

Student **69**

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AGRICULTURAL COLLEGE

THE HON. MINISTER OF AGRICULTURE (C. R. STORY, M.L.C.)

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Assistant Farm Superintendent: VACANT

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Lecturer in Veterinary Science: F. B. HARDY, M.R.C.V.S.

Research Officer Sheep and Wool Biology: VACANT

Instructor in Sheep Husbandry: C. W. HOOPER, R.D.A.

Field Officer: W. A. ELSDEN, R.D.A.

Instructor in Dairying: A. H. CHARTIER, R.D.D.

Assistant Instructor in Dairying: P. J. RYAN, R.D.A., R.D.A.T.

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Lecturer in Farm Management: A. J. NANKERVIS, B.Ag.Ec.

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Assistant Horticulturalist: VACANT

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Assistant Plant Breeder: G. J. HOLLAMBY, B.Ag.Sc.

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Oenologist: R. J. BAKER, R.D.Oen.

Agricultural Biologist: P. C. O'BRIEN, B.Ag.Sc.

Lecturer in Biochemistry: C. WEEKS, B.Ag.Sc., Dip.Ed.

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Visiting Instructors in Woolclassing:

C. SMITH

M. ABEL

EDITORIAL

Now is the end of an era at Roseworthy. The college Open Day '69 marked its death, if one wishes to be dramatic about it. The change has actually come over several years, and so many factors are responsible that it would be unrealistic to mention them all. Most important has been the lifting of entrance standards and consequently the sensitivity, broadmindedness and intelligence of students. Today, the traditional and idiotic bigotries and initiation of new students have been replaced by an organized and enjoyable programme of introduction for first year students, given in small groups with individual attention by seniors.

The course and campus have also changed almost beyond recognition in three years, mainly due to utilization of Commonwealth monies, enabling the construction of new buildings, and courses, previously inadequate, in Engineering, Chemistry, Biology, Plant-breeding and Poultry.

While we watch Roseworthy's Diplomates in Technology overtake the university's graduates in Agricultural Science, we must not forget Roseworthy's potential. We need an even better intake to cope with and become effective in the presently evolving fields of extension and management technology.

Inadequacies in students, staff, course-organization and teaching techniques, administration of students, public relations and library facilities are hindrances, and the apathy towards advertising, general lack of enthusiasm, monetary limitations and poor student-management causing them must be overcome now, if we are to keep up with World Agriculture.

The concept of Roseworthy as a well known training-ground in the State's, (and I hope the World's) Agricultural:— management, extension, teaching and technical fields, is emerging amongst our students, for it will be diplomates who save the World's food production problem by putting new theories into practice and through simplification and extension, to gain acceptance and application by farmers of rationalized research results.

Courses in the general field of agriculture will become longer and more widely accepted, as food takes a more critical place, and as long as the researcher does his job in the areas of population-control and food production, the diplomate will remain invaluable to this hungry World.

MAGAZINE COMMITTEE
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GRADUATION DAY 69

Mr. Herriot welcomed the Minister of Agriculture and visitors on behalf of staff and students, and outlined the past season, explaining how agricultural production was at an all time high, and how the development programme had continued. The farm reaped over 47,000 bushels, 18,000 bushels better than the previous high of 1960, this mammoth task being carried out to the credit of the farm superintendent (Mr. Norton) and an enthusiastic band of students.

Talking of the wheat variety Glaive, released from the college in 1967, Mr. Herriot explained that it is doing well and was a credit to the breeder, Mr. Krause. It was expected to release another of Mr. Krause's wheats this year. The suggested name of this variety is Halberd, which has outyielded Heron by 10% and should rank for medium to strong classification in most districts, as well as being adaptable to harsh and favourable growing conditions. College sowed only 15 acres last year, and this reaped over 800 bushels, of average yield of 54.5 bushels per acre. Mr. Herriot then explained that of particular interest was the pointing out by cost conscious critics the high cost of running Roseworthy College, and how the return by these two new wheat varieties, would in the next few years return to the treasury far in excess of the total cost of running the college.

In reporting on redevelopment, the principal explained that by the mid 1970's it was expected that the college would house 190 students, and after the rebuilding of the winery (which is to commence soon) the redevelopment of the college would be half complete. In line with this, student character has changed and we now have a batch of students interested in their, and the college's well being.

Another change, was the decision by the Advisory Council to allow selected students to be given a second chance to repeat a year, if beds are available after all qualified prospective students are accommodated. Opportunities for repeats will be limited, but will not be as ruthless as the old 'Pass or leave' policy.

Mr. Herriot told how today Roseworthy will house 50 new first years, half of whom will have the chance to return to farms should they choose. This gives 129 students, a record for the college. A critical situation will exist for the 1970 Oenology course, as many prospective students have foreseen a position in this industry, and we have been over whelmed by applications for the course of 12, this being a rare problem, as never has a student been excluded from the course in its 30 years of existence.

March 4th was a special day for Roseworthy the principal continued, for the first bunch of Roseworthy Diploma in Agricultural Technology graduates, these being the first graduates from this course for fourth years who have attained 60% in diploma subjects. They are a select and unique group who will assist to improve our extension services. In addition Mr. Herriot thanked the donors of the generous prizes.

The Gramp Hardy Smith Memorial Prize, donated by the Australian Wine and Brandy Producers Association was announced, with Gavin Eckersley winning after a difficult decision.

Mr. Herriot said how all students who come to Roseworthy leave their impression on the place, as well as the college leaving its impression on them, and that the graduating third years have spent \$640 improving the college's main entrance, and to this end erected a monument and marker to label the entrance, and this is to be opened before lunch by Sir Richard Hawker.

Before the Diploma presentation and prize giving ceremony Mr. Herriot commented on how attached most staff had become to the Graduating Year, and said on behalf of all staff "We've enjoyed working with you, we wish you well and we'll always be pleased to meet you again."

PRIZE LIST

DIPLOMA IN OENOLOGY

The R.H. Martin Memorial Prize for Wine Tasting — Brian Andrew Falkenberg

The Australian Wine Consumers Co-operative Society Limited prize for Viticulture — Christopher Ross Hurn

ROSEWORTHY DIPLOMA OF AGRICULTURAL TECHNOLOGY

The Royal Agricultural and Horticultural Society of South Australia prize for the Dux of the course — Gavin Campbell Eckersley

The Commonwealth Development Bank of Australia prize for Farm Management — Gavin Campbell Eckersley

The Adelaide and Wallaroo Fertilizers Ltd. prize for Extension Principles and Practices — Bruce Leslie Wigney

ROSEWORTHY DIPLOMA OF AGRICULTURE

I. GRADUATING STUDENTS

Gold Medal (Presented by the Royal Agricultural and Horticultural Society of South Australia for the highest aggregate in all Diploma subjects) — Keith Arnold McCallum

Old Students Cup and Prize (Presented by the Roseworthy Old Collegians Association for the second aggregate in all Diploma subjects) —

James Philip Cooper

Outside Work (Presented by the Albert Molineux Memorial Trust) — Keith Arnold McCallum

Morphett Prize for Dairying (Bequeathed by the Late Mr. B. Morphett) — Keith Arnold McCallum

Practical Farm Engineering (Presented by Caltex Oil (Aust.) Pty. Ltd.) — Keith Arnold McCallum

Sheep Husbandry (Established by Mr. W. S. Kelly and perpetuated by Mr. C. R. Kelly, MHR) — Keith Arnold McCallum

Farm Management (Presented by Commonwealth Development Bank of Aust. Ltd.) — Keith Arnold McCallum

Animal Nutrition and Veterinary Hygiene (Presented by Noske Bros. (S.A.) Pty. Ltd.) —

Keith Arnold McCallum

The Haselgrove Prize for Horticulture (Bequeathed by the Late Mr. C. T. Haselgrove) — Guy Kirkwood

Practical Horticulture (Bequeathed by estate of the late Rudi Buring) — Guy Kirkwood

The Most Efficient Operator of Farm Machinery (Presented by Mr. A. G. Strickland, Director of Agriculture) —

Darryl Elmo Miegel

The Richard Maxwell Memorial Prize (Presented by Trust established by fellow students of the Late Richard Maxwell for the Best Stockman) —

Thomas Robin Usher

II. SECOND YEAR

Dux of year (Silver Medal (Presented by Gawler Agricultural, Horticultural and Floricultural Society) —

Graham John Pearce

The W. J. Colebatch Memorial Prize (Awarded to the student in the second year of his course who has shown the greatest all-round promise, having regard to scholastic ability, industry, practical work, leadership and sportsmanship) —

Graham John Pearce

Horticulture (Presented by Trust established by the estate of the Late F. G. H. Buring) —

Graham John Pearce

Outside Work (Presented by the Albert Molineux Memorial Trust) —

Graham John Pearce

The Shell Prize (Presented by the Shell Co. of Aust. Ltd. to the most promising student at the end of the second academic year who displays the most promise of developing leadership in his field of work and as a citizen) —

Michael Ainslie Wood

The H. Wyndham Brown Prize (Presented by Trust established by the Late Mr. H. Wyndham Brown for the highest aggregate in basic science subjects) —

Robert Ian Maczkowiack

III. FIRST YEAR

Dux of Year (Bronze Medal) (Presented by the College) —

Noel Christophersen

Outside Work (Presented by the Albert Molineux Memorial Trust) —

Noel Christophersen



DUX OF AGRICULTURE

Keith McCallum was born at Morchard, out from Orroroo, where his family have a grazing property.

He gained his Leaving Certificate at Booleroo Centre High School and followed this with Leaving Honours at Prince Alfred College.

From here he spent time in the Canberra pine forests, then with the Commonwealth Bank at Woomera.

Knowing 'Barney' as we do, it is obvious this would not satisfy him and he came to Roseworthy in 1966, immediately showing a keen interest in both scholastic work and college activities which he has sustained throughout his course. Rural Youth and cricket are two of his activities.

He is still with us, being absorbed in working for his R.D.A.T., and then is destined, as are many others to serve two years in the Army.

He shows aptitude in Farm Management which he will probably put to good use on his discharge.

DIPLOMA LIST

I. ROSEWORTHY DIPLOMA OF AGRICULTURAL TECHNOLOGY

Passed (in Alphabetical Order)

David Malcolm Crawford
Gavin Campbell Eckersley
Robert Edgecumbe Holloway
John Alan Jones
Peter James Ryan
Geoffrey Lawrence Schrapel
Bruce Leslie Wigney

II. ROSEWORTHY DIPLOMA OF AGRICULTURE

Honours (In order of Merit)

Keith Arnold McCallum — Second Class Honours (Distinction in Agricultural Engineering; Veterinary Hygiene and General Husbandry.)

Passed (In Alphabetical Order)

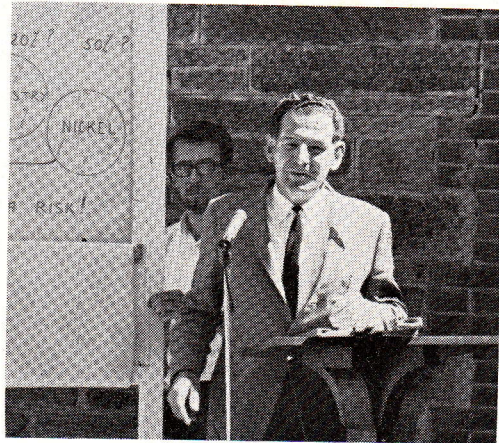
Brian Walter Boerth
James Philip Cooper
John Bertrand Davies
Walter Alfred Elsden
William Grant Giles
Colin James Glaetzer
Richard Henry Habgood
Guy Kirkwood
Darryl Elmo Miegel
Barry William Philp
Michael James Riley
Warren James Roesler
Richard Keep Turnbull
Thomas Robin Usher
William Donald Watson
Jonathon Christie Womersley

GRAMP, HARDY, SMITH MEMORIAL PRIZE

Awarded annually to the student showing the best all-round character and ability, taking into specific consideration his manliness, his leadership, his sportsmanship and his scholarship.

Gavin Campbell Eckersley

WHAT IS ROSEWORTHY DOING ABOUT FARM MANAGEMENT EDUCATION?



MR. K. B. LESKE

To give a satisfactory answer involves consideration of a number of important issues including the role of Roseworthy itself.

Obviously a major point to consider is the need of our students. What do they want to get out of a course which leads to the award of a Diploma in Agriculture or a Diploma in Agricultural Technology if they elect to pursue their studies for an optional fourth year?

While it is probably true to say that some of the students are not quite sure when they arrive at our doors, we can say that they generally seek to equip themselves for a career that is in some way related to, and directed towards the agricultural sector of the economy. However, this career may be as farm owners: farm managers: farm advisers in various technical fields of government service: employees of business firms providing specialist technical services to the farming communities: farm management consultants: teachers in Agricultural High Schools.

The spectrum of job opportunities and job preferences is a very wide one and Roseworthy must therefore seek to provide courses that are broad enough—and yet sufficiently detailed and specialised—to meet these needs.

It is within this context then, that the study of Farm Management must be considered. It is but one of the major subjects covered in the course, which proceeds through all three years of the Diploma in Agriculture and takes up about one-eighth of all formal lecture time. In the specialised fourth year Technology course one-third of the student's time is devoted to Farm Management. In addition to formal lecture time, tours and assignments help to add to knowledge in techniques and principles. Farm Management is therefore an important element in the total course structure and plays a very vital role as an integrating subject. It seeks to question the economic reasons for various on-farm activities and attempts to equip these young men with the principles necessary to enable them to make logical and economically rational decisions for themselves (as farmers) or for others (as their advisers) in the light of all the information that is available.

The new student as we noted earlier, comes for various reasons and with some thoughts about his future career. He also comes with a good many preconceived ideas and concepts about agriculture which are not altogether correct. e.g.

"Farming is a way of life", "You can be your own boss", "All the pleasures of country life", "There's no prettier sight than a contented herd of cattle", "There's a mint of money in turkeys".

We do not aim to burst the balloons of hope and idealism with one shattering blow. Our aim is rather to make our students think about the problems of farming and to show them that the chances of fulfilling these hopes can only be achieved if their farm operations combine to make a profitable business unit; and to show them, furthermore, that profits depend upon the management skills applied to the operation; that business brainpower must take precedence over brawn.

In other words Farm Management seeks to lead the student to accept the point that any and every type of business unit must be organised and operated in such a manner that the resources of land, labour and capital applied, yield a return that is worthwhile and rewarding and is the optimum return obtainable from the combination of resources available to that business. If this return can be achieved the other personal hopes, satisfactions, and preferences are likely to be fulfilled also—but not otherwise.

It is to this end that all work in Farm Management is directed and I believe the courses we offer here meet the requirements adequately and are fully comparable with those at any similar tertiary institution.

Our course meets these needs through discussion and study of the following major topics which influence managerial decision making.

(i) *The farm as a business unit.*

This section emphasises the financial characteristics of a business and seeks to establish the point that a farm is simply one way in which an investment can be made. The same funds could be invested in Commonwealth Government Bonds or Nickel Prospects or in other ventures with more or less risk. The critical question is simply the ability of the investment to earn a reasonable rate of return on the funds employed.

Considering the risks involved a return of 10% p.a. is not unreasonable and only well managed farms of adequate size achieve these figures.

(ii) *The Characteristics of the farm investment.*

This involves discussion of such matters as land tenure, valuation and credit and seeks to answer questions such as:

Should I own, lease, or sharefarm? What are the problems and advantages of each system?

If I buy, how much can I afford to pay—If I want to be sure of a reasonable rate of return on my investment?

How much can I afford to borrow? On what terms? Where from?

(iii) *Production and Production Economics.*

This area covers every aspect of use of resource, inputs and the value of the output obtained in order to determine the optimum levels of input application so that maximum financial benefits may result. It involves consideration of input-output relationships and specifies the principles which determine the economic levels at which to apply fertilizer, to carry livestock per acre, to feed protein to pigs, or the levels at which different products should be combined for optimum results.

Additionally in this area we deal with matters relating to the economic use of machinery, buildings, fencing and water supply.

From the principles of production established students have learnt to determine what to produce, how to produce it and how much of it to produce.

(iv) *Recording and Analysing.*

Needless to say, to arrive at meaningful answers to the types of problems a business faces requires information—and in particular information of the right type.

Consequently an important section of the management course deals with: the role of records in business, the type of records to keep, how to keep them and how to make use of records through such management aids as comparative analysis, budgets, gross margins analysis and programming. In this area of record keeping and analysis the computer is becoming an increasingly important tool and farmers also are becoming more and more involved in these processes which save both time and money.

(v) *The Farm Business Environment.*

No business exists in isolation. How a business performs and succeeds or fails is at least in part dependent on many outside institutions and agencies which affect and influence the internal operations of the business. A necessary part of the course, therefore, involves discussions in the areas such as:

- Marketing and trade both local, interstate and international and the various boards, agencies and government departments which control and regulate such sales.
- Banking procedures, the law of contract, hire purchase agreements, land transfer.
- Taxation as it influences and affects management decisions.
- Estate planning in terms of insurance, wills, gift and estate duties.

Throughout these discussions the emphasis is continually placed on management and the fact that the function of management is to operate a business unit so that the returns from that unit are maximised. It is emphasised that management is a continuous process that involves Planning—Organising Directing—Controlling which is constantly aiming to reach an Objective—An efficient business unit producing optimum results.

Furthermore it is being pointed out that the functions of management can best be directed towards achievement of the objective if the manager proceeds by a series of logical steps: Observation, Analysis, Decision, Action and Responsibility.

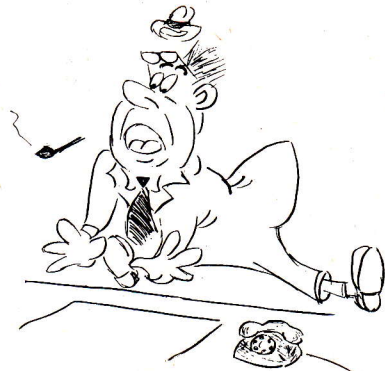
What Roseworthy is doing about Farm Management is, we believe, providing a very full course in basic principles which is comparable with that offered by any similar institution. We believe it achieves for our students a level of competence in the modern principles of business management which enables our graduates to assess

- (i) Which observations and which information is of relevance and importance to the problem in hand and
- (ii) How this information can be analysed in the most useful and effective way.

Having done this they are therefore in a position to make logical and rational decisions which should lead to effective and rewarding actions for which any man would be proud to accept managerial responsibility.

K. B. Leske, B.Ag.Sc., F.S.A.I.T.,
Senior Lecturer in Farm Management.

You say you are a Tihrd Year, Miss Sex-ton!!!



FARMER WITHOUT LAND



He may never plant a crop, this good neighbour of yours. But he knows the land and the people on it. He knows their needs – and the needs of their machines.

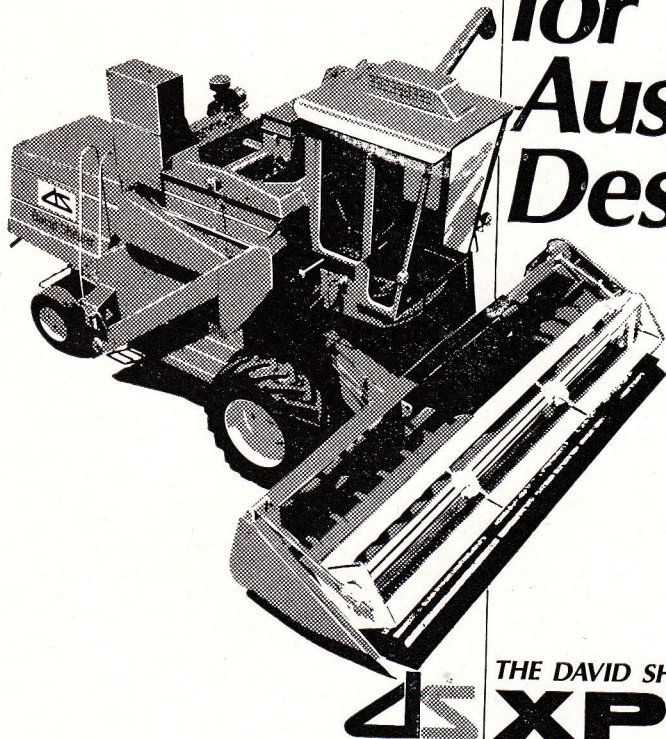
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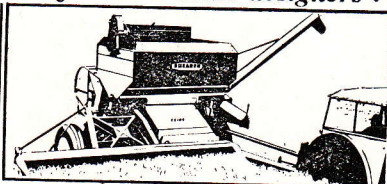
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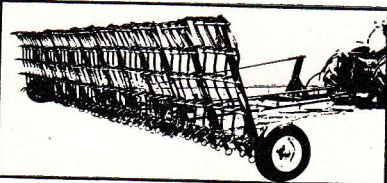
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"I always had Dunlop tyres, but last year I thought I'd give another kind a go. I was glad when they wore out. The new Dunlop Super Grip tyres I've got on now have cut slippage down to about seven-to-nine percent.

