPPED AND USER FRIENDLY Y/N/NA

PRESENTATION: CLEAR, MOTIVATING, WITH APPROPRIATE FEEDBACK Y/N/NA

OPERATION: EASY TO USE, STUDENT/MACHINE INTERACTION Y/N/NA

STRUCTURE: CLEAR, VARIABLE CONTENT AND SEQUENCE Y/N/NA

COMMENTS: _____

_____

CLASSROOM APPLICATION

PREPARATION: REQUIRED BY STUDENT AND TEACHER Y/N/NA

OPERATION: CONVENIENT TO USE IN CLASSROOM Y/N/NA

TECHNICAL: ARE RECORDS KEPT Y/N/NA

COMMENTS: _____

_____

SUPPORT MATERIALS

OPERATION: ADEQUATE INSTRUCTIONS Y/N/NA

CURRICULUM: TEACHING IDEAS AND WORKSHEETS Y/N/NA

TECHNICAL: DOCUMENTS ACCURATE AND SUFFICIENTLY THOROUGH Y/N/NA

_____

DISK 1

YOU HAVE THE FOLLOWING PROGRAMS AVAILABLE FOR YOUR USE ON THIS DISK

1. FILE CABINET

This is a simple data base program that can be used for record keeping, eg inventories, stud records, etc. It allows you to sort, search, delete or change records on file.

2. LEAST COST RATION

This is a linear program that has been set up to work out a least cost ration. All your ingredients are in files on disk and these can be changed. You need to know what feed sources you wish to use, plus the important nutrients in your ration.

3. WORD PUZZLE

This will produce a word puzzle (hidden words amongst letters). These can be useful as a fun activity for your students. It can also be used by the students themselves.

4. PHONE DIRECTORY

A computerised personal phone list. Once again a simple data base.

5. CASH FLOW MANAGEMENT

A program that allows you to keep track of your cash flow. Keeps a record of income and expenses. It can also be used for budgeting control.

DISK 2

YOU HAVE THE FOLLOWING PROGRAMS AVAILABLE FOR YOUR USE ON THIS DISK.

1. SPELLING TEST

This is a spelling test program. It flashes words onto the screen and then the user must spell it correctly. You can add, change or delete words on file. You can also put new lessons on disk.

2. STOCK MARKET GAME

This simulates the stock market by allowing students to buy and sell shares. The important thing to remember, when using this program, is to have pen and paper handy so that you can record transactions, and details of.

3. LIVESTOCK RECORDS

A simple way of keeping track of the stock you have. It records increases and decreases. Monetary value of stock is also a feature in this program.

4. PIG RATION ANALYSIS

A simple program that allows you to anlayse a ration you feed to pigs. It can be used to check existing, or check one you are about to use. This program does not formulate a least cost ration.

5. A SERIES OF 20 SMALL PROGRAMS

These cover financial areas (eg loans, depreciation, interest, etc), and conversion tables. They are simple to use and would be useful in the classroom situation.

Examples of the programs are:-

* Regular Deposits
* Future Value of an Investment
* Earned Interest
* Rate
* Salvage Value
* Principal on a Loan
* Anglo -- Metric Temp & Weight

DISK 3

YOU HAVE THE FOLLOWING PROGRAMS AVAILABLE FOR YOUR USE ON THIS DISK.

1. DECISION MAKING

This is a program that works out a decision tree exercise. The result being a mathematical reason for choosing an enterprise over another. A useful program to show students how computers can AID decison making.

2. INSECT KEY

A simple key that allows a student to work through it while observing their insect. It classifies insects into their orders. The correctness to the breakdown is dependant on the accuracy of the students observations.

3. 200 DAY CALF WEIGHT ADJUSTMENT

Uses the NBRS for calculating adjusted 200 day weights for your calves. These figures can then be used by the farmer to help in his culling program.
NBRS -- National Beef Recording System.

4. BEEF HERD PREDICTOR

This is a useful program that can be used to show students how a herd would vary with such things as calving %, culling rates, etc.

5. PIG HERD PREDICTOR

This program allows you to enter both stock and financial records. Then it gives you an indication of the 'Profitability' of that situation.

6. PLANT KEY

A detail plant key that looks at grasses, clovers and medics. It will give you the common name of the plant you are trying to classify. Once again the accurancy of this program is dependant upon the users observational skills.

7. SOIL KEY

A very simple soil key.

8. LINEAR

This is a fairly good linear program. You put in constraints and levels for almost any situation. The program will give you an answer for that situation. A knowledge of how to linear program would be an advantage.

DISK 4

YOU HAVE THE FOLLOWING PROGRAMS AVAILABLE FOR YOUR USE ON THIS DISK.

1. CROSSWORD MAKER

This will generate a crossword. You put in the answers and the clues, and the program will work out the crossword.

2. BALANCE SHEET

This program produces a balance sheet once the user has put in the data, (data relates to assets, liabilities and prices). A useful program for student use if you create exercises for it.

3. HANG AGGY

This is a game of hang-man that uses agricultural words. It would be a very useful program for students studying Junior Agriculture. It can also be used by older students.

4. SANTA PARAVIA

This is a detailed resource management game. You control taxes, feeding .etc., of the population. The aim of the game is to manage the available resources properly. As you progress, your title changes as you acquire more resources. The idea is to reach the status of King or Queen.

5. BUSINESS SIMULATION

This is a fairly straight forward program. It makes hidden assumptions about some aspects, but overall it should be useful to get students thinking about control of assets and liabilities. You can only exit the program at the end of each trading period.

*** VISICALC FILES ***

On these disks are numerous files that need the Visicalc program. They cover various topics, as you can see from the list below. To use these files you must know how to use Visicalc, so if you don't have a copy, I would suggest leaving the purchase of these disks until you have Visicalc. The files available would be used more as a demonstration for a class. Below are the files that can be found on the two disks:-

VISICALC FILES 1	VISICALC FILES 2
Factory Milk Production	Pig Unit Budget
Australian Ration	Sprayboom Calibration
Dairy Ration 1	Rainfall Records
Dairy Ration 2	Labour Profile
Dairy Herd Budget	Tractor Budgeting
Farm Budgeting	Crop G.M.
Annual Cashflow	Crop Planner
Depreciation	Fertiliser Best Buy
Depreciation with Reserves	Beef Feedlot
Farm Purchase Calculator	Beef Ration
	Liveweight Gains Calf Rearing
	Liveweight Gains Feedlot
	Livestock Schedule
	Interest Calculations
	Personal Budget
	Agricultural Cost Analysis
	Vehicle Data
	Pig Budget Sows
	Compound Interest Calculator
	Depreciation Calculator
	Loan Schedules

RAISING PURE BREEDS OF POULTRY

I would like your readers to consider the value of including the raising of PURE BREED POULTRY in their Junior Agriculture Course. I have found that it is the only animal that can be used to teach the FULL requirements of the Junior Course without having to resort to elaborate and expensive school farm set ups. It offers many students the chance of "hands on" practical work either individually or in small groups. Educationally very desirable.

Why PURE BREED FOWLS? If breeds such as WHITE LEGHORNS, AUSTRALORPS, RHODE ISLAND REDS or LIGHT SUSSEX are selected you have the following going for you -

(i) Surplus stock or culls are easily disposed of to locals as they readily recognise the breeds and in many cases prefer the "good old breeds" like they used to have.