The walls are stronger than ever before and the wide lugs are buttressed, so no distortion, no cracking."

"One thing's for sure, I'm back on Dunlop—for good!"

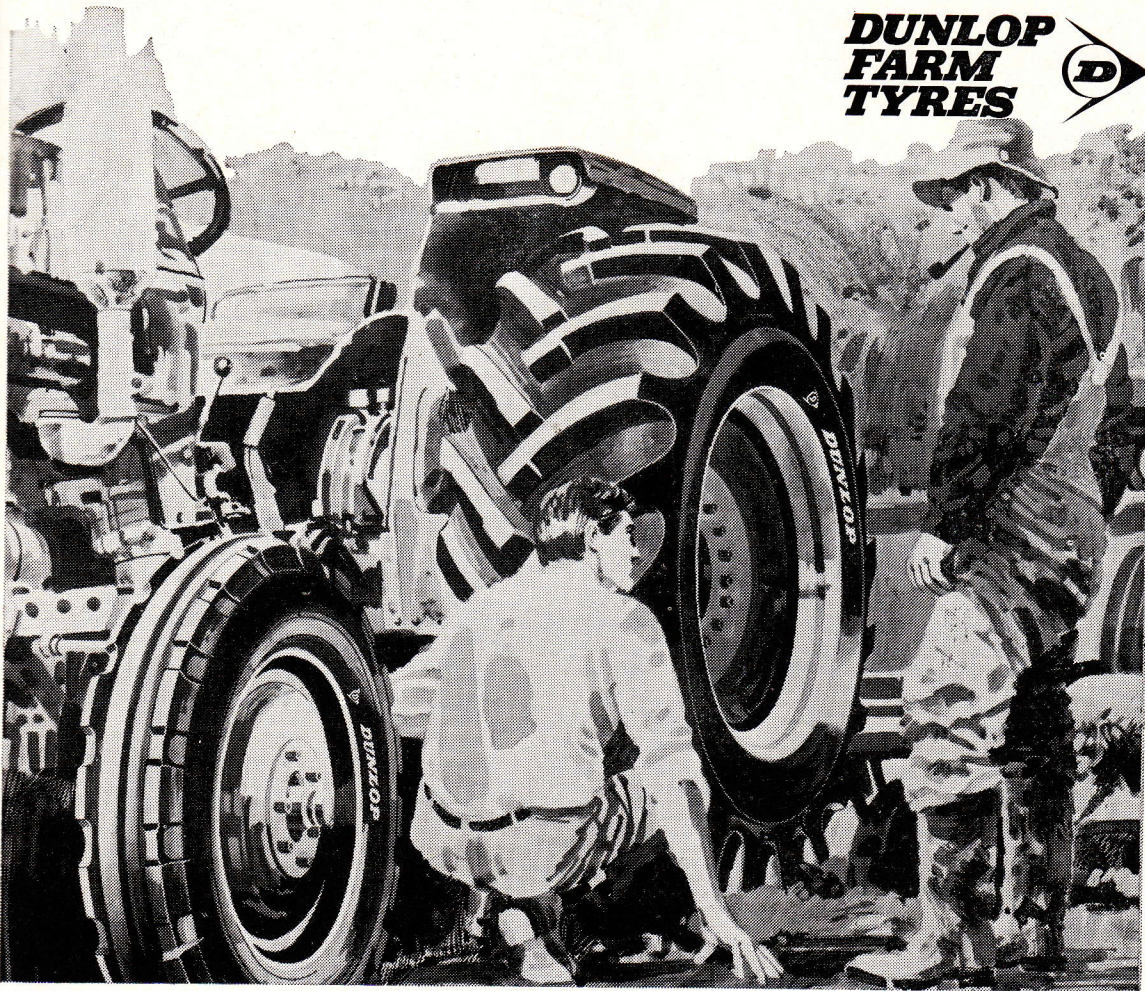
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SECTION REPORTS

BEEF

We have reached the stage in the beef industry where growth rate figures have become an important factor to the buyer. This has brought about a change in type from the low set early maturing type to a longer, leggier animal which grows quicker and produces a leaner carcass. The Poll Shorthorn breeders are leading the field in this trend with South Australian studs equal to the eastern states.

The College have used scales for over 20 years and based selection on type and weight gain. So we must be in a position to benefit from this trend. Over the past four years our bulls, which finished at Adelaide Show had growth rates of 2.37 lbs to 2.89 lbs. per day on their mothers. These figures compare favourably to those quoted for the mighty Brahman cross. (The College herd is now 66 strong with two bulls and 31 breeding cows.)

SHEEP

Merino

The lower wool prices over recent years has cut appreciably the nett return in the industry. There seems to be three ways to increase returns:

1. Grow finer wool.
2. Carry more sheep per acre.
3. Achieve higher lambing percentages.

The College is not in a position for a sudden change to finer wool because of experimental work. However, we can grow quality wool in our present count and reap some benefit from this. In any case it is not advisable in the long run to chase the market.

On most properties it is possible to raise production by the other two means listed above—and production per acre is what really counts. Recently, in addition to the fertility plus flock in the experimental group, the College has started a commercial flock of twin-born ewes mated to twin-born rams. It is recognised that this will give increased lambing. But we intend to study management of twin bearing ewes and how twin-born lambs measure up at hogget classing and shearing. With a commercial flock it will be possible to put on more grazing pressure than can be done with experimental sheep.

POLL DORSET

The development of a completely poll flock takes considerable time, and probably 1969 mating will see the finish of the horned ewes bought for the establishment of the stud. This year we have commenced the weighing of lambs, and their growth will be measured from after weaning until hogget stage.

The breeders of British sheep have been very slow to make use of scales to measure production and it is very pleasing to know that they have now commenced.

Rate of growth must be very important in the purchase of a sire. Possibly something on the type of ram in a breed to use with a Merino ewe or cross-bred ewe could lead to increased production. I am sure they would vary. As in the beef world one can envisage the production type ram varying considerably from the present day show ring champion.

The meat trade has taken a very definite set against the over fat lambs, so extra weight must be lean meat and this could mean a longer, leggier sire. (Sheep numbers at 30th June totalled 1,746.)

C. W. HOOPER.

HORTICULTURE

This year we have 9 out of 27 Third Years who have chosen horticulture as an option, maintaining the relative proportion of 1/3rd in recent years.

This year's course has not changed greatly in that Second Years have a general grounding in principles and practices of horticulture, supplemented by the River Trip which is designed to give them a first hand look at the industry. Third Year students receive a course in greater depth with the aim of leading them to a better understanding of horticulture in general.

While the students who choose the sheep course are shearing, the horti boys visit all the major horticultural areas except the River and the South East.

The tree plantings at horticulture are responding well to the various types of under-tree irrigation installed last year and we hope to install drip irrigation on some sections, soon as a comparison.

The vegetable garden has had its ups and downs. Barry Philp, after completing his course, returned as my assistant, did a very good job of production and kept the place neat and tidy.

Our potato venture was quite successful and this year we are planting an area at the piggery and furrow watering with their very wholesome waste water.

Farmers Day this year attracted more people interested in horticulture than in previous years, which is pleasing, as our course has not received much recognition from the industry in the past.

J. A. GURSANSKY.

PIGS

How would you run a profitable piggery at an Agricultural College? The building programme has progressed steadily with the completion of the intensive breeding stock unit, concrete raceways connecting the various buildings, a new sludge sump with manure pump, extensions to the pond disposal system and now in the course of construction are a series of motel type accommodation (better known as permanent shelters) in the outside yards. The additions have allowed a good spelling of all the outside paddocks to enable working and sowing down to barley.

It could be that students have requested a better flavour in the college grown potatoes, for this year they are being grown in the piggery and are to be irrigated from the waste disposal ponds. I wonder if Lepto, Pneumonia, E.Coli, Gastro Enteritis, Poor fecundity, Abortion, etc., can be transmitted via the food material. Never mind, I guess they will be sterilised in the cooking process.

The major investigation programme during the year has been keeping a close watch on the food conversion and carcass quality with reasonable success. The major problem was mice and the associated stress factor. It's been wondered whether 150 grade 3 and 4 children can cause as much stress in half an hour as a mouse plague. A debatable subject I feel but one that could keep a research officer quite busy investigating for a considerable time, and the final answer would be breed a strain of stress resistant pigs. There is a challenge for some future stud breeder.

It was pleasing to be told by a piggery research officer from an overseas college that the three major causes of disease and unprofitability in a piggery were, stress, nutrition and lack of elbow grease. He discourages visitors and demonstrations in the piggery. He has a fully staffed nutrition laboratory on tap with three permanent herdsmen employed to run the unit which accommodates approximately 50 breeding sows (all from progeny tested litter) and their progeny. The research side of the unit is subsidised to the extent of 7,000 dollars per annum by the pig industry.

Don't despair, "while there is life there is hope". We do hope in time to have a demonstration unit to satisfy the students and the industry's needs, stocked with disease and stress resistant animals, with excellent conversion ratios, above average growth rates, and fecundity, with a carcass composition and quality which will meet all the market requirements.

Oh, to have a challenge!!

Stock numbers at the 31st September, 1969, totalled 378.

A. H. CHARTIER

FARM

The season of '68 was an amazing one; almost copybook for Roseworthy and the resultant total and individual yields were a record. 15,840 bushels of wheat, with an average yield of 42.6 bushels; 8,380 bushels of oats, with an average of 43.9 bushels an acre; and 23,112 bushels of barley with an average of 45.2 bushels.

Fodder reserves, depleted by the '67 drought, were replenished with 508 tons of hay, and approximately 1,100 tons silage in bunkers and pits as a drought reserve.

The '69 season has started as a repetition of 1968, with exceptional crops and pastures, but lack of rain up to the 23rd October has altered the picture somewhat.

However, during September and part of October 350 tons of ensilage and 100 tons of excellent medic hay were added to fodder reserves.

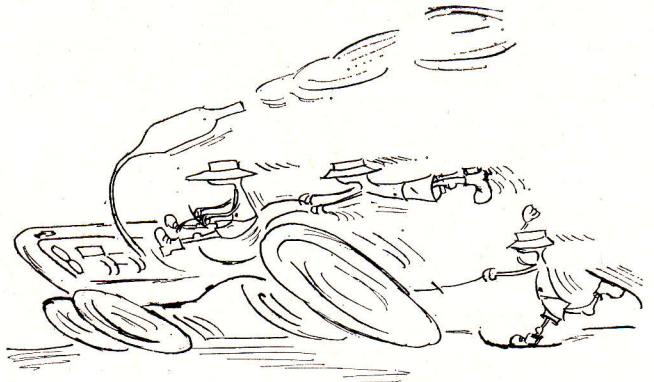
THE FUTURE

One of the problems facing this farm is one which is facing many cereal sheep farms at present. We have embarked on a programme of raising soil fertility and maintaining it by use in this area of improved medics such as Jemalong and Harbinger as have others with various sub clovers in higher rainfall and less alkaline soils. The balancing procedure in the past has been to utilize excess fertility most economically with wheat, at \$1.30 per bushel.

With an imposed quota system which will become part of farming in the future, the choice of a crop or enterprise to replace wheat in a programme becomes the dilemma. The immediate reaction to grow more barley is natural, but high fertility results in a high protein, flinty barley which doesn't meet maltsters requirements and attract premium prices. That over-production of barley could reduce prices, making lower grades of feed-barley difficult to sell and perhaps uneconomic, is another factor to be considered. This high protein barley could easily have a Crude Protein yield of 16-20% on a Dry Matter basis. Barley of this quality is eminently suitable for stock feeding as it reduces the level of expensive animal protein which has to be added to say a porker or a layer ration, but all farmers are not in a position to use all their excess high protein-barley.

Oats is a proposition only where low production costs and high yields are feasible. In 1968 on this farm dry seeded oats on a relatively clean paddock requiring no spraying and no super, yielded 60 bushels per acre.

An acceptance of the idea of a lower value crop with low production costs could be an answer where early seeding is possible and "one pass" spraying controls all weed types.



Wheeee!!! This sure beats ploughing.

The fact that linseed was grown on large areas of the lower and mid north of this state during World War II would indicate that with more sophisticated methods available today, this crop could still be a proposition. However at the moment there appears to be no market for excess production.

A suggestion to utilize fertility is to grow summer crops for seed. A very early fallow in May or June would prepare and conserve moisture for an early seeded crop of Chou Moellier or Sudax, which in some years could yield well yet in others would fail and be grazed.

It is most obvious that farmers are now to become very aware of the benefits of a low cost — optimum yield approach to cropping. The maximum yield per acre in all instances is certainly not the most economic. The cost inputs of some high yielding cereal crops when compared with lower anticipated returns in coming years will leave only small profit margins.

A farmer who remains alert and flexible in his thinking and can apply sound principles to attempts at new enterprises is the one who will continue to fully utilize his great capital investment under what now appears to be a difficult marketing situation.

R. S. NORTON.

DAIRY

Last year it was stated that seasonal conditions necessitated a very quiet time in the dairy section, however, this year the exceptionally good conditions have created a variety of problems.

Thank goodness problems are never unsurmountable, providing time and patience is available. Profuse medic growth in the paddocks has created a slight bloat problem and it is suspected it also caused a gross calcium and phosphorus imbalance in the cows blood streams, particularly the higher producers, and this has ultimately caused lameness, infertility and possibly been one of the predisposing causes of two broken limbs. Thank goodness we have an ever increasing student population to eat the problems. But even so, dairy stock numbers are on the increase, assisted a little by the purchase of two cows from the Vynette stud at Tooperang and one cow, four heifers and a bull from the Pella Stud, Eudunda.

The 37 cows that completed their lactation during 1968/69 averaged 7006 lbs. of milk and 371 lbs. of butterfat.

The main additions to the dairy section since last year is the new stainless steel butter churn and the direct expansion refrigeration in the Dairy Factory and a dehorning and inspection crush bail at the dairy so that cows and heifers don't have to be calved, P.D., and mishandled in the milking bails. Dimensions of this particular addition were such that it could be used to assist calving of beef cows by a very portly lecturer in Veterinary Science.

There was a request for greater variety in the student menu so the dairy section is trying to oblige by rearing unwanted Jersey bull calves on chronic mastitis cows for use as veal. If the result is pleasing to the students' palate one may have to watch out for an increase in the mastitis incidence. I grant you, with the present price of beef and veal, it would be congenial that milking cows are possibly nearly as profitable, as it is reported that an average cow can rear up to 1,000 lbs. of veal per lactation and at 25c to 30c per lb. it seems a little more profitable than 371 lbs. of B/F at 35 cents per lb. The only problem is a dairy cow won't produce 6 to 8 calves per lactation and a little difficulty may be experienced in getting her in calf for the lactation. Apparently the increased hormone release caused by multiple suckling can have an effect on the release of others.

Stock numbers at 30th September — 109.

STIMULATION AND MILK YIELD

Trials at Ruakura over the last few years have shown that among both average and high-producing cows a large percentage are not stimulated to full "let-down" by the action of the milking machines alone. Production gains from additional stimulation have reached 25% or about 70 lb. of butterfat per cow and 15% per acre.

The need for stimulation increases as lactation proceeds, being for maximum effect about 15 secs. to the end of October, 30 secs. for the next 3 months, and 45 secs. for the rest of the season.

Although an individual cow's milking time is reduced by stimulation the total time occupied by milking is likely to be increased by adopting a full stimulation programme. On fully stocked farms the extra time is generally well spent, but on under stocked farms it might be more advantageous to milk more cows. Without stimulation herd losses can average 40-70 lb./BF. The need for stimulus is inherited, so replacements must be carefully chosen. Culling and bull selection is the long term answer. Advantages of stimulation are—reduction in replacement costs, maximum production per cow, and highest output on fully stocked farms. Disadvantages are—its labour requirements, limitations on throughput and lower advantage on understocked farms.

MULTIPLE SUCKLING OF CALVES

It has long been considered that the rearing of a calf on its dam was an unduly expensive method of raising herd replacements. By the use of identical twin foster mothers it has now been demonstrated that when three or four calves per cow are suckled the cow's production may be stimulated, that on her return to the shed she can produce on average only about 25 lb. less fat during the rest of the season than her twin has produced for the whole season. The advantages of multiple suckling include—good calves (180 lb. at 7 weeks), cheap calves at \$2-\$3 each, low labour requirements with cows and calves together and less mastitis. Disadvantages are in the mothering-up problem and concealment of heat in the cow.

A. H. CHARTIER.

AGRICULTURAL ENGINEERING

Practically all aspects of agriculture to some extent involve agricultural engineering. About 30% of the cost of establishing and operating an agricultural enterprise comes within agricultural engineering; such things as tractors, implements, seeding and harvesting machinery, water supplies, buildings, fences, etc. It follows that the main areas of capital depreciation occur in agricultural engineering facets. Agricultural engineering therefore provides services to production in agriculture, and the Agricultural Engineering Centre at this College provides services to the productive working sections.

During 1969, much of the work done has been routine and would be worthy of mention if it were not so dull, but the major tasks have included the following:

- (a) A bird cage was constructed for the Plant Breeder. This has an area of 40 ft. x 80 ft. and unlike most bird cages is to keep birds *out*.
- (b) The harvesting and cleaning section of the self-propelled 4-row stripper for the Plant Breeder is being developed and initial tests have given encouraging results.
- (c) A magnetic sweep has been developed. This is to pick up "hardware" from roads, fencelines and paddocks by means of electromagnets. This should result in less "hardware" disease in both animals and tyres.
- (d) Experiments were carried out in the farrowing unit at the piggery to determine the environmental conditions following the installation of two evaporative coolers. These verified our design calculations. A lot was learnt from this project which was our first in artificial environments.
- (e) The old workshop-blacksmith shop was demolished "almost" without accident, thus ending an era in agricultural engineering at Roseworthy College.

The agricultural engineering course has been enriched with the introduction of laboratory work in soil mechanics, hydraulics, electrical distribution and power, statics and dynamics. This follows the introduction of tractor testing last year and continues the trend for more emphasis on group work and "active" education, emphasizing the move in agricultural engineering towards recognition as a necessary and integral part of agriculture.

It is inevitable that mechanisation will increase in the future, and agricultural machinery must be designed to handle greater quantities of material. In South Australia, water is at a premium and water supply must have greater efficiency. Agricultural production is becoming more intensive and is moving "indoors". Therefore farm buildings and their environmental control will become increasingly important. At present electronics is little used in Australian agriculture, but in future, automation and computerisation will take place.

In the four major fields of agricultural engineering — power and machinery, soil and water, buildings and electrification — considerable changes are imminent and the proper education of sufficient people in agricultural engineering is the only way that we in Australia will be able to initiate, implement and maximize the benefit from these changes.

G. P. ATKINS.

ANIMAL PRODUCTION LABORATORY

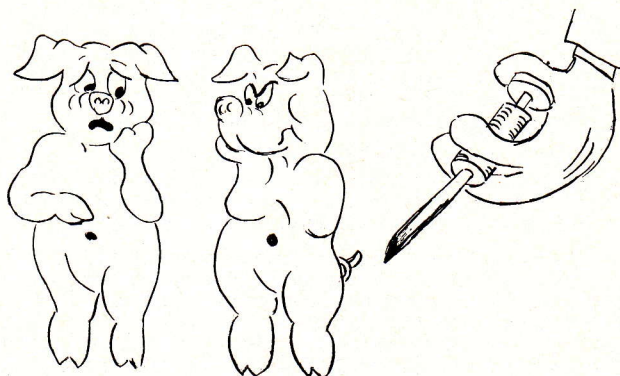
During the past year the major work of the laboratory has been in 2 Merino Selection Experiments: The Generation Interval Experiment, designed to determine the contribution made by selection in the annual increase in clean wool production, and the Fertility Plus and Minus Experiment, designed to determine the inheritance of multiple births in the South Australian Strong Wool.

The first paper from the analysis of the results of the now-completed trial, which compared selection based on visual classing *and* clean wool production was published during the year. The result of the experiment was that the flock selected on clean wool production cut 0.05 lb. more clean wool per year per head, accomplished by a slight increase in wrinkling, fibre density and length of staple.

The advantage of 0.05 lb. clean wool per year per head was gained by selecting only rams, and a greater rate of improvement could have been achieved if the ewes also were selected on clean wool production. However this cannot be attempted at the College or in the industry unless there are large numbers of ewes available for selection. This raises the problem of the low frequency of multiple births in the Merino. The present trial (Fertility Plus and Minus) has shown that there is a response to selection for multiple births, but that the rearing of these additional lambs is often not successful. Thus a quite profitable area of investigation would be lamb survival in relation to lamb fitness, maternal performance and the climatic conditions.

In the long term, one wonders what will be the forms of animal production in the future. Intensification of animal production is occurring in the pig and poultry industries, but the pastoral industry must evolve efficient meat production from those areas which can only be harvested by the grazing animal (unless a major breakthrough is made in the technique of providing water in large quantities and of the right quality for irrigation). Efficient meat production can only be achieved in these areas by the use of animals which are well adapted to the rigorous conditions of climate, nutrition, and which give good yields of product. While selection and crossbreeding may give some advances, more revolutionary changes may be needed. Can the indigenous kangaroo be carefully harvested to augment the meat production from sheep and cattle? Would the introduction of exotic animals, such as native mutton sheep of Africa or the eland, assist in increasing the total productivity of the non-arable and arid areas of Australia?