(ii) You have a breeding challenge to breed the fowls to show standard and participate in local shows. This proves great P.R. for the school and opens many useful community connections many of which prove useful in other parts of your curriculum e.g. lambs, calves, feed, etc. Oh yes! Farm visits too.

(iii) The operation is compact and easy to manage.

(iv) Students will often take up the fancy breeds as HOME PROJECTS developing a positive use of their leisure time.

A couple of words of warning -

. Avoid fancy breeds at school because the surplus is difficult to get rid of. The surplus must be recognised as egg producers or a good bird "to put in the pot" or difficulties are had.

. Do not keep game fowls at school especially large Old English Game as they are dangerous except in the hands of the experienced game fowl fancier.

. Do not go overboard with a wide range of varieties. Stick to one, two or three at the most until you have mastered the husbandry and breeding.

On the community involvement side, there are poultry fanciers willing to help in just about every town there is a school. Many of them are old timers with a wealth of information and interesting yarns to tell you and the students. Some are very settled in their ways and have not much time for much of the new fangled intensive poultry industry. It is a good idea to find out whether there is a poultry club in town. Yes, they still exist and in many places are going through a revival with the renewed interest in poultry keeping as a hobby and past time.

RICK KEMP
P.O. BOX 1181
GRIFFITH. 2680

AGRICULTURE SPECIAL INTEREST GROUP

The following are a selection of extracts from correspondence of the Federation Special Interest Group in Agriculture. Teachers can attend these meetings (and have their travel expenses subsidised) or become corresponding members (and have notices and reports sent to them) by writing to the contact person, Peter Crick, Windsor High School, Mulgrove Road, McGraths Hill, NSW, 2756.

REPORT OF DISCUSSIONS WITH THE DEPARTMENT OF EDUCATION 8 November 1984

Present: John Fleming, George Comino

Alan Layt, Cheryl Screech, Col Rennie, Leo Pomeroy. Katrina Rosa (Marsden Hospital SSP), Sandra Bushell (Marsden Hospital SSP).

Recommendations from Agricultural Science SIG

Federation requested the Department to ensure that the Committee currently examining the Ancillary staffing formula, would examine the inconsistent way in which Farm Assistants were employed in schools.

Federation then listed the case of relief for Farm Assistants. The Department replied that current provisions laid down that when any Ancillary staff person would be absent for five days or more, relief could be provided from the first day of that absence. Farm Assistants could be relieved over December and January if essential.

The Department is examining the case of relief for Ancillary staff but this is part of the Ancillary staffing provision and no decisions have been made as yet.

COMMITTEES

Agricultural Science Teachers

1. The Special Interest Group would like to know who is going to administer the planned legislation on animal welfare - the Department of Education or Local Government?

Resolve: Endorse. General Secretary to contact Department.

2. This Special Interest Group of agricultural teachers sees the following areas of concern in the employment and use of Farm Assistants.

   (a) The inconsistent formula for employing Farm Assistants in schools. This leads to some schools having a much greater access to Farm Assistants than others. The Special Interest Group would like Federation to clarify this issue.

   (b) The material entitlements for Farm Assistants include respirators, cartridges, eye goggles and ear muffs.

(c) Farm Assistants are often required for work off the school premises, e.g. delivery of stock, picking-up feed, etc. Difficulty is experienced in doing this because of lack of travelling allowance and the doubtful position of the Farm Assistant with regard to workers compensation. This Group requests Federation to pursue these issues, so that Farm Assistants are able to carry out tasks which are essential for running an agriculture department, be that at school or some other areas.

(d) This Group would like Federation to pursue the issue of overtime/ weekend work for Farm Assistants. Many aspects of agricultural, farm management require attention seven days a week, and this responsibility adds an unnecessary financial and physical burden on teachers of agriculture. At present there are "stock hands" employed in agricultural high schools, who are required to do weekend work as part of their award. We would like to see this concept extended to high schools with agriculture, or the payment of overtime to Farm Assistants, so that weekend/holiday maintenance of farms is assured.

(e) Federation is requested to clarify the working conditions of Farm Assistants, in consultation with the Department and the AWU.

(f) That Federation negotiate with the Department to ensure that Farm Assistants on leave are replaced when they are on leave.

Resolve: Endorse points a) and f). Federation is to initiate discussions with the AWU in relation to points b) to e) as well as points a) and f).

1 November 1984

Mr D Swan
Director-General of Education
Department of Education
GPO Box 33
SYDNEY NSW

Dear Mr Swan

The Teachers Federation Executive has endorsed a proposal from the Agricultural Science Special Interest Group requesting that agricultural science classes be reduced in recognition of their practical nature.

The Agriculture SIG requests that Federation take all necessary steps to have the practical nature of agriculture recognised in terms of class sizes and staffing.

Specifically we assert that -

i class sizes should be limited to a maximum of 15 students and 13 students in disadvantaged schools,
ii that the staffing formula be adjusted to make this possible without affecting staffing in other areas of the school.

Staffing agriculture has traditionally been on the same basis as for non-practical subjects i.e. 30 maximum. This situation has been able to persist because of the relatively small numbers of students electing agriculture in the past.

However, recent years have seen a major increase in the popularity of agriculture, particularly in metropolitan high schools, to the point where agriculture classes often reach the staffing maximum.

This situation is untenable for reasons of:

i education, and
ii safety.

1 Education
The practical content of the agriculture course has been established by the Secondary Schools Board in agriculture junior and senior syllabus. Refer to the sections in the attached syllabi marked with an asterisk. Particularly note students should learn as much as possible through practical experiences.

2 Safety
Large class sizes involved in practical work creates a high level of risk. Due to the high risk of injury, not all students are able to participate in practical activities forcing a rostered situation where only a small number of students can participate in a practical activity at any given time,reducing the effectiveness of teaching.

Accidents have occurred in garden plots where large class sizes have reduced space between students using hand tools. Documented accounts are available.

The use of powered machinery, e.g. rotary hoe requires individual instruction.

Yours sincerely

David Gilks
Acting General Secretary

*** THE UNIVERSITY OF NEW ENGLAND ***

ARMIDALE NSW 2351

THROUGH ITS DEPARTMENT OF CONTINUING EDUCATION IS HOLDING A SEMINAR IN SYDNEY ON 8-10TH JULY 1985 INCLUSIVELY ON ANIMAL EXPERIEMENTATION

Its sub-title is "Ethical, legal and scientific perspectives"

Readers of this will know that animal welfare in its multi-faceted aspects is a metter of considerable public concern in many countries - in some of which there has been more public debate than has been the case until very recently in Australia. So, in addition to Australian contributors, there will be two speakers from the USA

* Professor B E Rollin
  Director of Bioethical Planning
  Colarado State University
  Gave the second Home Memorial Lecture (London, 1983) on "The Teaching of Responsibility"

* Dr Andrew Rowan
  Tufts University, Boston
  Author of "Of Mice, Models and Men" (1984)

The sub-title given above indicates the purpose and broad approach of the seminar's program; the "scientific perspectives" will be subdivided into bio-medical, and agricultural and veterinary. Many of Australia's leading professionals in each of the disciplinary areas under review will be participating in the event. The Chairman of the bio-medical sector is Professor David Curtis, FRS, of the Department of Pharmacology of the John Curtin School of Medical Research, ANU.