D. TAPLIN.



Shishkebab—what's a shishkebab??

POULTRY

A LOOK AT FLOCK REPLACEMENT PROGRAMMES

Most commercial egg producers have relied for many years now on obtaining their production from first year hens only, selling the birds as culls at the end of a laying year. Running the hens for a second year has not, in general, proved a sound economic alternative to the animal replacement programme, even where efficient force moulting has been practised.

Several workers have suggested recently that the 'laying year' requires careful re-consideration under present economic circumstances, and have suggested a laying shed cycle of 60-70 weeks as being more appropriate. The purpose of this article is to consider this proposal and to look at some of the problems and benefits of extending the laying season.

Two factors in particular are responsible for our changing attitude to the laying year. These are (a) Improved husbandry techniques, particularly in nutrition and the use of artificial lighting programmes, coupled with improved genetic potential of the stock now available, have resulted in our ability to maintain birds at a higher production level later in life. (b) The growth of the broiler industry has had a seriously depressing effect on the price obtainable for laying hens at the end of their life, and it seems reasonably certain that hen prices will continue to fall in the future. The effect of this is to increase considerably the cost of bird depreciation during the laying period, particularly as rearing costs have tended to rise as fast as hen prices have fallen. By lengthening the laying season, this depreciation is spread over a longer productive life. Table 1 shows both actual and theoretical costings of a flock of 1200 birds that was recently cleared at the college. This flock was in fact disposed of after 57 weeks in the laying shed, but calculations have been made on the profit that would have been realized in the flock, had it been cleared earlier, and by estimating future production and costs an estimate has also been made on the profit that would have resulted if the flock had been retained longer. The table indicates that maximum profit would have been attained at 59 weeks. This was despite the fact that the flock was one that produced well above our normal average and that it reached a high peak of production early in lay. Incidentally, if costings had been based on the purchase of point of lay pullets at normal price (instead of lower-priced home reared birds) the difference becomes even more marked with maximum profit being reached in a minimum of 61 weeks.

These and other figures of our own would seem to confirm that the 12 month laying period in no longer sufficient to maximise profit, and that under present conditions a flock life of around 60 weeks (or possibly more when replacement pullets are purchased) is required. When considering re-stocking policies a further period of 2-3 weeks must then be added to allow for shed cleaning and spelling.

One considerable benefit that an extended laying cycle brings is the more efficient use of rearing facilities for those producers who still rear their own replacements. Each batch of pullets will occupy the rearing accommodation for a period of 20 weeks (18 weeks rearing plus 2 weeks clean out). With any laying cycle of less than 60 weeks only 2 batches of pullets can be reared per cycle. However, when the laying period exceeds 60 weeks, three complete batches of pullets can be reared per cycle. This has the effect of reducing by one-third the ratio of accommodation to laying accommodation required.

One problem, however, that will have to be tackled by producers is that with the intake of day-old chickens shifting in time from year to year they must be prepared to provide rearing accommodation suitable for successful rearing at any season. Very few rearing sheds found in the state at the moment could justifiably have this claim made for them. Once this problem has been overcome there should be no further incentive for a producer to restrict his pullet buying to any particular time of the year. Egg prices are now far less subject to the drastic seasonal fluctuations that used to occur. The general use of artificial lighting in laying sheds, and increasingly in rearing sheds also, removes completely the important seasonal effects of light and the need to buy stock only during the traditional hatching season of July to September.

TABLE 1

No. of weeks in laying shed (housed at 18 weeks)	Profit realized \$	Profit per week \$	Profit per annum \$
51	1,988	38.99	2,027
53	2,134	40.27	2,094
55	2,264	41.16	2,140
57	2,372	41.61	2,163
59*	2,460*	41.70*	2,168*
61*	2,530*	41.47*	2,156*

* Calculated figures based on estimates of production and costs if the flock had been retained over 57 weeks.

T. A. LUCKHURST.

As a barley by-product, this beats mother's milk any day!!



OENOLOGY

At present the Wine Cellars are being rebuilt on their original site and are being extended somewhat to include teaching and research facilities. Although it will be impossible to complete the new cellars in time for the coming vintage, it is hoped that all facilities will be completed for the commencement of the course in 1970. Then, with the advent of new equipment, the students will be encouraged to make use of the facilities to investigate the styles of wine, which are both naturally popular amongst the purchasing public, and which the various wine growing areas of Australia are best able to produce.

A new era is dawning at Roseworthy, and the future students are most fortunate in being able to be part of this exciting period of development and achievement. At this particular time, it seems fitting to pay tribute to those who in the past have laboured in the teaching of Oenology and contributed to the wealth of the Australian wine industry.

At the end of 1897 the cellars had been built and completed and at this time it was Professor A. J. Perkins, a holder of the Diploma of Agriculture at Montpellier, France, who was lecturer in Viticulture. He was a very active personality and both the College and the State were to feel his influence later as he was Principal from 1904-1914.

The introduction of Oenology as an optional subject to Third Years was instigated in 1897. This was to appear on the Diploma of Agriculture as an extra subject and remarkably enough most students took this subject into their curriculum.

This continued as such until 1936. The subjects studied under the heading Oenology were—

Introductory — The Study of the Grape — Fermentation — Buildings and Machinery — White and Special Wines — Red Wine Manufacture — Methods of improving the must — Maturing and Blending — Diseases — Utilization of Residues — Analysis and adulteration — Distillation and Brandy Making — Manufacture of Vinegar. Professor Perkins continued to lecture in the subject until 1914 when he retired as Principal to become Director of Agriculture. The lecturing was taken over by H. E. Laffer who continued until 1919, when he left to take over administration in the N.S.W. Department of Agriculture, Viticulture section. R. H. Mowatt only lectured for two years when he left to go to another department of the government, and D. G. Quinn lectured in the period 1921-29. Quinn was a graduate of the College and had been Superintendent of Horticulture before he took over the Oenology subject. Another graduate, J. L. Williams, relieved Quinn of his position in 1929 and it was during his period as the lecturer in Oenology that the Roseworthy Diploma in Oenology was born. This was in 1936 when Dr. A. R. Callaghan, D.Phil. B.Sc. (Oxon), B.Ag.Sc. (Syd.), was Principal. The course was announced at Speech Day in 1936, and it would be appropriate here to relate some extracts from this—

"The object of the course is to provide a thorough theoretical and practical training in winemaking and allied arts. In this respect it is designed to supply the demand from all parts of Australia

(a) for men fully qualified to supervise and control the manufacture and maturation of wine and by-products of the vine.

(b) men qualified to conduct analytical, bacteriological and yeast studies in commercial wineries. The College will also aim to solve as many difficulties as possible by investigating all matters of direct practical significance to the trade and especially where knowledge of which could be essential to effective teaching, the maximum students for each course being 6. Students completing the course and passing all examinations set down in the regulations will be entitled to the academic distinction of Roseworthy Diploma in Oenology (R.D. Oen.) . . ."

This was followed by rules and regulations, subjects taken and conditions of entry. Following the issue of a Prospectus at this time, many inquiries were received but in most cases the actual qualifications for admission were much below those required. The fee for the course was considered high by some

people and as a result the South Australian Wine Association provided a \$200 scholarship, and although the value has changed, the scholarship is still available today for two students per course.

Four students began the course in 1936 and received their Diplomas in 1938. The first R.D.Oen. was Charles Worthington Kelly, who gained 1st Class Honours in Wine, Brandy, and Vinegar analysis. It was also very fitting that Mr. Leo Buring, one of the famous personalities of the wine industry in Australia, presented Diplomas on this day.

Getting back to staff; Rex Kuchel, an old student, was appointed lecturer in Biology in 1943 and took over from J. L. Williams in 1944 as Oenologist. There was a lapse of one year as no applications were received in '44 and so he began lecturing in 1945.

The numbers participating in the course was varied and looking at the Diploma Board, it varied from 2 to 6 and continued this way until 1966.

In late 1961 Rex Kuchel left to go to the Adelaide Botanical Gardens to continue with his biological work. His position was filled in 1962 by Bob Guy who was Oenologist until 1965 when he left for a position in Hyderabad, India.

In 1965 the college was in the position where there was one applicant for the course, and so at this stage it was decided to make the course biennial and increase the numbers to twelve. The Oenologist now is Robert Baker, who had many years experience in the Upper Murray of South Australia and had previously worked overseas.

With the biennial course it was decided by the Principal, Mr. R. I. Herriot, and Robert Baker, to review the course and reorganise so as to eventually increase content and standard in the Oenology Diploma.

The subjects now stand as below—

FIRST YEAR

Principles and Practices of Winemaking I — Sensory Evaluation of Wines I — Viticulture I — Business and Industrial Economics — Commercial Law — Chemistry I — Microbiology — Industrial Engineering.

SECOND YEAR

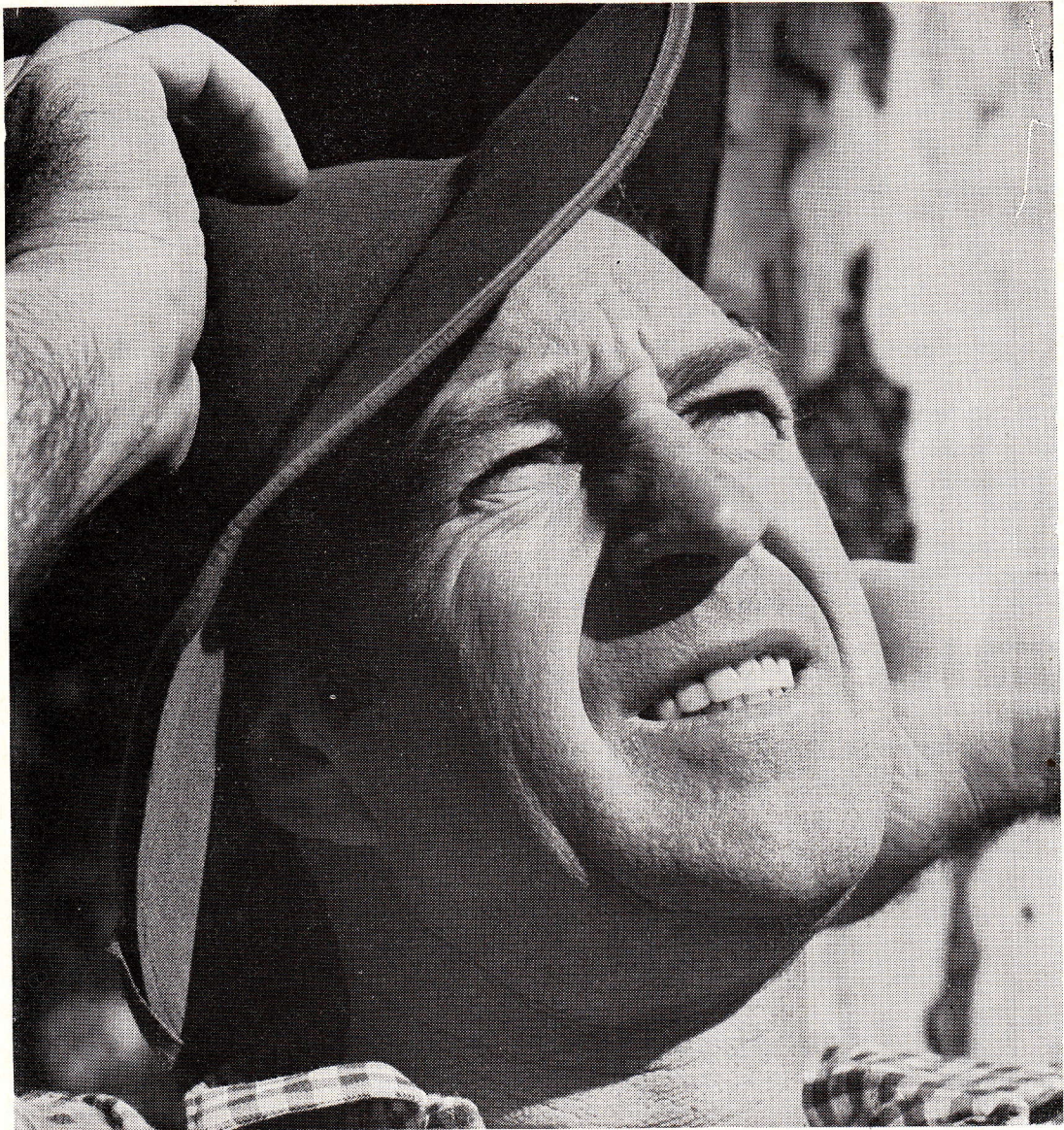
Principles and Practices of Winemaking II — Sensory Evaluation of Wines II — Viticulture II — Distillation — Analytical Chemistry — Biochemistry — Business Finance and Management.

Included in this course are major projects in Viticulture, Winemaking and Economics. The trips included are a two week interstate tour of wineries and merchants as well as day trips to wineries and allied trades of the wine industry. The course also attends lectures on specialised subjects, e.g., Packaging, Excise Control and Exporting Products.

The course has, at present, graduated 93 Diplomates and seven students will be completing the course in 1969. The 1970 Oenology course has 16 students at present accepted and even though this exceeds the regulated 12 students, it is what the Industry feels it can absorb. The Diplomates from the College are active in Australia's wine industry and hold not only winemaker positions but also partake in top management. The Diplomate is also active overseas with members in Argentina, India, England and the United States.

The R.D.Oen. is regarded as one of the unique winemaking courses in the world; the others being Bordeaux, Montpellier (2), Beaune, Dijon—all in France, Giesenheim and Trier (mosel) in Germany and Davis, California, in U.S.A., and in any of the winemaking nations of the world the R.D.Oen. is respected for the quality of diplomate it produces.

MR. R. J. BAKER and M. H. BABIDGE.



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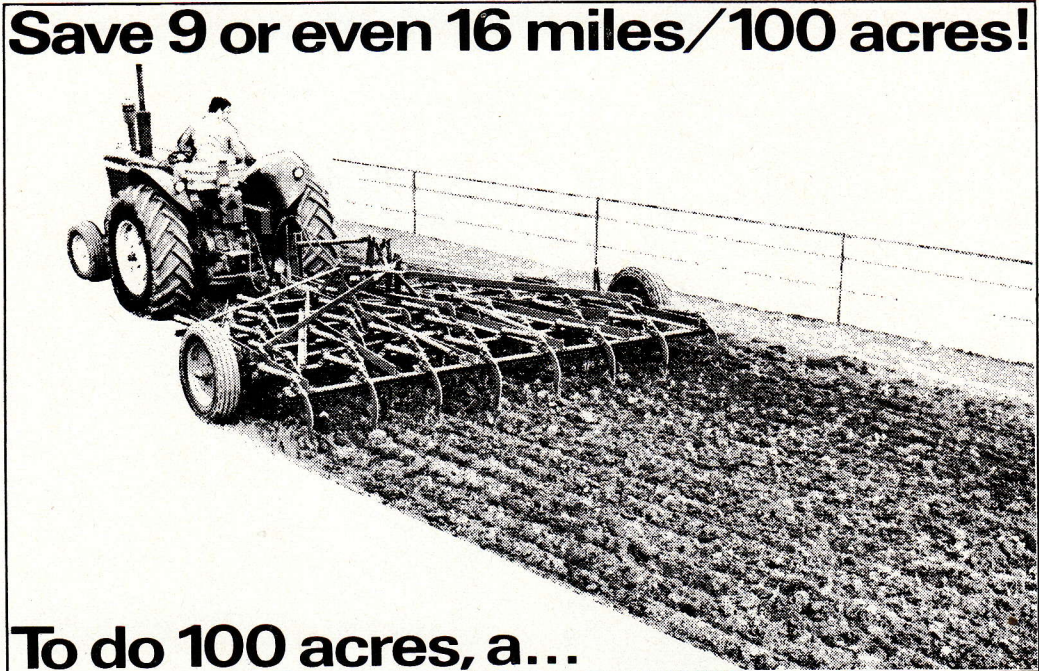


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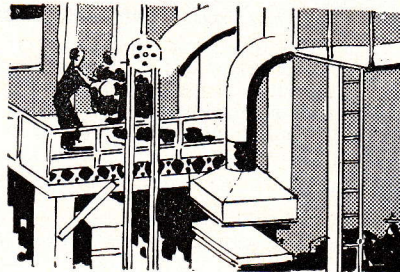


Cuckoo in the Nest

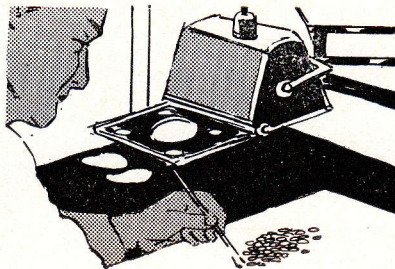
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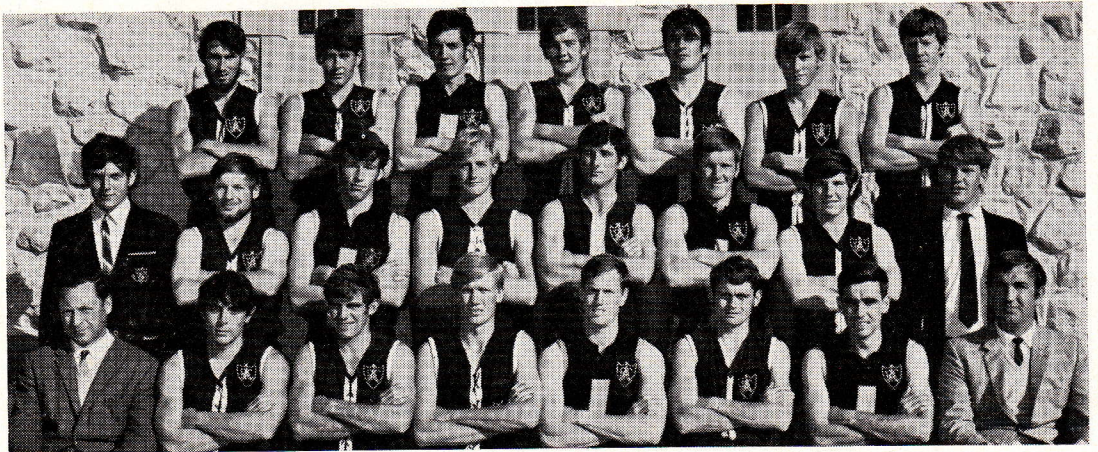


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 Middle: J. Ellis (Sec.), G. Brookman, D. Snodgrass, C. Hopkins, P. Mansfield, A. Oliver,
 G. Burge, A. Gerlach (Trainer).
 Front: M. Burton (Manager), R. Miller, J. Chappel, C. Goode (Capt.), P. Friedrichs (Vice-Capt.),
 A. Pick, A. Bass, P. C. O'Brien (Coach).

FOOTBALL

1969 was a very successful season for us and we were very unlucky not to win the premierships. We had a lot of prestige to recover after last year and we did just that by winning ten of the fifteen minor round matches and soundly beating the premiers in the second semi-final.

However, we were never in the race in the Grand Final at Wasleys where South Gawler led all day and took the final flag — despite our five goal burst in as many minutes of time-on.

Undoubtedly, the prime movers of our improvement this year were Peter Friedrichs who won the Mail Medal, Best and Fairest in the inter-association Carnival, Tim Dunstan Trophy for the College Best and Fairest and was second in the League's goal kicking, and Phil Redden with his intelligent teamwork as captain of the "B's".

Special mention and our gratitude must go to the coach, Chris O'Brien, who brought us from bottom in 1968 to nearly top this year. He coached both A and B grade to the grand final and his inspiration certainly played no small part in our success.

We had good representation in the Association team by Charlie Goode, Peter Friedrichs, Andrew Oliver, Colin Hopkins, Mick Shallow.

We'll look forward to next year when, again, we should field extremely good sides.

GYM — JUDO

We had quite a successful year in 1969 with the standard of each section being lifted as illustrated by the Championship and Demonstration Evening.

The main feature of the year was the old Plant Breeder Store Shed's conversion to become the Gym Judo Club's Quarters to accommodate all sections. Some alterations have been made to the building and to complete its preparation, more lighting is needed.

The addition of sabres to the Fencing section will lead to added interest in the already thriving section.

It was unfortunate that no boxing ring eventuated this year, however it seems to be on its way, as there is no reason why the ring will not be ready for use early in 1970. It is unfortunate that Mark Ulbrich, who has worked hard for the boxing section and the purchasing of the new ring, will not be here to see the results of his work.

We thank Mr. Brady and Mr. Luckhurst for their work and guidance in the Club.

CRICKET



Back Row: J. Crosby, G. Hady, A. Pick, L. McLaren, P. Mansfield, A. Bass (Vice-Capt.).

Front: D. Snodgrass, C. Hopkins, I. Cowell, B. Falkenberg (Capt.).