****

The planning of this event has been under discussion for several months by B J F JAMES (of UNE) and Dr Margaret Rose of the Department of Surgery, Prince Henry Hospital - the teaching hospital of the University of NSW; she is also inter alia Convenor of the Animals and Experimentation Committee of the Australian Veterinary Association. There have been extensive consultations with leading medical and veterinary scientists, and with philosophers and lawyers in determining the program.

The seminar is seen as providing a forum on this extremely contentious issue attended by leading professionals, who will thus meet together for the first time on a national basis: it is also seen as the "platform" upon which a whole series of related seminars and symposia etc can be based in the future; these will look at more specific aspects of this wide-ranging topic, which has major implications for society as a whole.

##########
If you would like more detailed information then please send the slip below to the Department of Continuing Education - UNE - Armidale. 2351
##########

NAME

ADDRESS

"ANIMAL
EXPERIMENTATION"

*Persons who have seen the previous Preliminary Notice are seeing/reading correctly; the venue has been changed from Canberra to SYDNEY.

PRESS RELEASE

ORANGE AGRICULTURAL COLLEGE

The Secretary, Telephone 063 - 624699
P.O. Box 883; ORANGE. N.S.W. 2800

3 September 1984

FOR IMMEDIATE RELEASE

BIG BOOST FOR ORANGE AGRICULTURAL COLLEGE

Orange Agricultural College expects to receive a 25% boost in student places for 1985. This announcement came from the NSW Higher Education Board and increases student numbers from the current 335 to 430 - the largest increase in the College's history.

Rob Napier, Principal, expressed his pleasure that confidence and support had been given to the College as agricultural and horticultural educators.

Napier stated, "We have a problem, a nice problem. Right now there are more jobs than graduates for our agricultural courses. We need some applicants for our Farm Management, Horticulure and Farm Secretarial Studies courses to keep up with the deman from employers. For example, the College currently has six jobs for Farm Management graduates and there are also six positions for Farm Secretaries which are unfilled."

"We have found that the demand, particularly for Farm Secretarial graduates, has been growing as employers become aware that Orange Agricultural College has prepared its students with courses and training directly related to current trends, technologies and practices in rural industries."

Men and women interested in agricultural careers are encouraged to take advantage of the big increase in student places and the availability of jobs for graduates by enrolling in an Orange Agricultural College course.

Further information may be obtained by contacting the Student Administrative Officer, Orange Agricultural College, PO Box 883, Orange, NSW 2800 (063) 62-4699.

CONTACT:
Jo Hoskin, Publicity Officer or Rob Napier, Principal,
Orange Agricultural College, PO Box 883, Orange NSW 2800.

These are samples from a list of AG-ED NOTES compiled by Agriculture teachers in the Western Region.

They are obtainable from:

Peter Dargin
Western Regional Country Area Program
P O Box 865
DUBBO NSW 2380

There are about 50 in the series, which cost $40.

ag-ed notes

All Districts Agdex 440

INTRODUCTION TO PIGS

Compiled by
L. D. Cartwright, W.D.A. Dip. Ed.
Kelso High School.

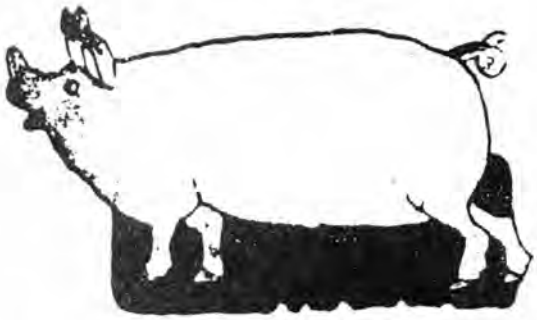
Pigs are different to most farm animals.
Here are a few important points about pigs.

Eat like Pigs!

Pigs will eat a lot of different types of food — they eat both plant and animal materials.

Pigs do not require a lot of food to grow well. If they are very healthy, they can put on 1kg of body weight for every 3kg of food eaten.

Pigs are not good grazing animals and will grow best when kept inside a shed and fed on prepared feed.



Pigs Produce

Pigs produce three different types of meat — pork, bacon and ham.

Pork is fresh meat but ham and bacon are treated or cured before they are ready for eating.

Pig skin and hair are also useful products.

Behave like Pigs!

Pigs are very clean animals in many ways. They will chose a toilet area in their pen and use it only as a toilet area.

Pigs are friendly and inquisitive animals but can also be dangerous at times.

CAP
ag-ed notes
46.

Agdex 921

FARM STUDY

Name .....

Compiled by P.L. Smith B. Sc. Dip. Ed.
J.K. Blythe Dip. App. Sci. Dip. Ed.
Cobar High School

The farm study is designed to provide you with basic knowledge of regional farms and an understanding of the complexities of enterprises within the farm.

These studies are meant to be carried out on the farm, **NOT** in the classroom. The format is designed for simple, straightforward questioning of the farmer.

The farm study is a flexible survey which can be used for almost all plant and animal enterprises.

From this initial survey will be generated further classroom activities utilising the facts and figures obtained.

The study is an excellent way of introducing the systems approach and the terminology associated with it, as well as an introduction to the Agdex system.

Objectives

After the study of an operational farm you should:

1. be able to identify the sub-systems operating within the farm unit and specify these in terms of inputs, outputs, boundaries and processes;
2. understand the goals of the farmer and why these have been established;
3. be able to describe the annual routine management procedures and explain why each exists;
4. examine the physical relationship between inputs and outputs in the principal farm production system and evaluate the economic and energetic efficiency of this production system.

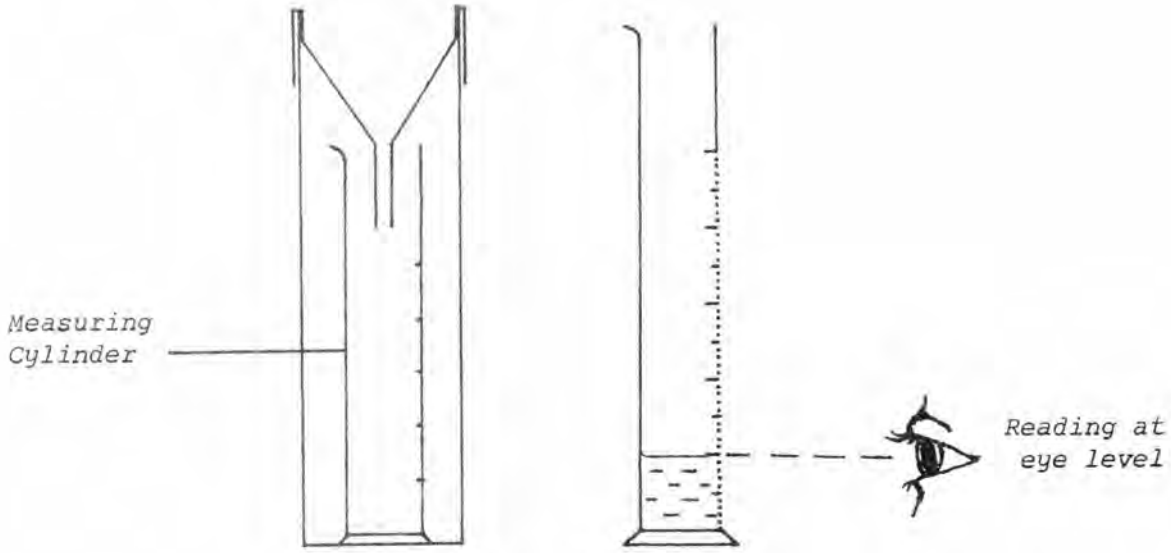
This is a sample of the 146 skills worksheets published in the book "Mastery Skills for Junior Agriculture Students" by R.G. Francis and R.T. Mead, published by the Riverina - Murray Institute of Higher Education. Their address is PO Box 588 Wagga Wagga, NSW 2650 and the cost is $12 per copy.