The 1967/68 season was quite a successful season for us and the two teams fielded were Grade I and Grade IV.

The "A" side under the captaincy of Chris Hurn, lost only two matches to finish as minor premiers, but lost the Grand Final to Riverside — one of the luckiest sides in the competition. Batting stalwarts in the "A's" were Bass, Hurn and Weeks. Bass and Hurn both scored centuries and also broke the association second wicket partnership record of 169 by 11 runs. The main bowlers were Tony Pick, Brian Boerth and Gary Douglas, the latter also being selected in the Para Districts under 21 side.

The "B" side went well early in the season but due to holidays had to forfeit one or two matches and just missed the four. Wayne Hein was the main batsman and others to do well were McLaren and Christopherson. John Crosby was the main bowler with the good support of McLaren and Liebelt.

It is with deep regret that we record the death of Christopher Hurn, the captain of the club, who served Roseworthy with unselfish dedication and brilliance both as a student and sportsman.

WATER POLO



Back Row: D. Spencer, G. Brookman, A. Barnes, N. Holmes, L. McLaren, P. Burne, M. Wood.

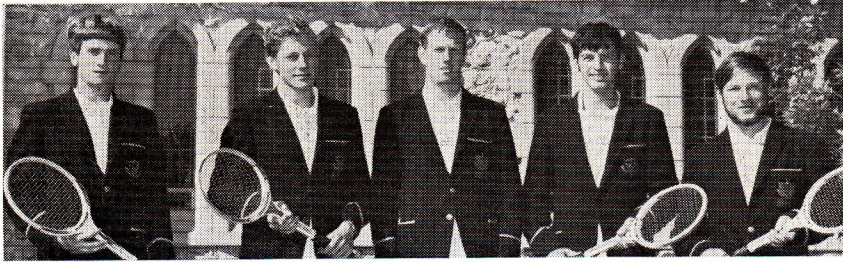
Front Row: A. Pick, G. Hollamby (Coach), C. Goode, P. Friedrichs.

This year was a little disappointing after winning the "B" grade grand final in 1968. However, we fielded an inexperienced side and competed regularly in the association matches in Adelaide. We also took part in the Gawler Water Polo carnival where we won one of our four games against stronger and more experienced teams.

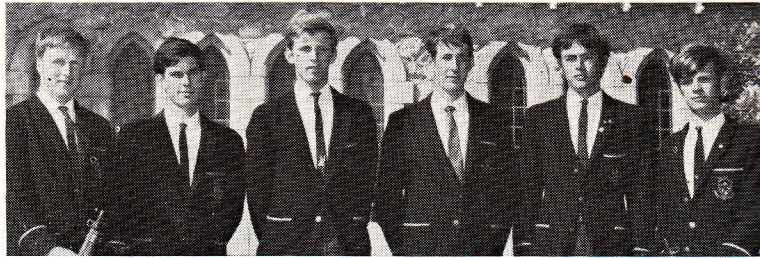
Our coach, Gil Hollamby, plays regularly and the team would like to express their appreciation for his zest and interest.

Holidays always seem to be a problem for us due to difficulties in fielding the same team from week to week, but this should be remedied in the coming season with the increased enthusiasm of players.

INTERCOL



Left to Right: M. Revell, L. Wright, P. Friedrichs (Capt.), C. Wurst, G. Brookman.



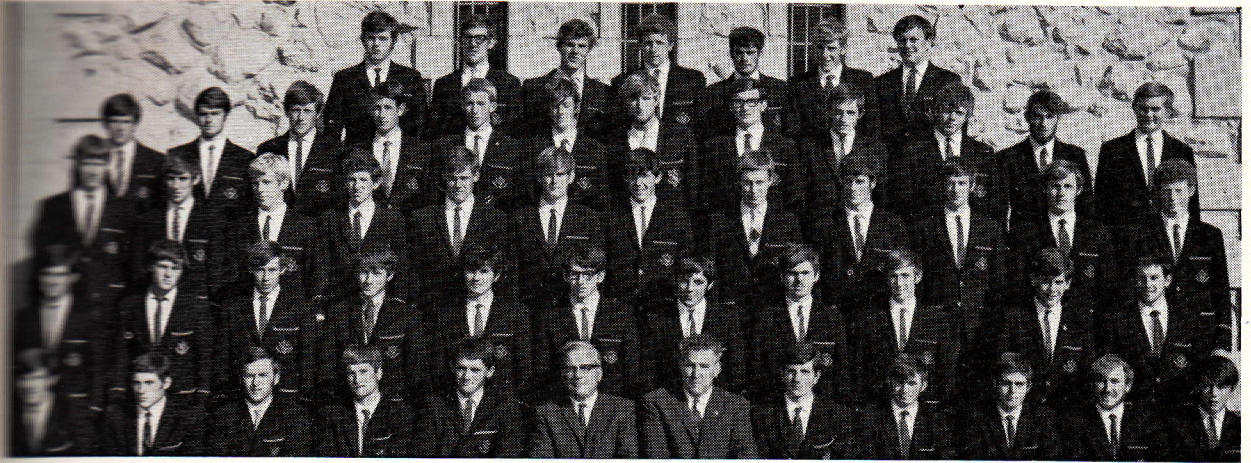
Left to Right: R. Maczkowiack, G. Bourne, A. Cumming, I. Cowell, P. Bowey, B. Luck (Capt.).

Monday, August 18th, saw the beginning of the Intercol at Hawkesbury with the tennis teams warming up and the riflemen still relaxing.

During the next 3 days Roseworthy proved its supremacy in both these sports by soundly defeating all opposition. In the tennis, Malcolm Revell proved to be the champion singles player by winning all his matches in fine style. Peter Friedrichs, playing second single, also showed he was a big match player. Peter combined with Graham Brookman in the first double thrashing all opponents, as did Malcolm Revell and Lindsay Wright in the second double. Roseworthy won all their 6 matches and won 23 out of a possible 24 sets.

The practice shoot on Wednesday saw Roseworthy in second position, but this was changed on the "big day", Thursday, when R.A.C. won the trophy. After shooting on the 300 and 500 yard ranges Roseworthy were level with Queensland and after the 600 yard were down a few points. Andrew Cumming saved the day by scoring 33, which put us in front by 3 points.

After a prize giving dinner, Hawkesbury put on a little show which was a real swinger. Everyone enjoyed themselves and we thank Hawkesbury very much and look forward to seeing them next year.



Back Row: G. Sheehan, P. Smith, R. Thompson, D. Chambers, J. Cameron, J. Mugford, K. Habner.
 Fourth Row: G. Symes, J. Hannay, A. McFarlane, I. Cowell, K. Dutschke, G. Prisk, M. Madigan, J. Evely, J. Both, N. Sprigg, D. McLennen, I. Grave.
 Third Row: R. Smith, D. Smith, R. Nourse, C. Brown, T. Byrne, D. Cox, W. Atyeo, G. Duffield, A. Richardson, S. Wright, D. Liebich, C. Michelmore.
 Second Row: A. Anderson, A. Snewin, A. Uppill, R. Wilkinson, P. Rymer, C. Thomas, P. Schick, K. Wilson, G. Burrows, P. Herbert, D. Paton.
 Front Row: G. Burge, J. Turner, W. Gregurke, M. Revell, M. Clark, Mr. Herriot (Principal), Mr. Foot (Housemaster), D. Clark, I. Coombes, S. Dohnt, A. McCawley, T. Allen.

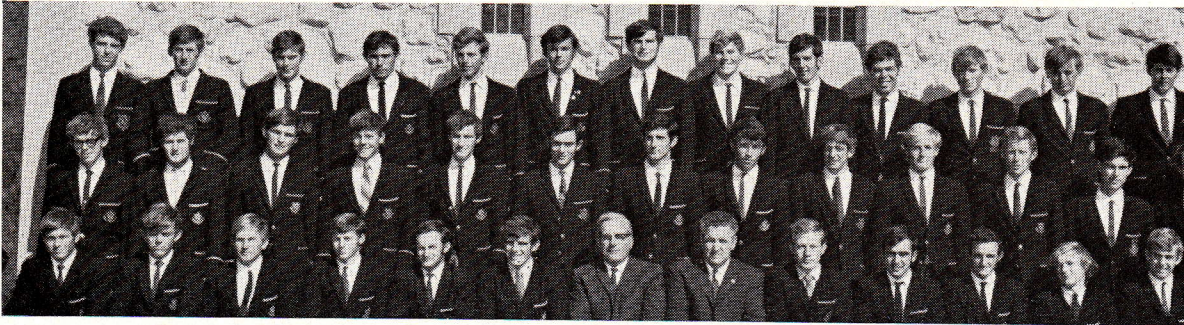
FIRST YEAR

Roseworthy's 86th group of first years, accepting all initiation processes in grand style, set forth in training for the gruesome three mile steeple-chase. We showed strength, with well known distance runner Kevin Wilson taking out the event in his usual casual style.

The first session was alarmingly unbalanced (beds, birthdays, etc.), and during its course we decided that our May Holidays should be put to advantage by helping our anti-foliage officer in keeping his garden beautiful for ladies' social meetings. Through the second session we showed new maturity in the expression of our independence, by becoming hairy, much to the jealousy of the sparsely bearded seniors. From the mid-year exams, unity and self-determination appeared, and to pass the final exams was the prime aim.

The "A" football team was pushed to great heights by "super goal sneak" Lips Smith, "dashing winger" Slug Burge, and during the finals "hairy Mac" took over the driving position of Centre. In the gym-judo club, Tony McAuley won the gymnastics, John Evely the body-building and Malcolm Revell the fencing. At Intercol we again showed brilliance with Hector Cowell in the rifles and Malcolm Revell, who took out the tennis singles championship also won the college singles championship, (of which first year are very proud).

Another great achievement of which the whole college is proud was the effort of Mort Clark, the first year S.R.C. representative toward Open Day. He was in charge of the advertising, and we were amazed by the fantastic job he did. This had helped in the paving of the way for the long overdue introduction of the concept of equality of all years; a principle we should uphold, no matter to which year we belong.



Back Row: J. Sullivan, A. Tolley, D. Gravestock, I. Pearce, A. Cumming, P. Bowey, P. Rumball, N. Holmes, A. Barnes, L. McLaren, M. Shallow, T. Bolto, P. Botten.
 Second Row: T. Prance, B. Ashton, M. Wake, R. Dawson, I. Black, J. Crosby, P. Mansfield, D. Snodgrass, B. Growden, C. Hopkins, T. Yeatman, G. Bourne, D. Spencer.
 Front Row: T. Bridge, R. Fehlberg, C. Olsen, J. Loxton, M. Ray, J. Chappel, Mr. Herriot (Principal), Mr. Foot (Housemaster), L. Wright, N. Christopherson, P. Carrol, P. Ashton, G. Rady.

Second Utility Country King's — Bench Report

We are classed as Second Years but our aristocratic superiority has been downgraded, firstly by the refusal of three to move on to greener pastures, and secondly by the appearance of two uni-dropouts who immediately tried to show us how to imbibe.

The three weeds (things being where they are not wanted) are: our meat balls and gravy man, a nurse-artist's model, and a month-in-May holiday man.

The two drop outs are such fun. At our first gathering one was found lying in the fire, his Pommy friend, all the while giggling and jumping on him.

The old crowd are just the same:

P.M.S. still thinks Dylan is at his best at 2 o'clock in the morning,
 Viva la Viva is King's cry,
 Guitars and folk singing are still in,
 Datsuns love week night drives,
 The bottle Nicking business is ale-ing,
 The Prancing and Jew-bilations continue.

We have many other outstanding carrots, one being "the rabbit", and getting away from the main, P.V.C. weights over the rest.

We certainly have a good share of woodchoppers, some bettering the rest by keeping in tree-top condition with a second axethon a couple of months after the first. Well done men!

Foot-wise, we had seven players continually in the "A" side and another seven in the "B's". Fos Williams has his Magpie eye on a couple of us.

The bullshooters always had three second years up there and mention must be made of our sharpshooter A. Cumming who did well at Intercol.

Although not responsible for the initial establishment of the potato plot, we do claim recognition for the trials conducted to test the suitability of Alberta potatoes for chip production.

Our gallant green lady of the road was subjected to a rigorous impact test and surprised onlookers by her most unlady-like manoeuvres. Thank Christ no Kneebones were hurt.

By far our greatest contribution to the College, however, is the installation of the E.F.L.S. unit, not in competition with the E.F.S., but certainly a less ex-Spence-ive addition than it.

The Upper Murray seemed full of Oriental Fruit Scale and San Jose Moth, but overall everything was G'n, Brandy and Sherry, and Mine Host was locked away.

THIRD YEAR

A two thousand mile pub-crawl must be regarded as our champion event of the year and highlights of the trip include:—running dear old Norman's Royal Mail Hotel at Hungerford bone dry; Bourke's hundred mile truck-tray joy-ride through two paddocks on Bulloo Downs; watching Cliff scull his first yoke's; eating Wishbone Goode's appetiser (soup), entree (sand), aperitiv (dust and dead horse), main course (incinerated chops), dessert (desert dust and dead apricots), liqueur (Southwark, one bottle), glass of beer was announced in Thargomindah, and taking part in an authentic corroboree near the mubbish dump of Tibooburra.

Again the year has made community service a keypoint, and amongst the ninety new members of the Master Axeman's Association were many well known Third Years. In appreciation of the services rendered in past years by the five foundation members of the R.A.C.M.A.A. the Principal gave them a month's holiday while the rest of the College, apart from the courageous Ulbrich and Polkinghorne, worked through their holidays to get the College cleared of the unsightly, tall, green, shady, pleasant pine trees. The R.A.C.M.A.A. held their Annual Dinner at the Arkaba restaurant, spending a convivial evening during their well earned holiday with guest speaker Mr. Nicholas Nieding, on "How to get rich quick" and Chairman, Mr. Graham Brookman, proposing the loyal toast, a toast to new members in the making and another to those who failed to return from two examinations.

Community Service was individually done by; student Burne who spent his spare time chipping hardened concrete off the bricks reclaimed from the extinct Stallion Box and students Ellis and Redden, involving the demolition of the old Beef Cattle yards.

A general census of opinion taken late this year revealed that Third Year felt changes at Roseworthy were needed in the near future. Such "high schooly" things as roll-checks, frequent inspections of rooms, leave restrictions and the many petty rules that breed trouble need abolition, while a new scheme of assessment to spread the work-load throughout the year rather than in the present horrifying barrage of up to twelve exams in a fortnight, would also be desirable.

Third year were also largely responsible for the two Intercol wins with Fred, Brooky and Wursty in the tennis, Lucky and Duck featuring in the Rifles. Innumerable third years played in the Water Polo under captain Goode and Bassy won the best Willower of the year in the Cricket Club.

Bass has continued his peeping on a grand scale and was caught coming out of a "Ladies" at Murray Bridge recently with an evil smirk on his dial.

We are pleased to see that our skeleton-making friend Prof. Hein has almost finished his reconstruction of a fowl and that Pierre's reconditioned clock is working like a charm (charms never work do they).

Charlie managed to get rid of his old Prefect after a bit of swift talking at the Third Year Auction and a hair-raising trip down the Old Belair Road with negligible braking powers, while Polky, with a startlingly frank speech on Christianity, won the Public Speaking Competition.

Our only studmaster, Mr. Andrew T. Oliver of McLaren Vale (Large Black pigs) informed us of the somewhat miserable farrowing of his "champion" sow. He has our sympathy and will probably need more!

Drinking carrot juice to "Peter, Paul and Mary" has come back into vogue (with Frosty's crusher and Wurst's purchase of a powerful old gramophone) and it's no wonder Dinky's voice began to break with that and the trauma induced by Chas's purchase of an ancient treadle sewing machine next door.

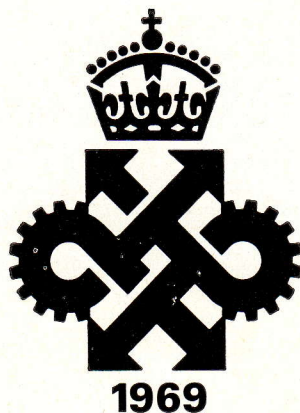
Gerls has been pumping the Charolais breed for years and finally procured an exclusive firm about these European cattle. If he doesn't eventually cross a Santa with a Charolais, Third Year will eat their respective hats.

Wacka's mini has recently received a home-grown panel-beating and new coat of paint—so don't buy a yellow Mini second hand; it could be fatal! Just thought Mrs. Redden may like to know that her boy Phil was awoken from a heavy doze pointing towards Terowie in the local Zephyr half way up the Wasleys Road one night. "Funny", we thought to ourselves.

Open Day must rate a mention and its unprecedented numbers (5,000) were handled most capably by the student section leaders. The makeshift Amateur Hour and Hydraulic Dance also went humorously and profitably.

The South East trip with our friend Mr. Burton was highly eventful with a Roman banquet at Mr. James' property near Lucindale, a riotous evening at the Motel Millicent and the leaving behind of about seven students in Naracoorte some of whom co-opted the local cop for a seventy m.p.h. chase towards Kybybolite and the others of whom took the opportunity to patronize the S.A. Railways, catch up on a shave and quench their typically unsatiable thirst.

It's been a fantastic year of change and most of us wish we were starting at R.A.C. in 1971 (not finishing in 1969).



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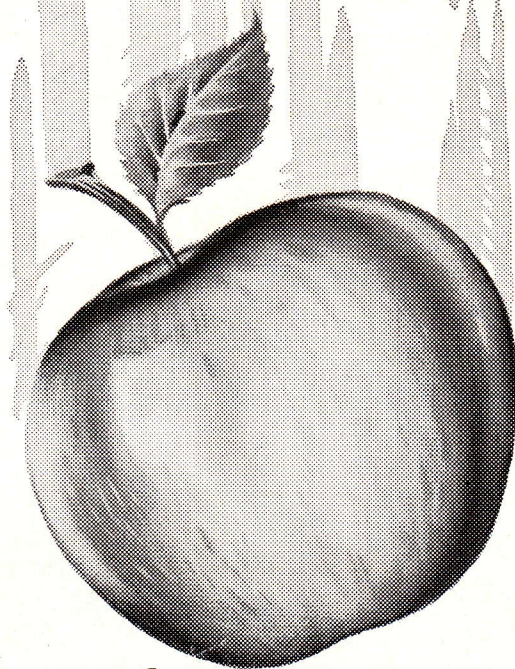
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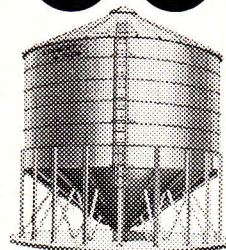
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GPE3700	3700	19' 0"	6	30°	23' 6"	—	\$1253
EMG275	275	7' 2"	3	60°	17' 0"	3' 6"	\$223
EMG550	550	9' 6"	3	60°	19' 6"	3' 6"	\$332
ESG260	260	7' 2"	3	45°	17' 0"	5' 3"	\$236
ESG330	330	7' 2"	4	45°	19' 0"	5' 3"	\$255
ESG390	390	9' 6"	2	45°	17' 6"	6' 0"	\$310
ESG510	510	9' 6"	3	45°	19' 6"	6' 0"	\$331
EPG330	330	7' 2"	4	45°	22' 6"	8' 9"	\$347
EPG510	510	9' 6"	3	45°	23' 0"	9' 6"	\$415

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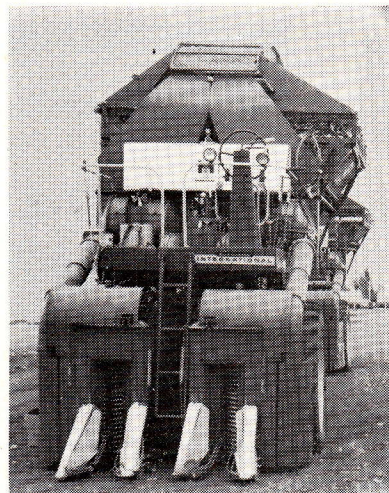
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INSIGHT ON THE ORD



Cotton Harvester

The Ord River Valley, surrounding the relatively new township of Kununurra in the East Kimberleys, is the place for ambitious young people prepared to work hard.

If you live in the Valley you will enjoy an excellent climate, high wages and miles of exciting scenery. At the same time you will fail to appreciate the exorbitant cost of living, the lethal chemicals forever floating over the Valley, the absence of acceptable spinsters, and tourists.

The farmer will appreciate the opportunities for growing just about anything without a vernalization requirement, and he will groan when he finds that "just about anything" proves to be uneconomic.

The climate is such as to permit two growing seasons. The Wet, when crops are planted in December and mature in April when the rains have finished, and Dry Season (when) with planting in May for maturation in September-October. These Dry Season crops require irrigation supplementation, as rainfall during this period is nil. Crops planted any later than May will dry off before maturity, as the high temperatures in October and November stop plant growth.

On the nitrogen deficient black clay soil, typical throughout the valley, cotton is the predominant enterprise, representing 90% of the acreage sown in 1968/69.