AN ESSENTIAL RESOURCE FOR EXPERIENTIAL LEARNING IN AGRICULTURE!

SKILL: MEASURING RAINFALL

OBJECTIVE: Measure rainfall over a 24-hour period and record it in millimetres

MATERIALS GIVEN: Rain gauge



PROCEDURE:

1 Empty the rain gauge

2 Twenty-four hours later, remove the gauge and note the level of water.

3 Record the rainfall in millimetres of rain. _____

_____ has attempted ☐ mastered ☐ this skill.

COMMENT: _____

TEACHER'S SIGNATURE: _____

PUPIL'S SIGNATURE: _____

DATE: _____

AUSTRALIAN PIG INDUSTRY RESEARCH COMMITTEE

C/- Department of Primary Industry, Edmund Barton Building, Barton, ACT 2600
Telephone 062 725139 Telex: 62188 Telegrams: 'Primind.' Canberra

PI 84/161 MEDIA RELEASE 29 August 1984

PIG INDUSTRY FILM LAUNCHED

The South Australian Minister of Agriculture, Mr. Frank Blevins, today launched a new pig industry film in Adelaide.

The film, "Pete's Pigs - A Journey Through an Intensive Piggery" was produced by the South Australian Film Corporation for the Australian Pig Industry Research Committee, in association with the South Australian Department of Agriculture. Production was financed by a grant of $40,000 from the Australian Pig Industry Research Trust Account.

Funds from the Trust Account are allocated each year by the Federal Minister for Primary Industry on the recommendation of the Australian Pig Industry Research Committee. Income for the Trust Account is derived from a levy on pigs sold for human consumption with a matching contribution from the Commonwealth Government.

A spokesman for the Committee said recently that the film, which has a running time of fifteen minutes, was shot at an intensive piggery in South Australia and is designed to give people aninsight into the principles and practices of a modern farm. All facets of pork production are shown from the birth of the piglets through to the despatch of grown baconers to market. Particular emphasis is given to the measures taken to keep the pigs well fed and disease free.

The spokesman said that "Pete's Pigs - A Journey Through an Intensive Piggery" would be particularly valuable for secondary school students who are studying geography or who are considering a future career in farm management or agricultural research. The Australian Pig Industry Research Committee is currently preparing school project material to enhance the film's usefulness to students.

The film, in either video-casette or sixteen millimetre format, is expected to be available soon to Australian schools from their respective State Education Departments. Farm groups wanting to view or screen the film should contact:

Mrs Elizabeth Smith
Secretary
Australian Pig Industry Research Committee
C/- Department of Primary Industry
CANBERRA ACT 2600

Phone: (062) 725139

FURTHER INFORMATION: Mrs Elizabeth Smith (062) 725139

CORGI & BANTAM ELECTRONIC PUBLISHING

PRESS RELEASE

28th February, 1985.

Dear Reviewer,

CORGI & BANTAM ELECTRONIC PUBLISHERS have recently taken on the distribution of SUNRISE SOFTWARE.

SUNRISE is the only software available now which has been developed specifically for the Australian rural community. It was developed in liason with farmers, the Department of Agriculture, McMillan Rural Studies Institute in Bairnsdale and the Victorian College of Agriculture & Horticulture. Its application can also extend to the learning process of the potential farmer, hence an excellent learning tool for the rural student.

There are presently eight programmes available with another four due for release throughout 1985. They have been developed for use on the Commodore 64 with disc drive and are priced very competatively - all packages are priced at $100 retail.

SUNRISE SOFTWARE is a farming tool which will enable quick on-farm decisions to be made, decisions that effect the profitability of an enterprise.

With printouts, the farmer can approach his bank manager armed with information that previously he would not have had the time to calculate manually. Printouts that will also prove invaluable when seeking advice from the local Department of Agriculture.

FROM THE PUBLICITY DEPARTMENT OF
CORGI & BANTAM ELECTRONIC PUBLISHING
26 HARLEY CRESCENT, CONDELL PARK 2200 NSW
PHONE (02) 709 2022 TELEX TRAPUB AA71471
TOLL FREE 008 222 444

Paul Whithy, of the Sunrise Company, recently commented, "Our local area is predominantly surrounded by sheep farms. After seeing other farming programmes, we decided we could do a better job, from which the 'seed was sown'! We started out by asking questions. We harassed the local farmers, advisory authorities and rural bodies."

"Out of all this, grew the first of the Sunrise Software Rural Programmes, SUNRISE SHEEP."

Programmes now available include:
- Dayplan 64
- Cashflow Budget
- Sunrise Beef Cattle
- Sunrise Cropping
- Dairy (quote)
- Dairy (pool system)
- Horticulture

And to come in 1985:
- Dairy Herd Recorder
- Stud Recorder
- General Finance Package
- Paddock Planner

Each programme is packaged in a folder containing a step-by-step guide to its use and expected screen response plus disc or discs, according to the programme.

If you are interested in more information on these programmes, please do not hesitate to contact me on (02) 908 4366.

Kind regards,

KARYN LYMBERY,
Sales & Marketing.

KL/kb

SUNRISE SOFTWARE

CORGI & BANTAM ELECTRONIC PUBLISHING

S U N R I S E S O F T W A R E

(AVAILABLE NOW)

CASH FLOW BUDGET

The Cash Flow Budget programme has been developed to assist the farmer.

It operates as a written cash book but with one exception. It is faster and does the calculations for you in an instant. You can view your actual and budget figures at the same time. It will store your transactions and allow you to search for a transaction by payee, cheque number or payer. The information is tabulated month by month.

The Cash Flow Budget programme will calculate the budget, month by month. Your actual figures for each month are presented from your Cash Book entries for comparison against your budget. You may change your budget figures at any time giving you an instantaneous calculation and showing the effect of this alteration.

DAYPLAN 64

The Dayplan 64 is a diary programme designed for anyone who needs to keep track of events, projects, special dates, etc.

This programme will allow you to record your projects in two separate diaries, move these projects between dates. It basically does the same functions as it's big brother 'Dayplan' for the 8000 series business computers.

It has facilities for recording addresses with easy access. You are able to printout lists of dates with your details of projects. The date ranges are selected by you.

BEEF CATTLE

The Beef Cattle programme assists farmers to determine the profitability of different stock ratings, calving percentages, sales values and expenses. A 'per head' analysis is produced by the programme on the profitability of the cattle selected for the analysis. This analysis allows you to see the effect of varying weights, purchase and sale prices. This is compared to the D.S.E. rating, hectares/acres and per head per day on the farm. The programme will show you the financial outcome of your enterprise using your budgeted year's production. The system includes a stock reconcilation. It can also be used for your actual figures for the current year's production. This programme was developed in liason with farmers, Department of Agriculture and McMillan Rural Studies Institute.