The earlier possibilities of excellent returns from cotton on the Ord have rapidly faded, and now freight, fertilizer, spray and ginning costs are sufficiently high to warrant record yields in order to show a net profit. Establishment costs can be minimised by "stubbing" or ratooning cotton and sorghum crops, and experimental results have shown both to give respectively higher lint and grain yields on the second cycle.

Regretably, research workers have been unable to produce a suitable alternative crop that will assure growers of an economic return. Rice and wheat fall way below possibilities, and peanuts require further research before recommending. At the moment, intensive grazing and lot feeding of beef cattle represents the most profitable enterprise. The stock are introduced to the irrigation farms from Weal Stations, fattened and moved out to the meatworks at Wyndham. 1969 was the first year this has been tried, and the experience augers well for future success.

The two main factors in minimising returns are the extremely high freight costs, and the numerous sprays necessary for insect control. A CSIRO Farm Survey in 1968 revealed that the number of spray applications to the seasons cotton crop ranged from 13 to 31. The main insect pests warranting control are *Spodoptera litura* and the spin thwarted locust (*Austraeeris guttulosa*). Rough bollworm and *Heliothus* cause only minor damage. Consequently, great importance is attached to spray management if variable costs are to be reduced.

So we are left with potentially one of the best irrigation areas in Australia but without a method for efficient crop production, we can only hope a solution is found before the Main Dam area is opened up to prospective landholders in several years time.

D. D. CURTIS

LAMB DEATHS

It is a well-known fact that the average lambing percentage in Australia is 70%, and that between 10 and 20 million lambs die here each year. This is a tremendous loss of production and a lot of it could be saved.

The farmer can increase his lambing percentage by correct feeding of his ewes before, during, and after mating. As far as lamb mortality is concerned the feeding of the ewe 6 weeks before lambing and the management of the ewe and lamb in the first 3 days are two critical factors.

It is desirable to get a 7-14 lb. gain in the ewe during the 6 weeks. This is essential to prevent ewe losses from pregnancy toxæmia and to decrease lamb losses. If feeding is controlled to produce this gain, heavier birth weight lambs will be born. Experiments have shown that ewes which are underfed and ewes which are overfed (very fat) give birth to lightweight lambs.

The critical period for the lamb is in the first 3 days after birth, as 80% or more deaths occur in this period. The majority of these deaths are due to starvation and the effects of climate.

Birth weight is possibly the most important single factor in lamb survival. The ideal weight is between 9 and 11 lb. Above or below this, the death rate increases.

Lambs which are too heavy at birth (12 lb. or greater) often cause dystocia (difficult births). The result is a dead lamb, and sometimes a dead ewe. This is very prevalent with maiden ewes and with male lambs. Twins have a higher mortality, mainly because of low birth weight, and a consequent lack of vigour.

The foetus has its heat efficiency regulated by the ewe, but once born it must regulate and maintain its own body temperature. A lamb's body temperature is around 102°F, which must be maintained. Once the body temperature falls to 84°F death isn't very far off—this does not take long to reach when it is windy, cold and raining.

Heavier lambs have a smaller surface area:body weight ratio and therefore, because of a lower heat loss, their chance of survival is greater.

Until the lamb gets its first drink it generates its heat from the fat reserves around the kidney and heart. This fat is called brown fat, and is metabolized much faster than white fat (of which the lamb has more). The amount of this fat increases with body weight. In practice this means a 10 lb. lamb will be able to survive longer without a drink than a 7 lb. lamb, and is better able to withstand cold weather in this period. The lamb must get a drink within 6 hours after birth, beyond this time its sucking drive falls away, the lamb weakens, the ewe-lamb bond decreases and its chances of ever getting a drink are very slim.

Another factor which has a big effect on heat loss from the lamb is the type of birth coat. Fine birth coat lambs have a significantly higher mortality than coarse (hairy) coat lambs. The fine coat lambs have a higher rate of heat loss in wet, windy conditions. This character has a 70% heritability, and could therefore be selected for.

Tied up with fine birth coat is the haemoglobin (H6) type of lambs (as distinct from blood types). There are three H6 types—A, AB and B. There is a significantly lower mortality among fine A type lambs as compared with fine coat B type lambs in wetter years. In a trial done at Parndana there was an 8% lower mortality over a period of 4 years, and in wet years the difference was 27%. This character could also be selected for.

The weather is the major external factor which kills lambs. Temperature variations alone have no effect on heat loss. Wind and rain each affect heat loss and increase deaths, but a combination of both can be disastrous. They have their greatest effect in the first six hours of the lamb's life.

The ideal conditions are winds of less than 5 m.p.h. and rainfalls lower than 5 points per day during the first 6 hours of life. Any combination of wind and rain above this, greatly increases deaths.

In another 5 year trial there was 91% mortality of merino lambs at 15-35 m.p.h. wind and greater than 20 pts. of rain per day; 25% deaths at 5 pts. of rain and 5 m.p.h. wind; 15% deaths with no rain and 1 m.p.h. wind.

The use of a drift lambing system in combination with shelter belts can do much to reduce deaths due to climate.

Much research has been done into methods of how to detect ewes bearing twin lambs. The latest innovation, which is now available commercially, is the ultrasonic detector. It amplifies the heart beats and can be used as early as 8 weeks into pregnancy. If the ewes with twins are separated out, it would enable more efficient feeding, higher lambing percentages and lower ewe and lamb mortalities.

With the present cost price squeeze we are facing, we can't afford to put up with 20 million lamb deaths per year. Possibly the easiest way of increasing returns at almost no extra cost is to increase lambing percentages and reduce lamb deaths.

C. J. McGOWAN.



M. Clark, L. Wright, G. Brookman, C. McGowan, J. Chappel, G. Pearce, B. Polkinghorne.

AGRICULTURAL EDUCATION IN THE 70's

"Agricultural Education should be directed towards overall promotion of the efficiency and the productivity of rural pursuits and the various related management skills, directly, by vocational training of farmers and prospective farmers and indirectly by educating and technically equipping those whose function it is or will be to advise farmers" (Dr. F. C. Butler, New South Wales Deputy Director General of the Department of Agricultural Education and Research).

When the Agricultural Colleges were established (Roseworthy, 1883), their function was "to educate lads for farming". Since then their purpose has slowly broadened with the need for extension officers and advisers. (Seven out of ten diplomates enter these fields.) The sixties have shown that there is now less room in the old Agricultural Colleges for the farmer, as science and technology predominate the courses, aiming at better training for all fields of extension.

In the Eastern states, however, things are changing fast and millions of dollars are being poured into the establishment of integrated Agricultural Educational schemes; one in New South Wales under the guidance of their Committee of Advice on Rural Studies, who are investigating and advising on: new courses, curricula (revised and new), means of entrance and lecturer training in teaching methods and presentational approach. The composition of the Committee includes representatives from Universities, C.S.I.R.O. and the Industry. With so broad a spectrum of members the Committee is well qualified to appoint suitable 'boards of study' into particular academic discipline areas of the courses and to integrate the work of each board into the overall plan of Agricultural Education.

Forward planning of their many specific courses will reward New South Wales and Queensland in years to come, with a supply of much needed experts in the various fields. A broadly based, science oriented, secondary education to Matriculation level, followed by specialization in their chosen field of Agriculture will produce well and specifically educated farmers, technologists and professionals.

New South Welsh Certificate courses include: Irrigation specialization at Yanco for 12 months; a general farmer education based on 12 months of Agronomy, Animal Husbandry, Farm Engineering and Farm Management at Yanco or Tocaj; and the two year Rural Management course with an associated specific husbandry course, Co-Ed at Grange.

Diploma courses are three years in Dairy Technology, Food Technology, Agriculture and two years Poultry Technology, all at Hawkesbury as well as the three year course in Agriculture at Wagga.

Post Diploma-Degree courses in Rural Extension for one year specializing in extension methods, techniques, sociology behavioural sciences and farm management are scheduled to commence at Hawkesbury in 1970.

Degree courses in Agricultural Science, Rural Science and Agricultural Economics are well established in New South Wales Universities. New South Wales will be producing people specifically educated for farming, advising, consulting, extension, processing, marketing, organizing, researching, teaching and they won't all be men. With the Eastern states on the way and Tasmania and Western Australia planning to follow suit, what is South Australia doing? With one Agricultural College, one and one quarter courses and a pitiful monetary recognition for the professional qualifications gained at Roseworthy, things would appear grim but with plenty of room for improvement.

One body to help with that improvement was recently inaugurated in Sydney — The Agricultural Technologists of Australasia, an association of the Commonwealth's diplomates. A.T.A. will unify the far scattered population of diplomates, enabling some extremely vital functions to be carried out — to establish an employment register thus allowing diplomates to move safely from job to job, make use of the jobs offered through the register and avoid unemployment; to produce an informative journal of news, policy effects and communication generally; to look into Agricultural Education; to bring pressure to bear in such a way as to rationalize and improve the adequacy and uniformity of salary scales, and to speak as a body to protect interests of and promote the advancement of Agricultural Technologists in Australia.

Student membership is available in A.T.A. and the student section of A.T.A. with the National Association of Agricultural College Students must push for Australia-wide standardization of courses by a Commonwealth body (producing such qualifications as the Australian Diploma of Agricultural Science, the Australian Certificate of Agriculture and the Australian Diploma of Agricultural Extension etc.). This will allow free movement of diplomates etc. around Australia, with equal recognition of qualifications (as the Agricultural Science degree operates), in the various States. It will also improve facility for students moving, during their course, to another State, so enabling a Roseworthy student, having completed Second Year, to move residence to Sydney and take-up in Third Year at Hawkesbury on the same footing as the native students.

So much for the future. The fact remains that Australia's Diplomates have been and are an essential and extremely valuable fraction of our population. As the mediator between farmer and researcher, translating the superb-scientific findings of our Agricultural Scientists into a practical form, operable (with explanation, advice and extension), by farmers, he performs an invaluable service to Australia's economy and productivity.

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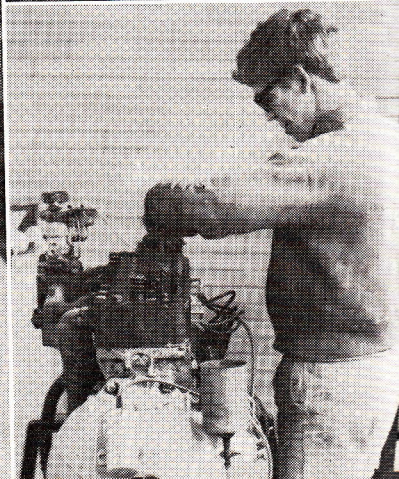
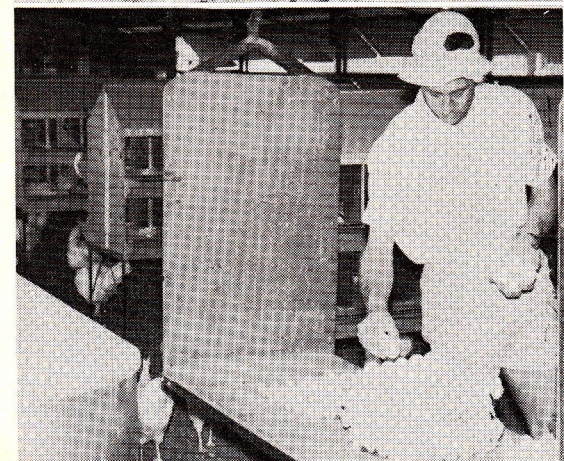
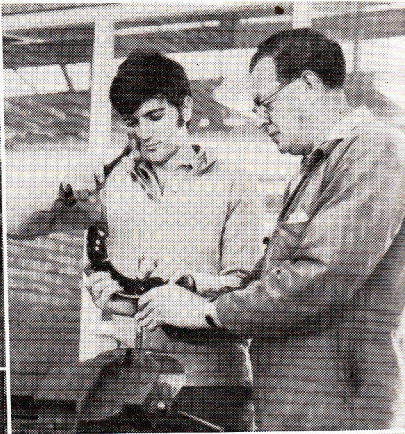
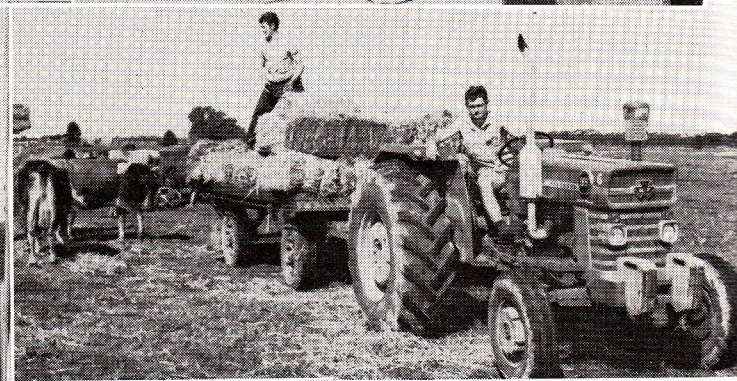
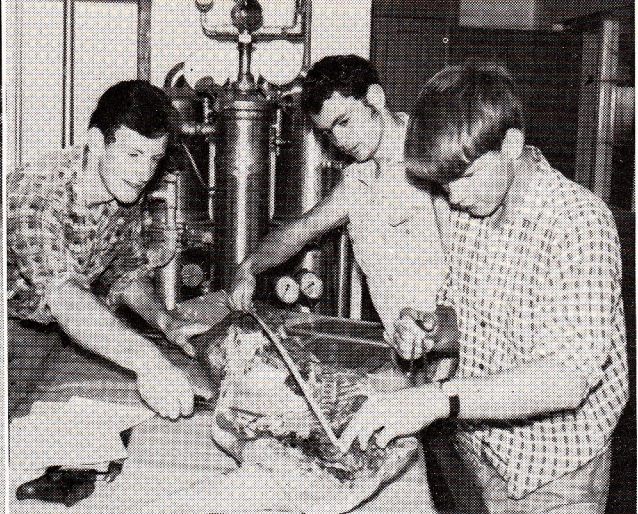
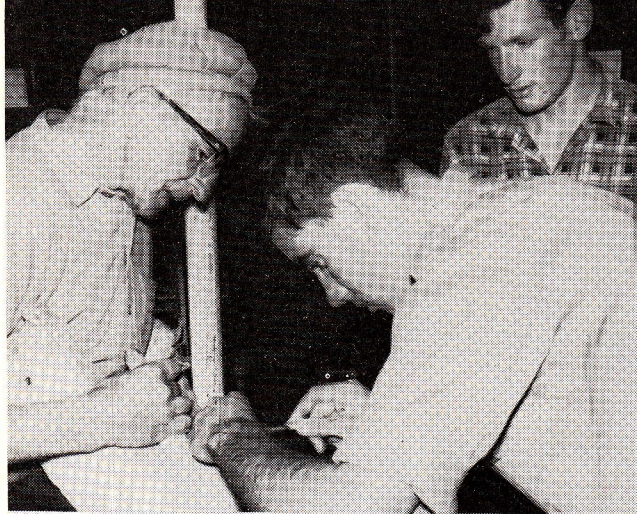
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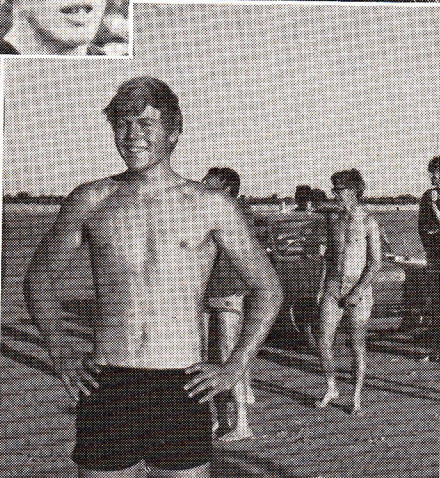
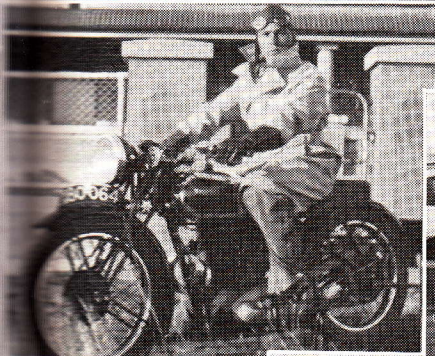
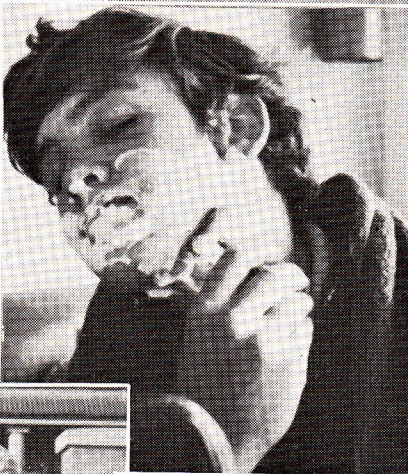
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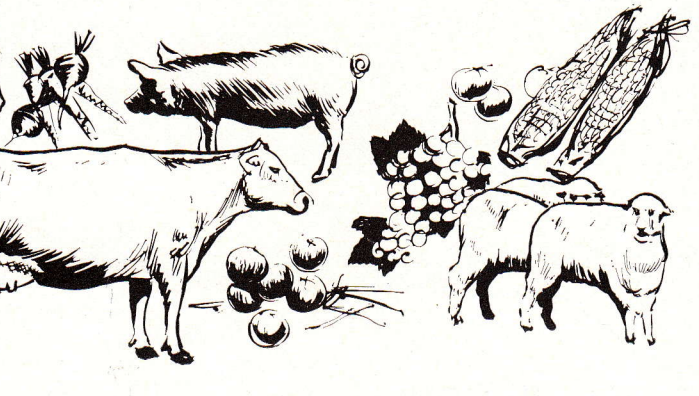
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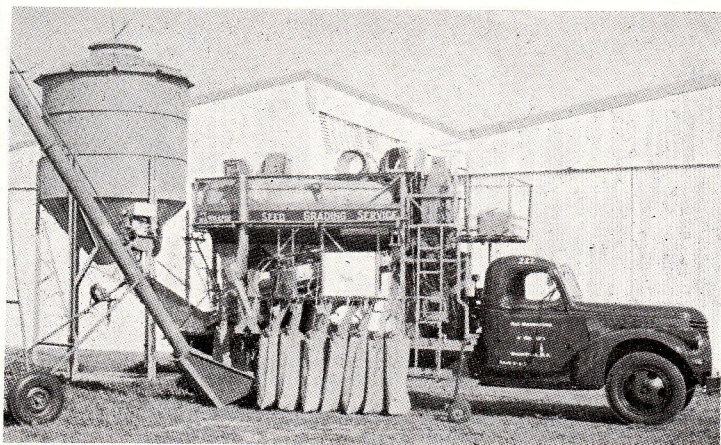
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GRADUATES 69



BRIAN POLKINGHORNE—"Polky" "What about the underdeveloped countries?"

The only Reverend member of 3rd year with a modern and practical view to Christianity. Despite his church school education, Polk ended up in Parkin Theological College (after a while farming) and came post-haste to R.A.C. from his Coomandook Parish to get stuck into the world's hunger and communication problems.

After a brilliant start in 1st year when he guided us young rabbits through to the greener pastures of second year, Polk has concentrated more on populating Australia, avoiding penalties, getting unlimited leave, brainwashing R.A.C., and rightly so, that expert advice, selfhelp, Christianity and outside funds used in the correct way will help solve the world's problems.

Some excitement of Brian's stay at R.A.C. have been a dramatic kidnapping from "the nest" at Gawler, followed by a somewhat exposed and yet blindfolded wander through an oat crop in West 4, and the arrivals of his last two progeny (he says).



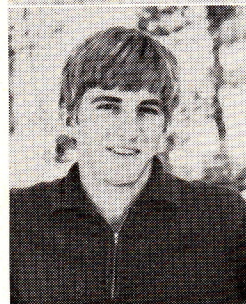
JOHN ELLIS—"Jellis" "Fair Dinkum!"

John wasted no time in taking advantage of S.A.'s natural resources and became engaged to one of our top quality females with remarkable speed.

After bombing out of Melbourne's Uni Vet course, he jumped in the Riley with a dozen and arrived just in time to celebrate his 21st out of a pickle jar. He has enjoyed the last two years so fully that he is staying on to round off his education with an R.D.O.

Jellis has been a tremendous secretary to the football club and has worked like a hound for many long nights to keep the club in shape.

He's a bright man with plenty to say on every subject (too much, sometimes!) and will go a long way if he doesn't drown in a vat or get shot by a champagne cork.



DENIS HANSEN—"Yogi bear" "Hey, Frosty"

Denis snuck into College from Mt. Barker via P.A.C. and in-between throwing judo opponents over his left ear and drinking carrot juice with Frosty, lives in his room; unobtrusively eating the "food his Aunty gave him", thinking about his very hypothetical world trip and shearing-a-hundred-a-day-for-twice-the-pay.

Farm practical, passing exams and performing great feats of strength are Hans' specialities.