26 HARLEY CRESCENT, CONDELL PARK 2200 NSW
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SUNRISE SOFTWARE

CORGI & BANTAM ELECTRONIC PUBLISHING

DAIRY

The Dairy programme has been developed to help farmers determine the profitability of different stock ratings, calving percentages, sales values and expenses. A 'per head' analysis is produced by the programme on the profitability of the cows as selected for the analysis. This allows you to see the effect of varying milk yields and milk prices. This is then compared to the stock ratings, hectares/acres and milk yields. The programme will show you the financial outcome of your enterprise using your budgeted year's production. The system includes a Stock Reconciliation. This programme was developed in liason with farmers, Department of Agriculture and McMillan Rural Studies Institute.

CROPPING

This programme will assist the farmer to determine the profitability of different types of crops, crop yields, sales values and crop expenses. A 'yield' analysis is produced by the programme on the profitability per hectare/acre. This analysis allows you to see the effect of any variance in sale prices and yield. The income is compared to your expenses in percentage form. The programme will show you the financial outcome of your enterprise using your budgeted year's production. It can also be used for your actual figures for the current year's production. This programme was developed in liason with farmers, Department of Agriculture and McMillan Rural Studies Institute.

SHEEP

This programme will assist you to determine the profitability on different D.S.E. ratings, wool weights, lambing percentages, sale values and expenses. A 'per head' analysis is produced by the programme on the profitability of ewes and wethers. This analysis allows you to see the effect of varying lambing %'s, wool weights and prices. This is then compared of D.S.E., hectares/acres. The programme will show you the financial outcome of the enterprise using your budgeted year's production. It can also be used for your actual figures for the current year's production. The system includes a stock reconciliation. This programme has been developed in liason with farmers, Department of Agriculture and McMillan Rural Studies Institute.

HORTICULTURE

The Horticulture programme has been developed for the farmer who is involved in Market Gardening.

The programme will assist you to determine the profitability in different types of crops. The programme will show you the financial outcome of your enterprise using your budgeted year's production allowing you to determine the most profitable crop to grow. It can also be used for your actual figures for the current year's production. The system includes a Stock Reconciliation. This programme was developed in liason with farmers, Department of Agriculture and McMillan Rural Studies Institute.

ALL PROGRAMMES RETAIL AT $100.00. FOR COMMODORE 64 WITH DISC DRIVE ONLY.

26 HARLEY CRESCENT, CONDELL PARK 2200 NSW
PHONE (02) 709 2022 TELEX TRAPUB AA71471
TOLL FREE 008 222 444

SUNRISE SOFTWARE

CORGI & BANTAM ELECTRONIC PUBLISHING

PADDOCK PLANNER

The Paddock Planner programme has been developed for the farmer who needs to keep information relating to his paddocks.

The programme will allow you to record your grazing, silage, watering and hay details. Fertilising, weed and pest control can also be recorded with details on chemicals, application calculating spread rates. All the above information is recorded in chronological order so that you can compare previous year's paddock details. This programme will enhance your other Dairy programmes. It was developed in liason with farmers, Department of Agriculture and McMillan Rural Studies Institute.

AVAILABLE - MAY/JUNE

ALL PROGRAMMES RETAIL AT $100.00. FOR COMMODORE 64 WITH DISC DRIVE ONLY.

26 HARLEY CRESCENT, CONDELL PARK 2200 NSW
PHONE (02) 709 2022 TELEX TRAPUB AA71471
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SUNRISE SOFTWARE

CORGI & BANTAM ELECTRONIC PUBLISHING

S U N R I S E S O F T W A R E

FORTHCOMING SOFTWARE

DAIRY HERD RECORDER

The Dairy Herd Recorder programme has been developed for the farmer who has a Dairy enterprise.

This programme will allow you to record individually each cow. Each record will contain the necessary information assisting you to determine the best producers. A calving schedule has been incorporated. Production histories can be recorded on a monthly and yearly basis, ranking each cow in the herd. Progenies are also analysed. The Herd can then be analysed as a whole to determine the average production of a cow. The Dairy Paddock Planner Programme will enhance this programme to determine paddock usage. This programme was developed in liason with farmers, Department of Agriculture and McMillan Rural Studies Institute.

AVAILABLE - MARCH/APRIL

STUD RECORDER

The Stud Recorder Programme has been developed for the farmer who wants to improve his stud stock.

This programme will allow you to keep accurate and easy reference records of your stud stock. Once your records have been collated you will be able to determine the best course your breeding programme should take. It enables you to record cross breed details. Progenies can be analysed to determine their future breeding potential. This programme was developed in liason with farmers, Department of Agriculture and McMillan Rural Studies Institute.

AVAILABLE - APRIL/MAY

GENERAL FINANCE PACKAGE

This programme will enhance your other Sunrise Software programmes and give you a final result.

The programme will collect together all your data on your RURAL DATA disc and summarise it. The summaries will be shown in a Trading Profit and Loss Statement allowing you to enter figures not already accounted for in your Sunrise Software programmes.

A Balance Sheet will be set up which will finish off your financial packages to give an overall financial status of your farming enterprise.

At any time, using your Model or Actual data, you will be able to perform these reports.

AVAILABLE - APRIL/MAY

26 HARLEY CRESCENT, CONDELL PARK 2200 NSW
PHONE (02) 709 2022 TELEX TRAPUB AA71471
TOLL FREE 008 222 444

SUNRISE SOFTWARE

c/- CORGI & BANTAM ✍ ELECTRONIC PUBLISHING
26 HARLEY CRESCENT, CONDELL PARK 2200 NSW
PHONE (02) 709 2022 TELEX TRAPUB AA71471
TOLL FREE 008 222 444

The following SUNRISE SOFTWARE titles are available on disk for the Commodore 64 computer [redacted], Recommended Retail $100.00 each.

DAYPLAN 64 ☐

* *366 day electronic diary*
* *Keeps track of events, projects, special dates, etc.*
* *Entries can be swapped between diary and project file*
* *Common business and personal names and addresses are retained*

CASHFLOW BUDGET ☐

* *Create your own monthly cashflow budget.*
* *Calculates in an instant*
* *Compares budget figures with actual*
* *Option to print detailed or summary budget*

SUNRISE BEEF CATTLE ☐

* *Determine herd profitability on a $ per head basis*
* *Variable costs and expenses*
* *Gross margin compared to DSE'S and Hectares and $/$100 of capital*
* *Financial outcome budgeted or actual gross margin for year*

SUNRISE SHEEP ☐

* *Determine profitability on ewes & wethers on $ per head basis*
* *Variable cost and expenses compared i.e. wool weight and prices,lamb prices etc*
* *Gross margin compared to DSE's and hectares*
* *Financial outcome - budgeted or actual gross margin for year*

SUNRISE CROPPING ☐

* *Determine profitability of various crops, yeilds, sale value and expenses*
* *Analysis of profitability per hectare and variable costs*
* *Effects of budget and actual figures for next or current year*
* *Crop comparison report*

DIARY (QUOTA) ☐

* *Determine gross monthly milk cheque, surplus/deficit, per cow.*
* *Analysis of variable costs. i.e. milk yield, feed, etc*
* *Financial outcome using budgeted or actual figures*

DAIRY (POOL SYSTEM) ☐

* *Determine gross monthly milk cheque, surplus/deficit per cow, income and expenses per cow*
* *Analysis of variable costs i.e. milk yield, feed etc*
* *Financial outcome - using budgeted or actual figures*

NAME _____

ADDRESS _____

SPECIAL DELIVERY INSTRUCTIONS _____

_____

DATE _____ SALESPERSON No. 1 _ _

ORDER REFERENCE _____

CUSTOMER NUMBER _____

SALES TAX EXEMPTION NUMBER _____

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☐	LOOSE
☐	TOTAL

FACT AND FUTURE: AUSTRALIA'S TECHNOLOGY OUTLOOK

I.S.B.N. 0 85894 105 8

published by
The Productivity Promotion Council of Australia

BACKGROUND TO THE PUBLICATION

The Australian Technological Change Forum was set up in November, 1983, by the Productivity Promotion Council of Australia as a result of a series of successful seminars held in 1979 on technological change. The Forum is an on-going project, sponsored and supported by the Federal Department of Science and Technology, aimed at providing continuously up-dated information on prospects for technological change in Australia and its impact on Australian society over the next decade.

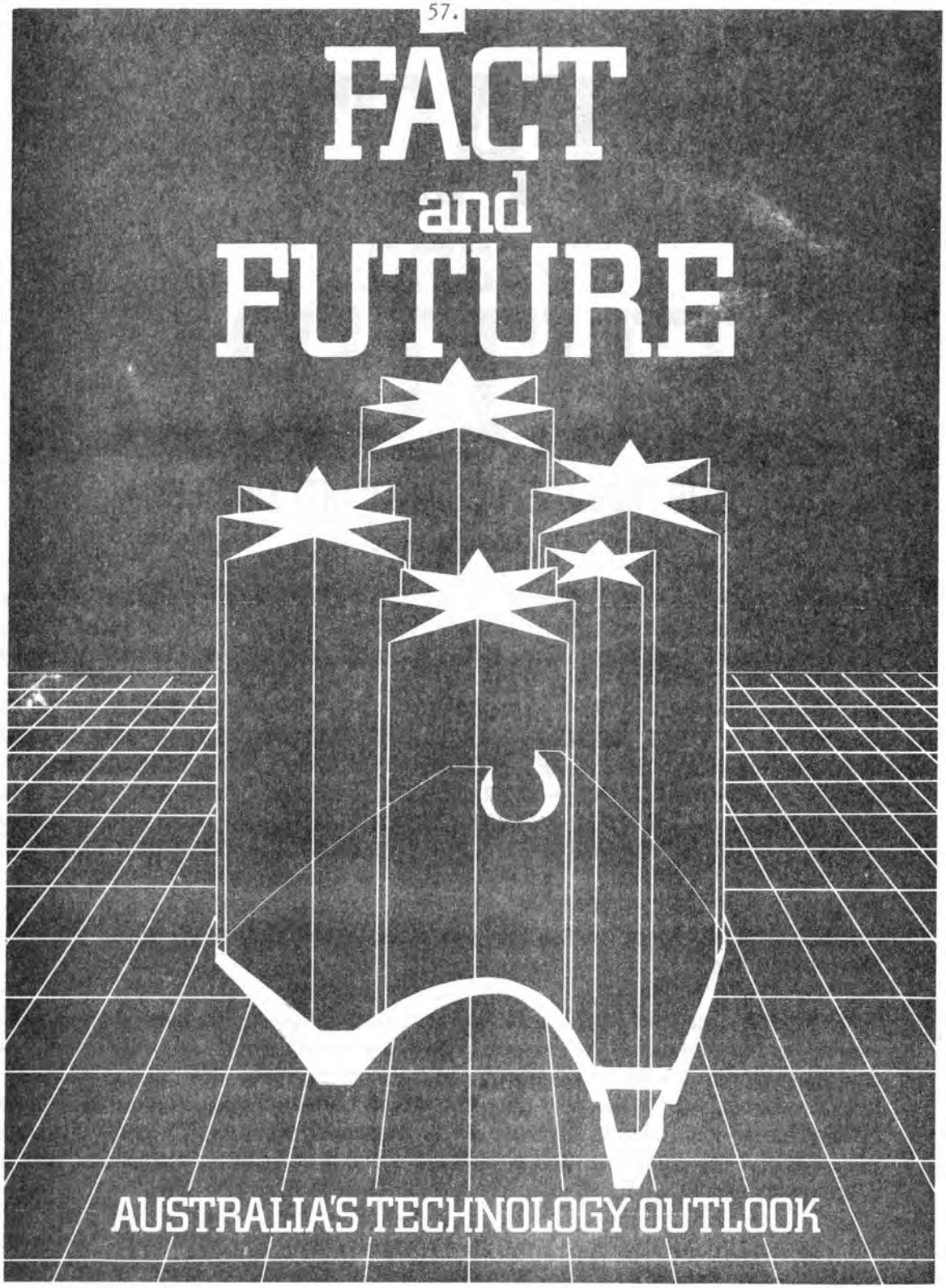
Forum members are Australian scientists, technologists and research and development managers from both the public and private sectors who have been identified through an extensive selection process, and who have completed a series of surveys in which various weightings have been attributed to a number of identified factors of technological change. The Forum meets annually and at its meeting participants clarify their views on the impacts and implications of these factors on Australian society over the next decade.

The first meeting of the Forum was held in Canberra in August, 1984. One of the outcomes of this meeting is the publication of a book to inform and heighten awareness of latest technological developments in Australia, with suggestions on how these developments may affect our future. The book is intended as a resource document for teachers at both secondary and tertiary levels, for libraries throughout Australia, for state and federal government departments and instrumentalities, for private companies and organisations and professional associations, and for the informed layman.

PRICE: $12 (including postage)

ENQUIRIES: Australian Technological Change Forum
Attn. M. Czako
P.O. Box 1112
Chatswood NSW 2067

Tel (02) 95 5697/ 33 5858



ORDER FORM

"FACT AND FUTURE: AUSTRALIA'S TECHNOLOGY OUTLOOK"

The Australian Technological Change Forum
PO Box 1112, Chatswood, NSW 2067
Phone (02) 95 5697 or (02) 33 5858

Please send me ..... copy/ies of "Fact and Future: Australia's Technology Outlook" at $12.00 per copy (incl. postage).

NAME: .....

ADDRESS: .....

.....POSTCODE..... PHONE:.....(work)

Enclosed is a cheque/P.O. for $..... made payable to: The Australian Technological Change Forum.

Signature .....

FACT and FUTURE

AUSTRALIA'S TECHNOLOGY OUTLOOK

ISBN 0 85894 105 8

During 1984 the Productivity Promotion Council of Australia, with the support of the Department of Science and Technology, mounted an on-going project designed to identify the technologies which will play a major role in Australian society over the next 10 years.

MICROPROCESSORS — VLSI — ROBOTICS — OFFICE AUTOMATION — INTELLIGENT MACHINES — FIBRE OPTICS — SATELLITE TECHNOLOGY — DIGITAL TRANSMISSION — ENCRYPTION — EFT — GENETIC ENGINEERING — MONOCLONAL ANTIBODIES — IMMUNOTOXINS — ULTRASONICS — DISEASE CONTROL — CLONING — NEW SPECIES — CAD/CAM — FLEXIBLE MANUFACTURING SYSTEMS — REPLACEMENT OF CONVENTIONAL FUELS — PHOTOVOLTAICS — COMPOSITE MATERIALS.