GRAHAM BROOKMAN—"G.T., Brooky" "No fungus worries"

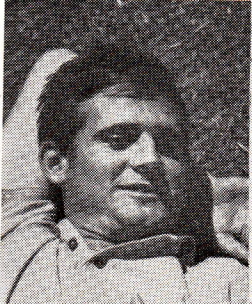
This dynamic little ball of muscle bounced into R.A.C. three years ago, and was soon recognised as a man of many talents, sporting, studious and otherwise.

Hailing from beautiful downtown Springfield, G.T. was educated at Scotch College and then Saint Peter's College, where he gained Leaving Honors with as little work as possible.

We have observed Brooky's talents as a cartoonist, "A" grade rover (grand final team this year), top-class tennis player, voluble conversationalist on any topic from pigs to peanuts, and the driver of a very speedy Morris 1100. He has conquered many speed records between College and Adelaide (needless to say a few bucks in fines have gone west, too). His aims for the future are to play soldiers for two years under some obscure national regulation, and then possibly an Arts or Art course. He will have nothing to do with agriculture unless it takes him overseas, to give assistance in another country.

Graham believes that R.A.C. has a rosy future and that it has far more potential than the crowded Agricultural Colleges of the eastern States, and also maintains that the Vietnam situation is basically wrong, sending out a plea to all that the world needs more agriculturalists, hence more food, and "population control, please!"

G.T. puts his heart into improving the future of Roseworthy (to the detriment of his studies) and the highlights of his days at R.A.C. would be Open Day, 1969, S.R.C. Chairmanship in 3rd year,



PHILIP REDDEN—"Red" "Boy—was that a night!"

A born conversationalist from the mecca of the North, Terowie, via Sacred Heart and Peterborough High, Phil has one of the greatest capacities over six hours in the College.

Farming seems to be Phil's vocation (with associated evenings in Frost's pub) and he'll make a conservative traditionalist in a few years.

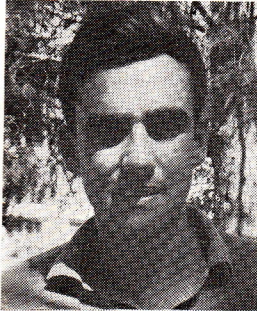
Red distinguished himself as the captain of B grade footy and won many matches for College with his teamwork. The blue Zephyr generally runs on about four pots and many nurses have been inside the old dear (trying to diagnose the symptoms?).

Three years in the skulling team and trying to lay a bull out with a series of uppercuts one evening must go down in Red's record.



JOHN HILL—"Hilly" "I'm cutting down on the smokes"

One of the traditional full-bearded men with a soft head. (He took the plunge and was hooked by a Young Liberal female). Famous for his partiality for wine, women and grotty songs, John has been at College (by some mismanagement) for two whole weekends this year and seems to have become co-owner of a Mini Deluxe. From the mountains of Cape Jervis he adventured to Adelaide High and from R.A.C. will probably become a teacher or knock over a Science course at Uni. He's one of the few members of third year who smiles upon politicians but feels that Australia should aid underdeveloped countries with a reasonable percentage of the National Income and schemes to educate and agriculturally assist them. Diplomats would be well equipped to run these schemes with dual Government assistance. Hilly's locomotive style of football out of the half-backs is one of his strong points, valiant efforts in various log-chopping competitions, his many sheaf-tossing feats, grotty songs on the Thargomindah trip, and super-scientific unintelligible comments in lectures will long be remembered.



TONY BASS—"Peeper" "Coming out to practice?"

The most unpeeping peeper there ever was—letting other people go their own way, while he studies-on regardless. He admits that he's got a disease called "study" but maintains that it's non-infectious (which the rest of 3rd year has borne out).

He's been an early-to-bed early-to-rise, self-supporting type since life at the Botanic Gardens (where he peeped for a year) and despite education at Taperoo High he still believes in flower-power, sheep and temperance.

Tony is the champion batsman of the College, a handy bowler and a half-forward flanker that kicks four goals in five minutes in football grand finals, despite his aims at being a good Ag. teacher and nature conservationist.



FRANK KAESLER—"Frankie" "Shut the b door, Miller"

A Loxton mallee layabout, disciplined and taught the advantages of Co-ed at Immanuel, Frank is a conscientious student but his coffee breaks are audible up and down the corridor and conversations about action in the cricket or "B" grade back pocket and Fromm's F.J.'s back seat on Saturdays (p.m.) are vigorously punctuated.

Frankenstein will no doubt be a successful stud camel breeder; feeding the local beasts on cold beer and silage with a competitive attitude to their consumption, as his aim in life is to have a spare tyre bigger than Lawry Truck's.



ANDREW OLIVER—"Olly" "Don't give me a hard time Fromm"

Olly's batchelor days are numbered and the "gutless white sands of McLaren Vale" will soon lose a stud master to Noske's at Murray Bridge.

He is a fanatic about pigs, maintaining that people should eat more pork at the slightest provocation and planning to make money quickly, to get married and set up a piggery.

Olly's incredible overhead marks in defence, rival only his persecution programme perpetuated and perpetuated on D'arc Fromm. Painting the sheds at the swimming pool after the Polkinghorne kidnap and starring in the footy grand final will be a couple of memories for him.



CHARLES B. GOODE—"Charlie" "I've got a lot of time for Cliffy"

Educated all over the world, including such holes as British Guiana, Kybybolite, Whyalla, Robe and even Scotch College, Charlie decided to follow in his father's footsteps, and R.A.C. gained a streak of a ruckman, football and water polo captain, champion swimmer, high jumper and (would you believe) one mile walker.

With sports (including skulling), and a female distraction taking up much time, he has scraped through two years and once-out he will be scraping together a small fortune in W.A. to buy his own beef cattle property.

Known as a wowsler and generally dressed in well ventilated clothes, "Wishbone" fitted remarkably well into the Thargomindah trip as an organizer and head cook. Charles rarely disguises his contempt for smokers, College stewards and indiscreet horn-sounders in lectures and must be branded as a brazen hypocrite on these three counts.

As O.C. of the Show stock team, he has made considerable impact on the Royal Show twice and their committee will be pleased to hear of Charlie's retirement (until he has his own stud).



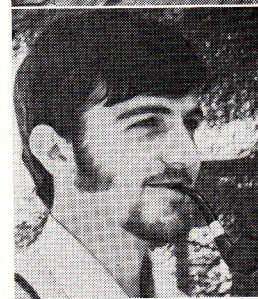
MARK ULBRICH—"Marcus" "Well just look at Summerhill"

The long-haired, bearded radical of the year, anti-Vietnam, anti-conscription, anti-rules-and-regulations, anti-conformist and all well reasoned-out with ample arguments, figures and references to flatten anyone except Chas. Marcus is rarely seen on weekends, generally leaving for Pooraka at 4 p.m. on Friday and screeching back in on the local bike at 7.55 on Monday morning after a weekend surfing.

He is an adamant believer in the free form of education as practiced at Summerhill in England, and will be a conscientious objector to Nasho in due course. But Marcus is a pleasant and entertaining gentleman who skulls Slivovitz, is a peril to females and plays baseball for Flinders Uni.

His dissatisfaction with the general small-mindedness and apathy of us "Isolationist Rural B" is heard frequently and staff are often tackled and usually come off second best in discussions with young Marcus.

Goodness knows where his future lies—prison or Vietnam? Arts at Uni?—perhaps even something to do with Agriculture!



WAYNE HEIN—"Fritz" "What a stoke"

Wayne's first "stoking" experience seems to date back to his childhood at Pallamana (well known mallee dustbowl), or his first high school education (at Murray Bridge High).

The trauma of R.A.C. has not adversely affected the growth of his Elvis-style 'boards (kept alive by frequent supplies from mother's comprehensive larder) but has induced neurotic signs in the pipe-smoking skeleton-assembling, bookcase-making, women-hating and even studying, habits Fritz has acquired in three years. Undaunted or unaware, he is continuing his academic career by tackling the Vet course and then . . . who knows?

The occasional "brandy and dry" can only improve his cricket and footballing capabilities but may lead to his eventual capture by an ambitious academic female.



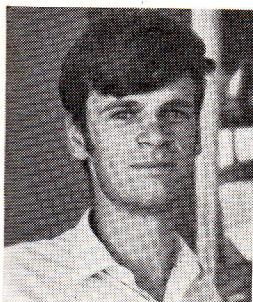
ROBERT MILLER—"Mousy" "What a weekend . . . Rrrr"

Bob and his father have been great assets to the footy club, Bob as a wingman and Mr. Miller as patron vice-chief-barracker to Fleece and protector of little-Bobbie. This stocky weight-lifting champion invaded R.A.C. from Urrbrae (or Italy), settled into his study programme in the first week and hasn't stopped since (except to become engaged and thus spend every weekend in Adelaide).

Bob's crazy dives (some unintentional) have amused one and all but he is said to a little short to sub foot Tarzan, despite the authentic sound-effects and double-muscling.

His weaving onto the occasional ale was pleasing to see (and necessary for subsistence at Thargomindah).

He and "the wife" will form a dynamic duo in the teaching profession and should stir up Teachers College for a while. Bob may one day become famous for crossing wireweed and lucerne or his guitar with a V.W. (He's already famous for memorable performances at College Amateur Hours.)



BRIAN LUCK—"Lucky" "By hell, Dorman!"

"Lucky" just managed to slow the Triumph down enough to stop at R.A.C. after a hazardous ride down from the crags of Mt. Barker (with board on the rack and side-boards intact), and the few new things he's learnt at College have been how to handle a rifle well enough to captain a winning Intercol team, to handle the female species (we have our doubts), to capture First-years for butt duty, to study and be successful and to realize the potential of the Ag. Extension field, to which end he may be coming back for fourth year. He'll always be a quiet and efficient type with long 'boards or a beard.



TONY PICK—"Pickles" "Who do you think you are, Goode!"

The pastoralist of the year and always dressed as such in immaculate U.F. & G. gear, but lets his image down by the ownership of a somewhat hulkish and scours-yellow unit.

St. Ignatius had him before R.A.C. took over, and this active young blood, noted for his love of motor bikes, lawn between the eyebrows, natural gas production in lectures and many birds (common or garden or local or hospital) needs to be hobbled regularly.

Picky's aims are to earn a stack of money in W.A. and glean enough experience to find a profitable job, suitable to utilize his acquired talents and resources. Others say he'll end up riding boundaries on Yamaha's (one handed, so he can suck on a Southwark and swear at politicians safely).

Tony has been a highly successful bowler and an aggressive full-back on the sporting scene and the Grand Final of the footy will be long remembered, along with the condition of the Consul and its owner after an eventful crabbing expedition to Port Parham last year.



PETER HODGSON—"Pierre" (Assorted birds calls)

A man of University experience who celebrated his twenty-first birthday in the Central-four scrub chopping up logs as a member of the RACMAA and who is forever changing his image from "Canadian Lumberjack" to "Great Lover" to "The Famous Pierre" to "self-made hydroponics and entomological expert" and back to the "Great Lover".

Pierre is renowned for his swift temper, cramming capabilities, interesting and confident conversations and insatiable ability to entertain birds (with bird calls and other methods). Some of his frustrations have been involved with enforced weeks on the College and some enforced weeks off the College, which trauma can only be satisfied by the slaying of a certain local ogre.

Peter will be an adviser (perhaps in New Guinea for a while), and may stay on for 4th year.

He has been a champion fencer (with foils and rapiers, not with Harold); is the only boundary umpire who has ever been reported in the Gawler Football League and is the only registered taxi driver at Roseworthy.



TONY GERLACH—"Gerls" "King Ranch—Fantastic!"

Often cited as the "Economist of the year", Tony never has any money but never goes hungry and only rarely thirsty. His plans include a "search and marry mission" for a rich grazier's daughter and thence probably a murder to ensure "that I own my own property properly".

"Educated" at Pulteney and originally from Walkerville (or was it Holland?) he is one of the outwardly happiest and amusing blokes in the College, but has his serious moments and certainly works hard when necessary.

The hallmarks of his 3 years have been various penalties which earned him foundation membership of the RACMAA and a month's holiday; the Thargomindah Trip (of which he was an organizer); his trip to Dookie as the faithful football trainer, and the somewhat untimely but spectacular and not unexpected demise of the twin's Simca on the Main North Road.

Tony is bound to find a niche in some rich grazing family and we wish him luck (he'll need it).



JOHN LIEBELT—"Munga" "I think I'll whip home for a meal"

A magnificent mocker with brains and brawn to reinforce dubious statements, Rudolf is frequently seen arguing with Chas. or any other comers, and if you ever become involved with him—divide all figures quoted by ten and believe only a selected fraction of material produced.

As "the red nosed policeman's boy", Liebs has been educated all over the State, and the F.J. has burnt many a gallon of oil in one facet of its faithful service. (The other facet must remain secret in case of jealousy aroused in one-time female occupants).

John hasn't decided which lucrative occupation he will take up, but is determined to be satisfied and to convince people that what information is insignificant in life should be isolated and disregarded in favour of serious and individually applicable material.

Munga's footy career has been of varied success and he's a notably fast bowler but a conservative driver, despite the unfortunate accident on the corner of Hutt Street "resulting in the damage of a valuable F.J."

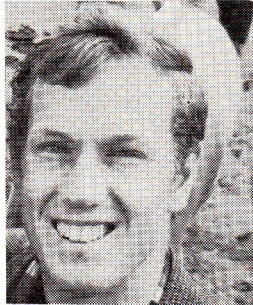


GRANT INVERARITY—"Frosty" "Lay off me, brown bread"

The Glenelg tram has been replaced by the somewhat clapped P.M.G. wagon and Urrbrae by R.A.C., but Frosty is still striving for an Agricultural life (even if it is to grow his vegetables in the quiet of the country and to learn from nature—living on carrot juice, honey, "Bemax", celery and no mattress).

He's a quiet, bearded, yoga-specialist who's really not so different, but believes that farm economics are basically wrong and that people drink too much beer.

One of Frosty's big moments was the eclipse of Duck in Animal Phy. exam at mid year by a fraction of a percent but his first day working on Vultures rates as the most shattering day at R.A.C.



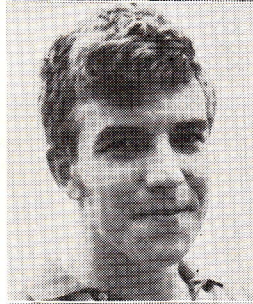
PETER FRIEDRICHS—"Fred" "Down the Mount"

Fred's our Mail Medal Man from Mount Gambier, and his life revolves around football, the Sturt clubrooms, meals expertly cooked by himself at one o'clock in the morning and his home away from home at Bellevue Heights.

Normally he's a quiet type, with good self-control, but becomes somewhat excited when intoxicated, i.e. behind the wheel of his hot Zephyr; upon reading one of the numerous press clippings about himself; or (in the more traditional way) after a few beers.

As vice-captain of the "A" football team he has played brilliant games at centre half-forward, amazing everyone with his sixty-yard goals, and as captain of the victorious Intercol tennis team with three years as a member, he leaves only athletics (of which he was champion in 1968), and water polo (which he also played).

Peter will be moving on to the more lucrative pastures of Teachers College and then either teach or go to Uni, while his critics predict an early marriage, a league football career and many evenings watching Westerns in front of the giggle box.



DARRYL FROMM—"D'arc" "Sorry, I've only got rollies"

The six foot-four splinter from Walker's Flat strolled into Roseworthy with the same ease as his now-Vietnamized brother and despite the new traffic laws his elbow still sneaks out the window of the local F.J. (as an aid to smoking and fitting-in).

He has the dry wit and cutting humour that the Mallee seems to breed and he will no doubt be "the traditional" dustbowl cultivator in a few years.

D'arc was rucking remarkably well toward the middle of the footy season, but fate had decreed that "B" grade should be a miserable shell of a team for the Final and Fromm's shoulder was therefore dislocated. Goodness knows what effect it will have on his cricket and log-chopping capabilities.



CHRISTOPHER WURST—"Wursty" "I'm in love with a big blue frog"

We believe Chris lives somewhere near Warradale but he maintains that his address is Yeelanna and has actually been known to head off in that direction on "the bike" several times. Although he was educated at Immanuel he has only recently realized co-ed's full advantages.

Wursty will make a somewhat large, excitable teacher after a year's training at T.T.C. and will probably turn his Ag. classes into P.P. & M. singalongs or bug-collecting sessions.

Although he feels that Australia's party politics are corrupt he doesn't intend to do much about it, whether farmer or teacher.

Vice-captain of the "B" grade footy and notorious for some shocking kicks, but a vice-like grip and good judgement in the air make Chris a slow but valuable asset.

Seeing Graham Haydon's face after he had chopped a hunk out of his finger with a reciprocating mower and winning the Intercol tennis '69 and "B" grade Grand Final in '67 rate as the highlights of his course.



MICHAEL WOOD—"Wacka" "The Min's really going well"

Another of the famous Tasmanian devils, living as fast as his poor yellow (and pink) mini allows.

Mick's a tall, suave gent, when necessary, with artificial voices and nose for every occasion, and persuasive enough for any female under eighty. He is running out of birds in Adelaide but still has thoughts about the R.D.A. course which would keep him and his min on the mainland for another year—perhaps long enough to pay Chas some of his credit, give up smoking, learn to spell and to understand Principals.

Wack will no doubt fulfill his potential (as heralded by the capture of the Shell prize in second year), and will breed the most outrageously profitable beef, after a world trip or two.

He's improved his footy out of sight but this dynamic ruckman has no time for a traditional summer sport preferring beach, birds and beer or just beer, which brings to mind that fateful night when the min sprouted wings and flew low over a pile of gravel, leaving its driver asleep thereon and thus lost and careless in the morning.



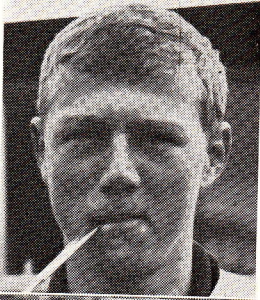
ROBERT MACZKOWIACK—"Duck" "Off to tea at Greenock"

The rollicking "member for Birdwood" fitted into his College blazer so well that he's never seen without it, despite his diverse upbringing with cows, onions, a year in the city, and another at Parnana.

"Duck" has a variety of aims for the future, with Farm Management, Advising, work in an underdeveloped country, getting the Dairy Industry back on its hooves and monopolising the supplies of Four Crown for his private consumption on cold nights in the Barossa, all being possibilities.

A registered member of the Master Axeman's Association, Bob is one of the few people to have had a month chopping and an extra month's holiday (care of the Principal).

We will never forget renditions of "Dinah . . . Dinah . . ." and other classics, related in the fabulous atmosphere of Ivan's bus on the road to Thargomindah—or his famous shot in the rifle competition at Gatton, scoring the losing bull (on someone else's target) but not forgetting his three rewarding years of Intercol shooting.



RODNEY DORMAN—"Dinky" "Don't knock Mt. Gambier"

Another Urrbrae product but with gills (he's from the most waterlogged city in the world), Dink has become considerably more outgoing since first year and with the move of home back to Adelaide he is seen screeching off in the E. & W.S. Holden Ute most weekends.

He's recently been weaned onto more respectable amounts of the amber fluid (which stimulates undreamed-of conversational capabilities).

Dink is a rifleman of some repute but he usually shivers at the wrong moment and blots the score card (due to distinctly barbaric haircuts).

He will probably end up a teacher in Mt. Gambier and swim the Blue Lake to work every morning.

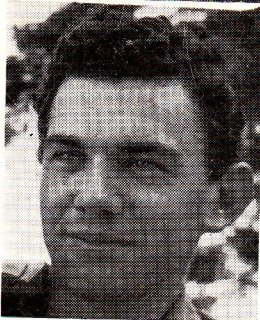


RICHARD STEWART—"Chas" "Money is no object to me"

"In all his experience" Chas. has "never lost his temper" and never lost an argument. This fastidious connoisseur of relics who revels in auctions, restoring junk and keeping his room like the drawing room of Buckingham Palace, came from the River via Urrbrae where he learnt the art of illogical argument and the merits of Brasso. But Chas. is a fantastic organizer, keeps records as well as Perce, and is generally known as "The Bank" due to his generous and unlimited credit system.

The Social Committee, Third Year Dinner Committee and "Information" on Open Day would have been in chaos but for his efforts.

Chas. could be a horticulturalist of some note but we prefer to see him as an antique dealer, patron of the National Trust or a retired gentleman with a mansion, rose garden and wife (pretty soon).



GRAHAM PEARCE—"Perce" "That's another night wasted"

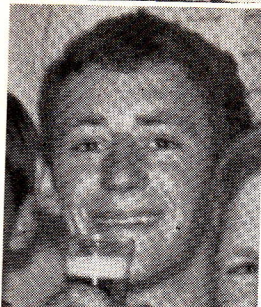
Keith seems to be the Pearce family's first permanent address and Perce has been educated all over the State, Brighton High being lucky enough to have this rather intelligent gentleman during his matric. year.

Tall, and a champion weight lifter, Puss bears responsibility well despite greying hair, and has been treasurer of the S.R.C. and College photographer for '69.