FACT AND FUTURE: AUSTRALIA'S TECHNOLOGY OUTLOOK is the first publication of the project. It highlights the key areas of science and technology which will influence Australia's future.

This readable, imaginative and well-illustrated book offers up-to-date information that is interesting and informative. Not only can the reader be aware of future directions but day-to-day dealings with the new technology can be more positive. This book is intended as a resource document for teachers and students at both secondary and tertiary levels, for libraries throughout Australia, for state and federal government departments and instrumentalities, for private companies and organisations and professional associations, and for the informed layman.

The book will be distributed widely. Ensure your copy by filling in the attached coupon.

The Australian Technological Change Forum
PO Box 1112, Chatswood, NSW 2067
Phone (02) 95 5697 or (02) 33 5858

EDUCATION DEPARTMENT

Curriculum Branch

Introducing

a new publication

from

CURRICULUM BRANCH

o Syllabus for Horticulture

This book is intended to assist teachers who have no formal qualifications in horticulture, but are asked to teach this lower secondary school subject. Emphasis is on the involvement of students in practical activities, and detailed outlines of relevant content and activities have been provided.

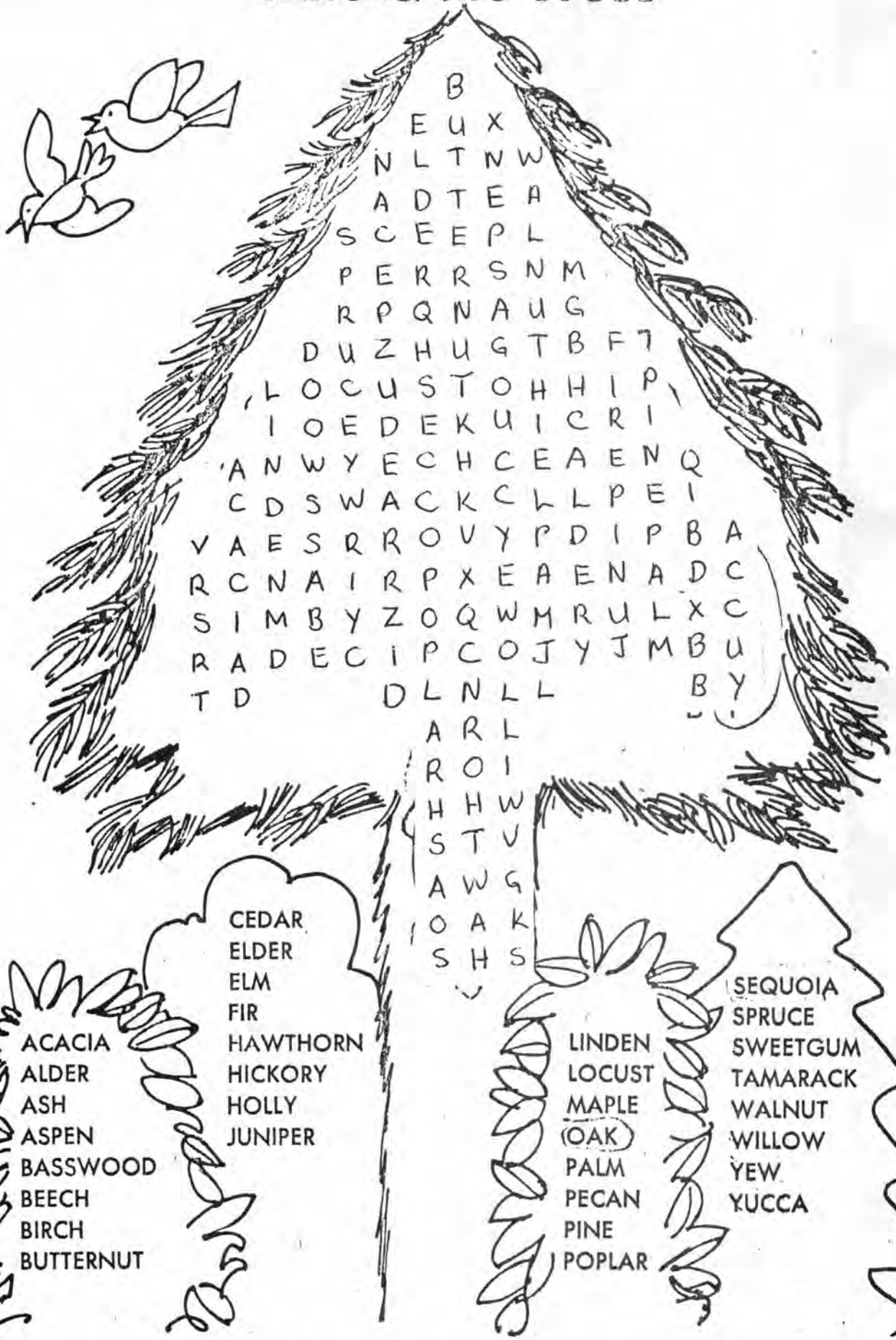
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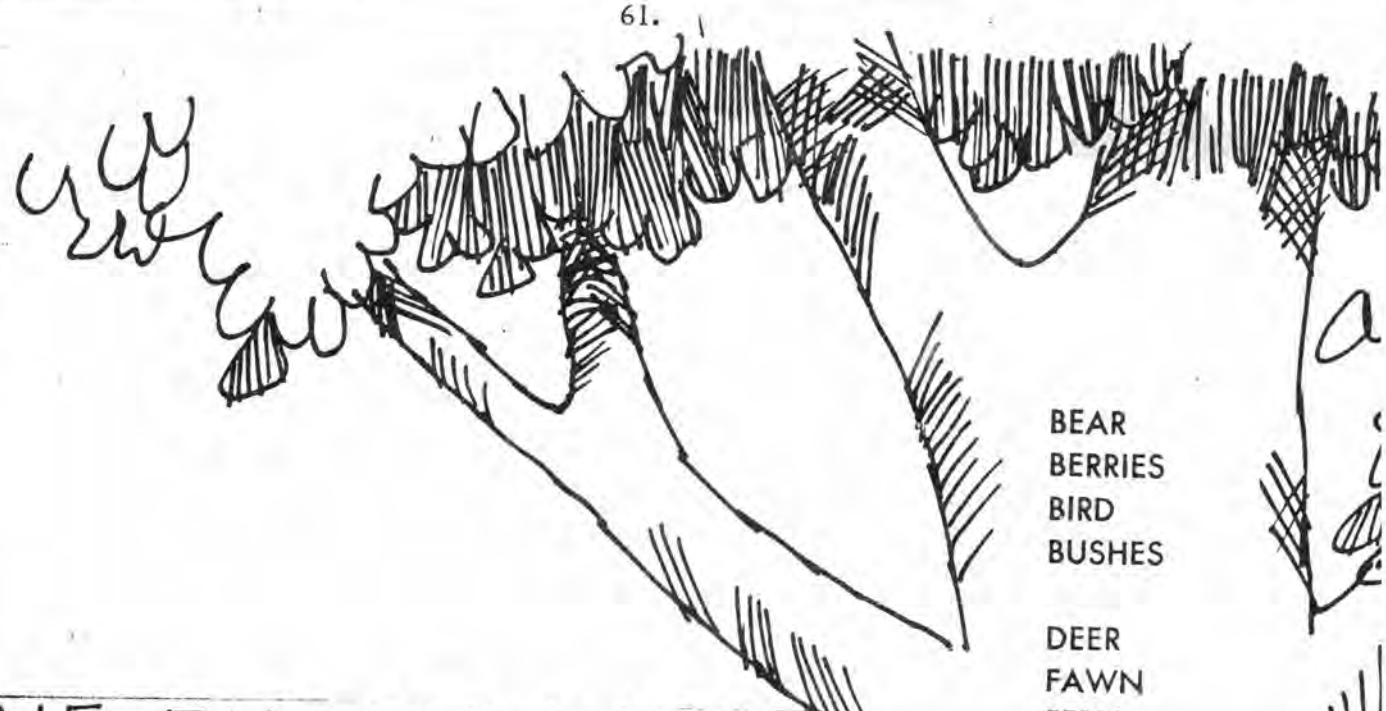
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Among the Trees