He made a dramatic comeback into the "B" grade ruck but managed to sprain an ankle (there is 15 stone of him).

Although somewhat absent minded (except when going to bed, when he thinks of everything at once), Graham has definite opinions on most subjects but women, and to hear that "understanding is to be successful"; "that I'm going to have some effect on South Australian farming" and that "it is good to learn as much as is practicable on as many subjects as possible with the least amount of study" is to believe it when Perce is speaking.

He will probably start as a greying teacher and work up . . . Prime Minister? "Oh, not for a while."



PETER BURNE—"Fleece" "Fair-go, Liebs"

An Urrbrae recruit using his R.D.A. as a stepping stone to the Oenology course and thence (we hope) South America, Burney has earned many votes in football supporting circles, for his helpful bellowing, audible for some miles. First also in the field of billiards (dominance over which he shares with his dedicated friend, ribber and foe, Mr. Gursansky); skulling—due to his hydrostatically controlled epiglottis, extensive mouth and storage capacity; brick chipping, after an episode with staff winning again. Chief Grot, collecting lizards, snakes, razor blades and other paraphernalia which made his the only room considered for the "Chas. Stewart guided tour for girls".

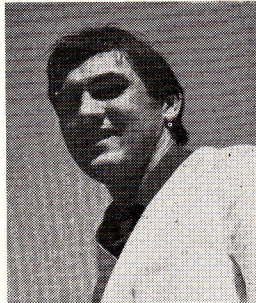
Although "Fleece" is the most "stirred" member of the year, he takes everything in good heart and leaves himself open for another onslaught with fresh philosophization on "the origins of life", "College spirit" and "Football tactics".



R.D.OEN.

JOHN GLAETZER—"J.C." "Adelaide tonight, Bill?"

Glaetzer arrived at R.A.C. four years ago from Whyalla via Adelaide Tech. and a wine bottle. Believing earnestly that Australians drink too little, he does his "level" best to make up for a few of them and will be "putting T.S.T. on the map" in the next few years. His claim to fame has been the many magical performances with twin brother Colin at the Amateur Hours for three years, and it's always a relief to see his head, midriff or legs intact after the show. Despite his notoriety for bird snaring in the Barossa we feel he'll be a free agent for a while.



PHILIP SHAW—"Phil" "I've been here five years. That's longer than any of these Ag. Blokes"

Phil's powerful figure has put terror into the hearts of football opponents for many years, but he has at last been snared by a mere female and will be the first of the Plonkies to be married.

He came from Scotch many years ago, and after gaining his R.D.A., moved into the lucrative winemaking field and will be going to Corowa next year.

Perhaps we won't comment on Phil's social life, but to say that we can never tell whether he's had none or three flagons and that the last faithful female he had was ill-treated (a frail, female Mini Minor) and blew it's radiator at him regularly.

An established member of the SRC, always representing Plonkies strongly, Phil argues about every point raised without fail and often has meetings in fits with his irrelevant comments.

Inbibing Flor sherry is one of his favourite pastimes and he can turn any train into a riot, but we predict his hay-days will be over in 1970.



ALBERT CHAN—"Charlie" "Give you a drag Scarbs?"

A highly professional plonky, Charlie blinds Ag. students with science at the drop of a hat and will have quite an impact on the New Zealand wine industry when he returns to the family winery.

Reputedly the Yodeller of the Year, he hails from Thames, N.Z., and takes more interest in all varieties of Vino than the indigenous females.

A crack rifle shot, Charlie was in the Intercol team to Dookie in '68 but is working too hard for sport this year.

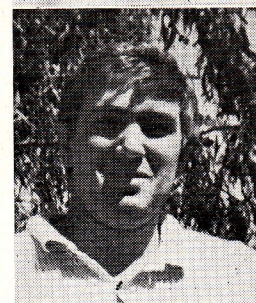


BRIAN FALKENBERG—"Falky" "Howa-ya-going, boys?"

A genuine "nice guy", Falky gets on well with everyone and has been a great trainer in the football club as well as a champion batsman and, of course, skuller.

His "Prince G.T." is renowned for "minimal time elapse" trips to Adelaide and the Barossa (from whence he came).

"Kaiser Stuhl here we come!" and "They make the best wine vinegar in Australia" are frequently heard expressions in the Falky-room and he should improve the local Vino out of sight when he gets his hands (or feet) on those Barossa grapes.



IAN SCARBOROUGH—"Scarby" "Down the flat!"

A champion on any form of alcohol, Scarbs has five years of records and skulling championships behind him and recommends metwurst-munching to all intending to follow his example.

Mr. Australia has teamed up with a certain long suffering dental nurse and is seen heading towards Adelaide in one of the "Horry" series, more often than some people consider wise. Anybody want to buy a cheap Holden?

A river-rat originally, Scarbs will be using home grown grapes and we hope fervently that he'll be able to produce more wine than he drinks.



MARK BABIDGE—"Kram" "I think you ought to . . ."

He was the biggest lad at Pulteney, now he's the biggest bloke at College and the biggest trainer in the history of the football club. Kram has been a great asset to R.A.C. in his five years of Bar-B-Q management, Amateur Hour performances, penalty services, P.U. design and production and being an inexhaustible general knowledge source to all.

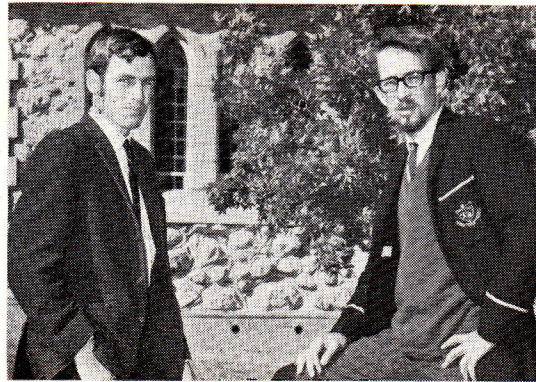
As a plonky his fame is champagne and his aim is the same but his big toe is also famous and is now believed to be hollow, to enable even greater consumption per sitting.

Babs will be bottling champagne in the Adelaide Hills for sure, and this knowledgeable gent will be a gold mine of information wherever he goes (and he won't be going anywhere alone by all accounts).



BILL BATTAMS—"Billy-Boy" "I challenge ya to a game of darts"

This Romeo of the Barossa gained his experience at Kingston in the South-East and Nuri High, but for all this, has "gone down the drain" and will be one of the first Plonkies to toddle up the aisle. He gives 'the vehicle' a very hard time with dashes to Adelaide and back involving his major pastimes of wine, women and song, and his jovial character has livened many a dull night. Bill's happy-go lucky outlook on life is demonstrated by a vacant gaze when asked about his future (which will be one of ribaldry and riot) and as long as the moustache doesn't drop out he'll be able to scare enough money out of old ladies for a subsistence ration of the various spirits and metwurst.



Left to Right: C. J. McGowan,
K. A. McCallum.

R.D.A.T.

CHRIS MCGOWAN—"Magoo" "It wouldn't work, Barney!"

Magoo (left of picture) has been, gone, and come back again to add the R.D.A.T. to his list of qualifications. While he maintains that '4th Years' are God's gift to our farmers, he dislikes the smell of the angelic pipe. This pint-sized camera clicker would be one of the quietest, most conservative students at R.A.C. but revels in cooking a good stew, riding bare-back on Kangaroo Island (which community's farming he intends to revolutionize in one easy extension lesson), and a strategic bit of hockey coaching.

Chris seems to have a distraction other than his home in Mount Gambier, and we wonder how long he'll keep up the "respectable bachelor" image.

He has distinct memories of the enforced reconstruction of the roadway in front of the dairy, from R.D.A. days, but he's stuck with the establishment and would like to send the People's Liberation Armed Forces C.O.D. from Adelaide to Hanoi. Magoo will no doubt make a useful Management Consultant as long as too many Tuesdays aren't spent in the Roseworthy pub.

KEITH MCCALLUM—"Barney" "Do you get what I mean . . .?"

On the S.R.C. and an avowed non-conformist with the foulest pipe on College (bar one, of course); a self-styled beard and some incredibly revolutionary ideas for an R.D.A., Barney is constantly defending statements branded as "hair brained" by listeners and applying "extension principles" to everything, from having a bath to dissecting a sheep.

His poor 1800 ute has aged 30 years in the 12 months he's had it and the unfortunate machine knows every bump and pothole on the network of back roads between Morchard and Adelaide.

Goodness knows what will happen when Barney's pseudo American voice booms out some dumbfounding statement as he proceeds to "extend" to a sergeant in Puckapunyal next year!

His hearty figure will no doubt make quite an impression on the State's farmers even after Nasho has finished with him.

Perhaps Barney's greatest achievement at College was winning the log chop, thereby beating many competitors with a month's practice under their belts.

MICROBIAL PROTEIN FROM HYDROCARBONS

With present world food problems, there is an urgent need to increase protein production. It is thus worth considering whether microbes can make a useful contribution to the World's supply of protein.

Traditional methods of producing protein-rich plants and animals are at present being pushed to their limit, and are slow producers considering the time taken to double their cell mass (e.g., grass, 1-2 weeks; chickens, 2-4 weeks; c.f., yeast, 20-120 minutes). Apart from this, about 60% of the dry wt. of microbial cells is protein, and virtually no non-metabolizable materials like the lignin of plants or the bones and hides of animals.

Yeast has always had a part to play in Man's diet, improving the palatability of bread and various beverages. At present unaltered microbial protein (namely yeast), when offered as a main source of protein, is unacceptable to man (even when near starvation). However, it can be quite successfully fed to livestock, especially pigs and poultry; these being logical choices for their fast growth rates.

At present 300,000 tons of yeast per year is produced from molasses and paper pulp, yielding 150,000 tons of protein, which is fed to cattle. (This production could go up to 1½ million tons/yr.).

The more interesting aspect is microbial cell growth on inedibles such as carbonaceous material; the most promising of these being petroleum. This can be as pure n-alkanes ($\text{CH}_3(\text{CH}_2)_n\text{CH}_3$) or as a mixed gas-oil fraction (microbes can use fractions of crude distillate which are of little use as fuels and lubricants). Microbial protein from petroleum could yield 20 million tons of protein/yr. from only 40-50 million tons of paraffinic products.

PROBLEMS AND ECONOMICS OF GROWING

The ability to grow on hydrocarbons is by no means rare. There are a number of micro-organisms such as yeast and bacteria which are capable of oxidizing $\text{C}_{12} \rightarrow \text{C}_{26}$ alkanes, and these can be easily isolated from soil. As yeasts are much larger than bacteria and moulds, they are easier to harvest. Thus most industrial and pilot plant processes are being based on yeasts.

Any organism growing on alkanes has an absolute requirement for oxygen, as the fully reduced substrate can only be metabolized oxidatively. Since oxygen is a relatively insoluble gas, the demand for oxygen by microbes is considerable, making the only practical limit on the density of microbe cultures, the rate at which O_2 can be dissolved from the gas phase into the medium.

Nutrient requirements are both cheap and simple. Ammonium ions supply nitrogen (N) and common inorganic ions such as phosphate (PO_4), sulphate (SO_4), magnesium (Mg), potassium (K) and trace elements can provide all else necessary for growth.

Fermentation vessels with high efficiency of aeration have already been developed for production of antibiotics, and similar systems have been used in pilot studies of alkane fermentation.

The two problems with these fermentation vessels are the low solubility of alkanes in water and the vigorous agitation necessary for proper aeration (causing a foaming problem). New techniques will no doubt overcome these limitations soon.

There is another consideration which poses itself; if the process is based on a pure alkane, the cells can utilize the substrate completely, making yeast cell recovery simple. But the purified alkane is more costly than a crude mixed fraction such as gas-oil, containing about 15% alkanes, from which the unmetabolized portion of the oil must be separated, making overall cost of production using both types of substrate very similar.

The petroleum refining process is a continuous operation, thus production of microbial cells from alkanes must also be along continuous lines if it is to be an economic proposition (i.e., being on a large scale and closely geared to the output of a refinery).

Although little work has been published on this new concept of microbial protein, there is no doubt that it is technically feasible; but to be of real value to the Agriculturalist it must be cheaper than conventional forms of protein.

A group of French scientists are constructing a plant at Marseilles capable of producing 16,000 tons of proteins per year. As it is being sponsored by the BP Company, they must believe that the cost of production will be competitive and suggest a cost per lb. similar to the price of protein from skim milk.

The quality of yeast protein grown on petroleum is richer in amino acids and vitamins than conventional proteins (although it lacks the amino acid methionine). By adding it to wheat flour (which is high in methionine) it provides a complete protein supplement which is quite palatable to man.

The main use of this protein would be directed at fast converters such as pigs and poultry. Experiments done in this field have shown growth rates to be the same or higher than using conventional protein. Improved techniques in fermentation chambers have annulled the early problem of toxicity due to hydrocarbon traces.

Microbial protein from petroleum will soon be a very valuable part of the world's protein supply, especially in the under-developed countries where the lack of a balance protein diet is causing malnutrition and metabolic diseases.

PETER HODGSON.

THE WARREN WEPOR

Oh woe is us! What widespread wampancy
will our wash wabbits waise now? These
owiginal wulers of the earth leaving wack
and wuin to Austwalian Agwiculture ewewy
Febwuawy and although their wanks are
wagged the wascally wodents won't west
until the cwops are destroyed and the water's
wancid.

Don't wun, but wack your bwains, you
worse than worthless wocks, for a weal and
weady wemedy. Awise to the wealisms you
Wip Van Winkle's and contwol these out-
bweaks whether it be by twap, wifle or some
other tweatment.

If not, the world could be overwun at
any stage, when many wabblink wodents
webel and weap the chawitable wonders of
our gween wealms.

But here at Woseworthy we have neawy
won the war and only won wesistant wing-
leader wemains, the wonderful and most
worthy Graham Rabbit.

STORM

A sudden darkness seized the land,
And bold clouds filled the sky
As if by some unseen command
All life had seemed to die.
The frenzied lightning cut the sky,
The mad wind tore the land,
While stones of hail thrown from ahigh
Were aimed by nature's hand.
The trees, the fields, the earth, the sky,
All things were smashed and bent.
They screamed and groaned before they died
But the storm would not relent.
Then suddenly the wind slowed down;
The storm had reached its height.
The thunder urged the Powers on,
But they refused to fight.
The tossing clouds road out of sight,
Close followed by the rain.
The Storm had fought and lost the fight,
But vowed to try again.

M. REVELL



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I don't like war, I can't see the point of it, it is destructive and a waste of human life. Most people if asked what they think of war would agree, yet although they can see the senselessness of war, they still condone it.

Now Australia is involved in another war, the VIETNAM WAR after having experienced the II World War — the war to end all wars — and it seems, has forgotten the ridiculous loss of life and ruin experienced in Europe but remembers only a false glory in the wasted lives of so many Australian diggers, perpetuating an image of the great Australian soldier.

To me, the great Australian soldier image is a farce, he is no better than the great Nazi soldier or the communist soldier — any soldier in my opinion is a threat to the world and an enemy of peace. It is ludicrous to expect a peaceful settlement in Vietnam or in any country as a result of martial dominance as there is always a resentment in a suppressed country which eventually will be expressed. History is a never ending story of wars as a result of oppression of one country by another or a government over its people.

My refusal to be involved in war; not just the Vietnam war, but all war, is on pacifist grounds. As a soldier you are trained to kill and take human life — on order — regardless of whom you may be killing in the name of your country, whose army is fighting for democracy, etc. If you fail to obey orders you may be courtmartialled and receive life imprisonment or a shot in the head for failing to kill some person you don't know or understand — the enemy, labelled by the papers as a communist-aggressor or Viet Cong. For all you know he may have a family and children and want peace as much as you do (if it is possible to think of peace, having been trained in aggression by the army). A soldier fighting in the jungles of Vietnam is not likely to be fighting for any vague democratic cause, his main aim will be self-preservation: kill or be killed.

Australia, by its involvement in Vietnam has reduced the likelihood of peace and has at the same time presented a poor image of itself, to other countries.

The mere presence of Australian and American troops in Vietnam is a stimulus to aggression. For example, if Australia were over-run by Communist troops, I am sure that most Australian people would not be inclined to accept their presence peacefully. Australia could do well by developing trade with communist countries, beyond that existing at present — and in doing so, create a greater understanding between the Western and Communist countries as a step towards peaceful negotiations.

Australia, by supporting America in Vietnam has increasingly isolated itself from the rest of the world — no European power actively supports America and no great Asian power is actively involved, e.g., India, Japan, Indonesia and Pakistan. There is no guarantee of future American support by aid to America in Vietnam, one of the reasons for Australia entering the Vietnam war. Australia at present has landed itself in the inextricable position of having pledged continued support and to remain in Vietnam, while America is doing everything it can to get out. Australia is leaving itself open to world criticism. People who believe that Australia will be over-run by Chinese if not stopped in Vietnam are, in supporting the American destruction of Vietnam, "destroying the only barrier to Chinese expansion southwards. That barrier is Vietnamese nationalism" (quote Prince Sihanouk of Cambodia).

The greatest potential danger of the Vietnam war or any war at this stage of World development is the possible escalation into World War III. To think that China will remain passive indefinitely while America bombs Vietnam (a neighbouring state) is living in a dreamworld, which may well be all that is left if an atomic war eventuates. Continuation of the war increases the likelihood of possible World War as relationships between the U.S.A. and Russia become more strained.

Today there are many people in Australia who disagree with war and/or the Vietnam war. Protestors who openly defy the Government's right to force individuals to fight, realise the consequences of war and its possible implications. Such people face fines and up to two years imprisonment and are criticised strongly by the government and public, yet there is no other way to show dissatisfaction to government policy.

The grounds for conscientious objection are limited largely to those of strong religious beliefs; it is not enough just to dislike killing or disagree with war or have pacifist beliefs. It would appear that the basic freedom in "Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of any frontiers" (quote Article 19 of U.N. Declaration of Human Rights, adopted by Australia, 10th Dec., 1948) has been disregarded by the present "democratic" government of Australia.

Most of us know of the Neuremburg Trials where many of the men under Hitler were condemned to imprisonment for their part in barbaric torturing of spies and prisoners. At the trials their plea was often that they had no alternative and were forced into it by their commanders. Such people are scorned by the public for their weak character yet a person who defies the National Service Act — refuses to kill or to be trained to kill or does not comply with or recognise the National Service Act, are not recognised for their conscientious beliefs but often despised. However, it is these people who are the ones genuinely concerned with real peace.

World Peace will only be attained when war ceases, "Wars will cease when men refuse to fight them".