ACACIA
ALDER
ASH
ASPEN
BASSWOOD
BEECH
BIRCH
BUTTERNUT
CEDAR
ELDER
ELM
FIR
HAWTHORN
HICKORY
HOLLY
JUNIPER
LINDEN
LOCUST
MAPLE
OAK
PALM
PECAN
PINE
POPLAR
SEQUOIA
SPRUCE
SWEETGUM
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E I N S E C T O P O S S U M O
B R L X U W Y A I N R E F U S
O D G D P R E D N A M A L A S
E R N L F Z R A E B N T X N K
U E M O W L S W C V S Y W S U
S G X C O E O E O E W A Q S N
M D W B V C K W N P F U V P K
O A X A T A C Q E I I J K R N
O B E H N R M A N R V C E I U
R L P S D O B E R R I E S N M
H U M M O C K E J C D L F G P
S Q U I Z K L I C H E N S B I
U B T C F L O W R E D I P S H
M Z S E D R P T I B B A R X C

BEAR
BERRIES
BIRD
BUSHES
DEER
FAWN
FERN
FOX
HUMMOCK
INSECT
LEAVES
LICHENS
MOSS
MUSHROOMS
MICE
NEST
OPOSSUM
OWLS
PINECONE
RABBIT
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SOCIAL STUDIES REPRINTS - OUR CHEMICAL WORLD - SAFETY

As in the past four years, we have contributed again to the booklet 'Project Aids for Students of All Ages, 1985 Edition' available from newsagents throughout Australia. The AVCA effort this year is on pages 96-99 inclusive.

The target audience is school children, in particular those in upper primary and lower secondary classes. According to audit results, approximately 120,000 copies per annum are sold and the magazine has an estimated readership fo 500,000.

We are enclosing a copy of the reprint article for your information and to keep you abreast of the measures AVCA is taking in communicating with the general public and attempting to reach in an educational capacity, the future citizens of Australia.

Should you require quantities of these reprints, please contact this Secretariat and wed will endeavour to satisfy any reasonable request for multiple copies.

G Digby
Executive Secretary

Royal Botanic Gardens Sydney

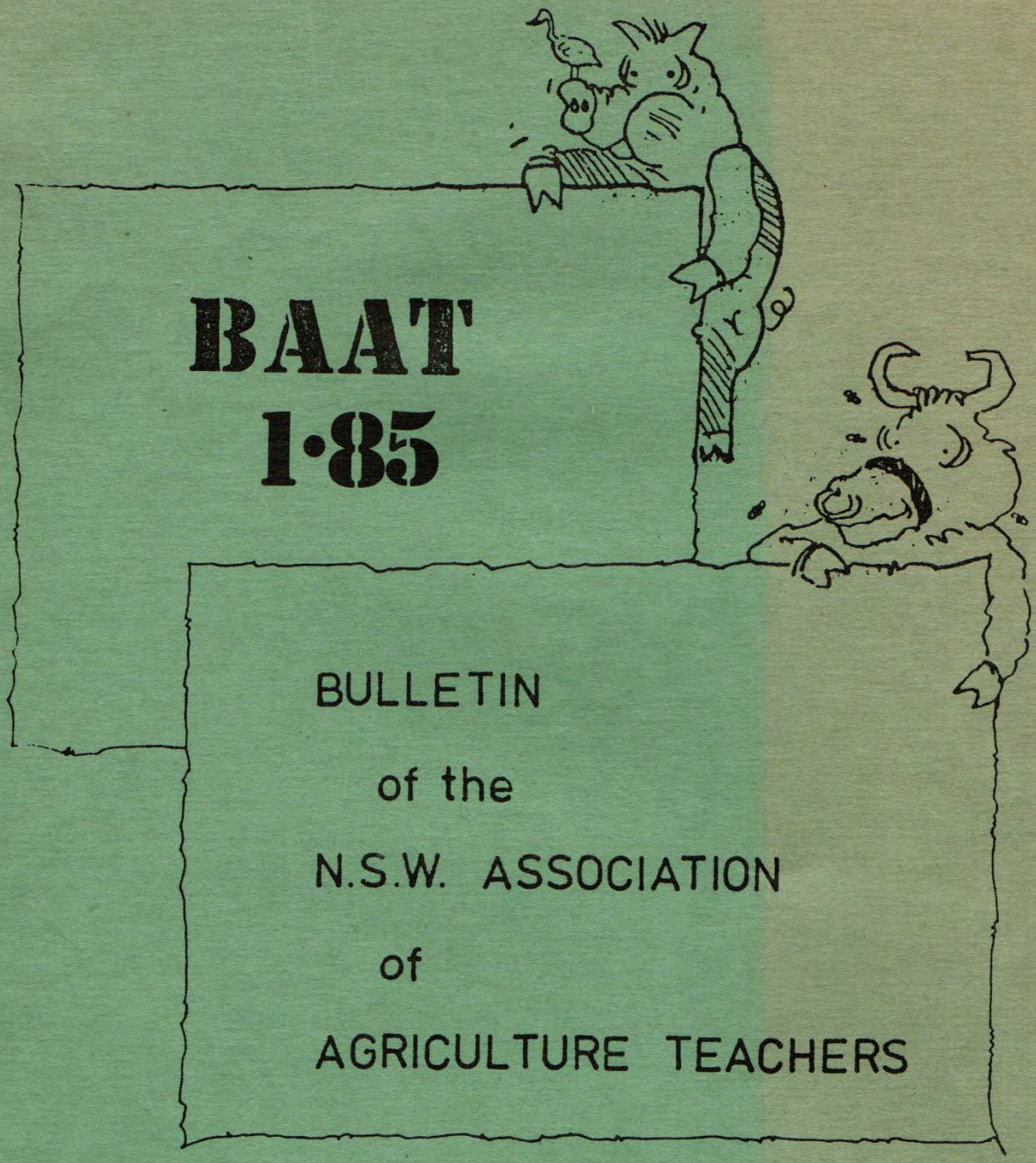
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Enclosed is information on our new slide unit. Unfortunately we cannot afford to give free copies to other institutions since the $60.00 price tag is close to our cost price. However, I thought that this unit would be a suitable reference for your Gould League library and that you may be interested in purchasing a copy. The slides included in the unit are particularly interesting since each one has been produced individually. As a result the colour, depth of field etc are as good as the originals - you will not see the blue overtones and "fuzzyness" common on many slide units.

Best wishes for the New Year

John Johnstone
Education Officer



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