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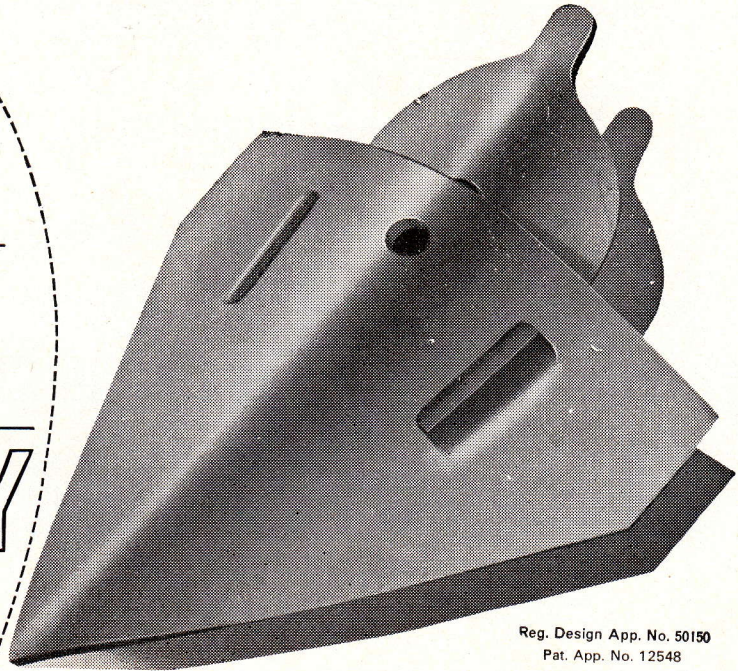
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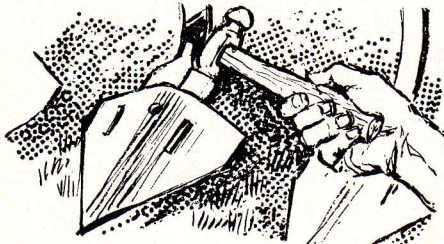
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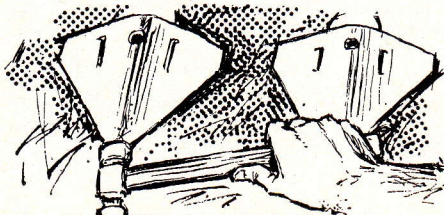


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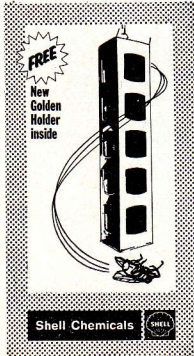
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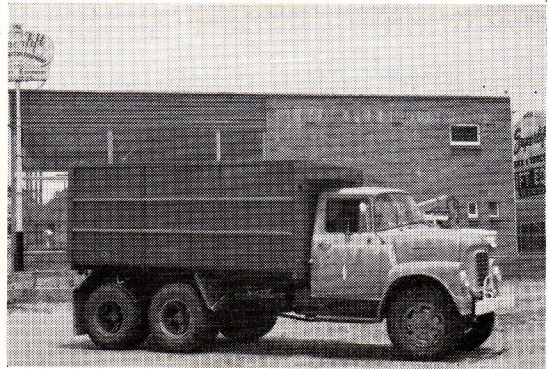
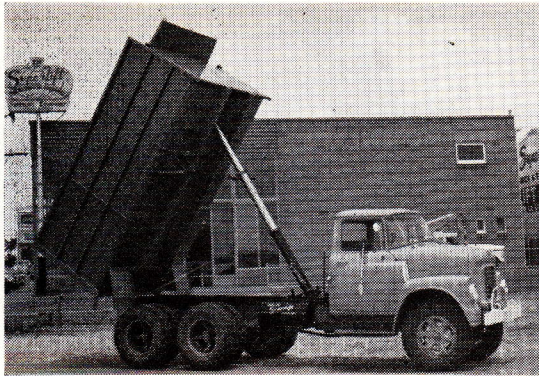
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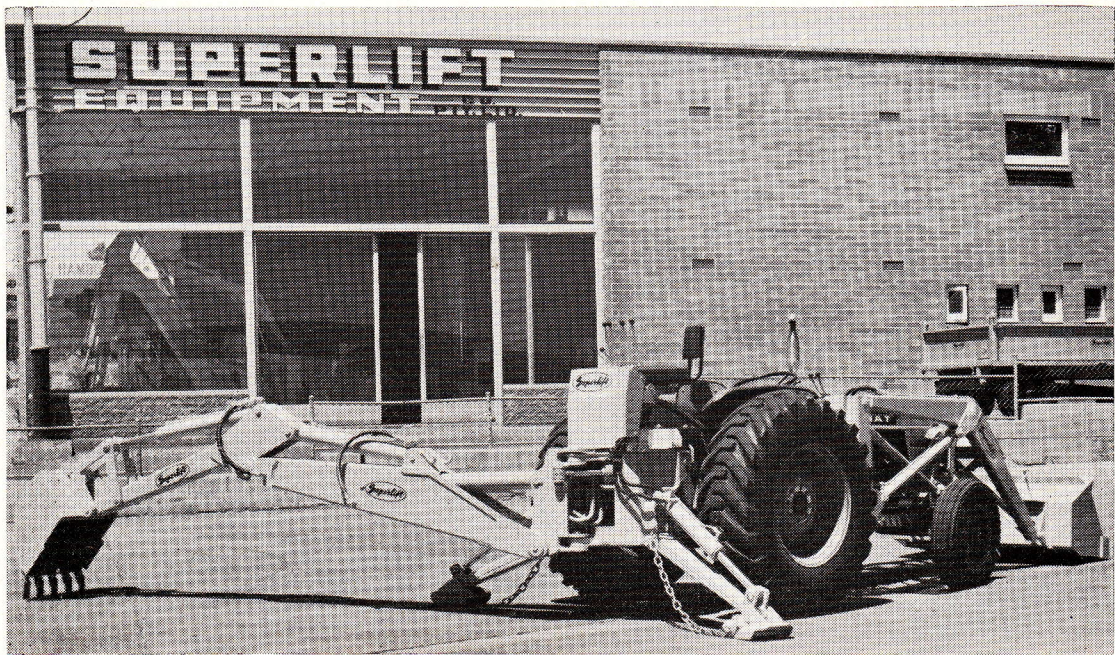
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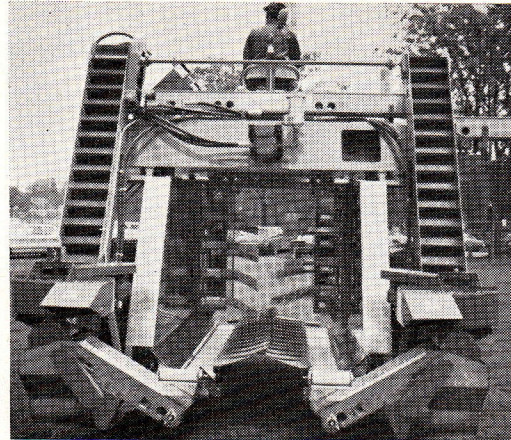


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MECHANICAL HARVESTING OF WINE GRAPES



Mechanical harvesting of wine grapes was begun in the United States in the early 1950's with a machine using a cutter-bar, and, for the 1969 harvest, at least four types of machine will be marketed for commercial use. All shake fresh grapes from the vine either by vertical shaking of the trellis wires or by horizontal shaking of the vine canopy.

Last vintage, C.S.I.R.O. obtained two machines for trial work in Australia, but it was unfortunate that the harvest was so wet, and trials were limited by soil type. The introduction of mechanical harvesting in Australia at present will require major changes in both production of fruit and methods of viticulture.

At present none of Australia's vineyards are geared for mechanical harvest of any kind without major conversion. The method of trellis construction needs to be studied, as trials at Merbein showed the duplex system of trellising not to give an increased yield in sultanas, possibly the first variety to be widely harvested. Introduction of mechanical harvesting must be linked with an appropriate training system, and only with acreage to match conversion, which will be seen later. The harvesters in general will not pick fruit lower than 30" above ground level, another drawback—especially in the Barossa bush vine area. Also under consideration is the loosening of the bunch by an abscission spray being experimented by C.S.I.R.O. at present.

Presently, the mechanical harvester has only been developed for high yielding vines on trellis support, so bush vines cannot be considered—due to difficulties with row spacings. The main aims in development of the harvesters were to develop a device delivering periodic impact to the underside of a trellis vine, and to enable harvesting without shoot enlargement. Wire sag if present, the delivery of debris free berries, safety in operation and reduction of undesirable vibration had to be considered.

Machines now harvest one row at a time, and recovery in the latest U.S.A. trials is close to 95% on Thompson Seedless (Sultana)—comparable to hand-picking. The fruit detached from the wire trellis falls about 10" to a belt, and, due to physical shape of the bunch, scatter is minimal and low fruit damage occurs.

Varietal response is quite important, optimally from varieties with large clusters, compact bunches and weak stems (including Sultana, Malaga, Pedro and Palomino), whilst the small cluster varieties which have a fibrous stem, e.g., Cabernet, Sauvignon, produce considerable cluster break-up and fruit detachment.

A good example of a mechanical harvester is the CRCO Model OW (as illustrated). This \$29,591 model is designed for single canopy vines. It straddles the row and as it progresses the berries are removed from vines by the side-shaking action of the shaker arms. The berries fall onto moving transfer plates and then to side conveyors which carry them to a top swing conveyor (with leaves and debris removed), and then to a portable bin or truck.

This machine will pick an acre an hour — about 10 tons of grapes under optimal conditions. It is 18' long and 11' wide with minimum collection height of 2' on rows 8' to 12' wide. It weighs 11,000 lbs., is powered by a Ford 4000 diesel motor and has a 10 speed selecto-speed transmission, with operating speeds from .9 to 17 mph.

Since mechanical harvest causes more injury to the fruit than hand picking, rapid processing will become even more important than at present. This means additions of carbon dioxide or sulphur dioxide in the field or actually crushing and de-stemming in the field, delivering only juice to the wineries. It can be seen that a machine capable of harvesting 10 tons of fruit an hour will certainly keep two tippers quite busy even if only a short distance from the winery is involved, so the contact between winery and harvester is essential to efficient operation.

As far as labour requirements are concerned, the mechanical harvester requires only a fifth of the man hours needed for conventional harvesting, but it must be depreciated over a five year period, meaning total depreciation each year of about \$6,000.

The cost of mechanical harvest is usually set at a per acre cost whilst the hand harvest is per ton. On the per ton basis, costs of mechanical harvesting are the same, irrespective of bunches per ton. The cost of mechanical harvest becomes smaller with increasing area of the same variety and so will be suited greatly to the large wine companies with their own vineyards.

In summary: the introduction of mechanical harvesting will decrease seasonal labour problems, but at the same time increase demands on the technical skills and viticultural techniques of the grower. It must result in better control of grape quality and thus enhance the overall quality of the resultant product.

MARK H. BABIDGE

*Information available from
Chain Sprockets (Vic.) Pty. Ltd.
P.O. Box 100, North Melbourne 3051*

THE FUTURE OF AUSTRALIAN WHEAT

In early October this year the F.A.O. announced that Australia was in a wheat crisis, because of over-production on a saturated world market.

This has arisen from several changes in the wheat industry. The first of these was the guaranteed price for home consumption and a set amount of export wheat, worked out on a cost of production, including a figure for return on capital which ensured a profitable grower return.

A decline in wool prices also caused a gradual shift to the more profitable wheat. Particularly as the unsold reserves during 1961 to 1967 were very low. This gave bright future prospects to the industry. The introduction and integration of bulk wheat also helped to reduce cash costs and further spread the industry.

In total, the acreage increased to 26m. acres yielding about 450m. bushels. This represents about a threefold increase on the average before 1958. During this time world wheat production has increased to a peak of 15% last year, however world wheat sales have not increased at the same rate. This has led to a situation where wheat is sold on a buyers market, and it becomes essential that we provide what the buyer wants, cheap, quality wheats.

This situation is worsened by less outlets and growth of rice production in recent years, meaning reducing wheat markets.

With over 200 million people starving and a further 700m. on sub critical diets there is adequate scope for increased total production on a humane basis, however the problem is one of economics, in that we have to get a certain price for our products. To reach these enormous markets we must reduce our costs and hence lower the price for which we can sell profitably.

According to the F.A.O., Australia has a further 26 million acres capable of wheat production so we can, on a national scale, reduce cost on a straight economy of scale basis.

Contracting and machinery pooling could be more widely exploited in Australia and this would reduce machinery costs. Hand in hand with fertiliser use research into new varieties of higher production and better quality is also needed.

Prospects of the Government retaining its guaranteed export price now seem remote and if this was reduced, we could as a nation afford a lower price for our wheat.

In view of the competition for wheat markets it would seem that the government could adopt a more realistic, or at least competitive attitude.

Australian wheat has built a reputation on a white flour wheat of easy milling character. However, we only sell eleven qualities of wheat, six of these are the dubious F.A.Q. standard. We need more and far better segregation of qualities; it is bad enough that this year's highest protein wheat at the Royal Adelaide was classed as F.A.Q. at the silo of delivery. A further argument for better segregation is the claim that Queensland's prime hard quality wheat has already been sold, and not yet completely harvested.

Overall it would appear that Australia's wheat future is at least limited, and in the face of this we need to reduce the cost of production, and produce higher quality wheat that is to supply the market with what it wants, high quality and cheap wheat.

K. McCALLUM.

THE NEGATIVE KNOCKER

I have just had a magazine send to me, and it's in the rubbish bin now and that's where all future copies will be going . . . unopened.

Now I suppose you think I'm narrow minded so let me hasten to explain. It's from a group the narrow feeble-minded Bible-bashers who are just anti everything that doesn't agree with them, but I haven't time to waste in considering the view point of purely negative knockers. True, I agree there are lots of things wrong in this world, but I'm not going to waste my time on people who haven't a positive thing to suggest — people who are just "knockers".

It's terribly easy to be a "knocker" really. You mention any group, any socially accepted principle and I can knock it, be as negative as anyone else; so it's not very clever really. Ask me to solve the problems with these aspects of life and I'm generally floundering for words.

Of course the most famous group of "knockers" at the moment are students. It's part of our cynical inbuilt outlook and we have a quite important role to play. But do you see what happens when we are consistently negative knockers? With everything knocked down, absolute chaos becomes the order of the day. Surely though the purpose of our "knocking" is to ultimately build a better society and in order to do this we must play another role at the same time, we must be constructive and positive.

How easy is it to be constructive and positive? Perhaps about once a year, if we're really trying we may be able to do something worthwhile and helpful. How long is it since you've come up with and implemented a positive idea about your friend's problem or your society's needs? Superficially and theoretically, solving problems can be an interesting academic exercise but practically, peacefully and positively, solving problems is far from a "piece of cake."

Do you agree then that continuously knocking and being negative in attitude is destructive of the "new world" that youth desires to build, and that being positive and constructive is difficult, nigh impossible? If so, then do you see that you are trapped! We all know what's wrong but find it very hard to put it right. We're cornered! We've reached the point of frustration with our backs to the wall. All we can do is to look beyond ourselves for help and inspiration "the beyond in our midst" as is one contemporary expression for God's being. We need some reference point, some example to obtain principles from, to receive inspiration and help from and to give our allegiance to. Where else can we look other than to the perfect man, the man of men, man of love, man of Nazareth — who else is worth referring to? Look as far and as long as you like and I claim you'll find none better.

But you possibly think all this "J.C." business is sissy. If so — I think you're sissy, you haven't grown up past a "Gentle Jesus meek and mild" kindergarten concept of the Christ or the Christian faith. The Jesus I see with whip in hand in the money changer's court, "stirring" the status-quo Pharisees, challenging the psychological drop-outs, unjustly being tortured for others, does certainly not project the image of a "meek and mild" Lord. He is the key to a constructive way of life, to a new world order of peace and brotherhood that deep down we all long for. Allow his words to formulate your attitudes, His words to guide your actions, His challenges to carve out your vocation and you'll never have time to be a negative knocker but you'll be a diplomate who makes a worthy contribution to mankind's problem solving work force.

BRIAN POLKINGHORNE.



"Speed" Spencer, for unrivalled deliberation.

A MAY DAY

It was during the May holiday break, that many students worked out an unpopular penalty by felling and chopping up pine trees. To them this poem is dedicated.

Crack of dawn, mouths yawn, sandmans load,
axes fetched, arms stretched, walk the road.

No saw, axes more, chop chopped,
hard work, sweaty shirt, brows mopped.

Chips fly, spirits die, blistered hand,
chips smaller, trees taller, scarred land.

Fallen pine, wasted time, axes blunt,
tree splits, axe hits, men grunt.

Wax burns, heads turn, axes chop,
wax away, axes lay, bodies drop.

Voices shout, fires out, coffee cold,
warden passes torrid glances, broken mold.

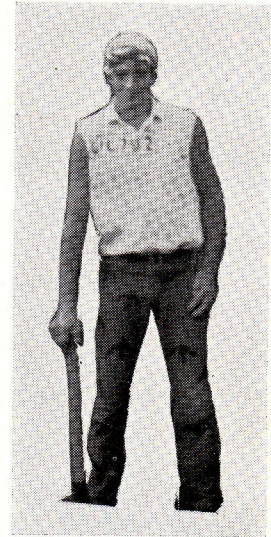
Burnt toast, pigeon roast, empty glasses,
Lazy day, cards play, money passes.

Birds come, work done, happy heart,
goodies fed, heavy head, sleepers part.

End of day, worker play, bodies drop,
Again tomorrow, prolong sorrow, patience pops.

No saw axes more, chop chop,
chips smaller, tree taller.

DISPENCER.



"Grubber" Growden, for less finesse.

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WE ACSEPTIC WITH TANKS

During 1968, the third years decided to redeem the fact that they were the most pitiful gaggle of graduates to ever pass through this institution.

They therefore went up the river and earned hundreds and thousands of dollars picking things.

Having only one crummy hotel for the Third Year Dinner and not being able to use up their money, they decided on a parting gesture.

World famous Ilyoka M. Smith, designer of the septic tank for the Sydney Opera House, conceived a brilliant, sensitive, geometrically and asthmatic pleasing design for the septic tank to beat all septic tanks to be mounted at the entrance to R.A.C. Basically it is in memory of Third Year of '68 who forever generous, kind, noble, modest, unobtrusive, quiet, understanding, strong in convictions and wipe-outs. The form of the edifice was to be a lasting expression of their feelings for many who regularly pass through the College portals.

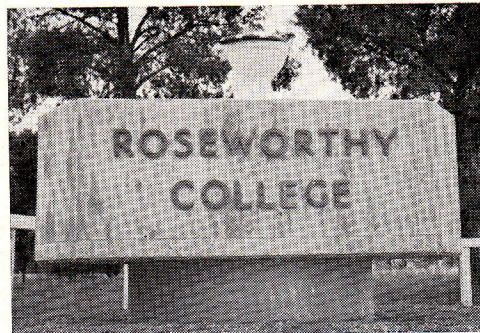
The total cost is of no consequence (it was a mere \$12,000) and the Public Buildings Department may be proud of the construction as a permanent memorial to their unswerving aesthetic sense.

It was to have been painted a glorious shade of green with black stippling, but the team of painters were working underground in Currie Street at the time so it was left a dismal natural grey.

Do not be confused by the apparent lack of size. The monument is actually symmetrical about the ground level, with the ten ton solid genuine and fully imported concrete knob standing atop a 5-ton Norwegian designed and manufactured septic tank which in itself stands on a ten ton solid, genuine fully imported concrete knob. It is therefore only half as ugly as it would have been if it had all been exhibited above ground. For this everyone is eternally grateful.



Plumbing Inspector Reddin.



This was inevitable.

ECONOMICS ANONYMOUS

Least cost combination curves

Like mountains topped with snow,
Net returns to capital

A cold and eerie low.
"We'll increase yields one hundred fold
And the size of farm by four
And dodge the income tax receipt
To earn a little more".

Materialist cling to your car,
But buy a new model next year;
Don't work for the sake of working,
And sell your barley for beer.

Stuffy classroom full of smoke,
One fails to see the light
For must we earn our ten per cent
If it means no sleep at night?
Let live on par with nature
And feast on milk and honey,
In love with life with such a wife
Who cares not only for MONEY.

G. R. INVERARITY

I'M HERE—

Child asks: How come?

Young man: Why?

Elder man: How long may I stay?

Elder: How long must I remain?

Spirit: Why was I there and how come I'm here?

G. T. BROOKMAN

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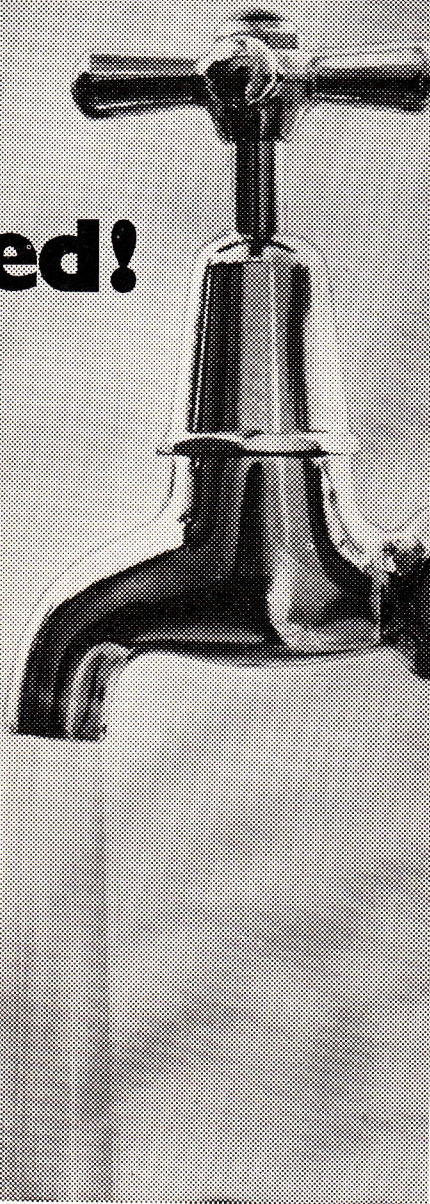
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In February, Mr. S. V. Pachalag arrived at Roseworthy. A veterinarian, he was sent by the Indian Government, under the auspices of the UNFAO, to study sheep husbandry methods in our State. This he did with the utmost diligence, showing penetrating interest in all phases of sheep management.

Because of his charm and warmth of personality, "Sam" as he is known, made many firm friends of both staff and students. It was for this reason we asked him to write for us.

A REVIEW OF ANIMAL HUSBANDRY DEVELOPMENT IN INDIA

"Among the developing countries of the world, the most under-developed Science is Animal Science," said D. R. J. G. Harmor, president of Rockefeller Foundation.

One will, therefore, understand the seriousness of this problem in India.

What is Animal Husbandry Development?

Animal Husbandry development means improvement in the methods of animal production and animal health, including all phases of feeding, breeding, management, disease control and, most important, the marketing of livestock and livestock products.

This development is achieved only by education.

Although mechanisation of the farms in India is in progress, still there is a large percentage of the population, working on farms, depending on cattle for everyday farm operations like ploughing, sowing, and transport of farm produce.

It was therefore top priority to develop programmes of Animal Husbandry improvement with sheep, goats and poultry.

To accelerate these development programmes, the Government of India launched the five-year plan. Since the inception of the first five-year plan in 1951-52, the whole picture of Animal Husbandry in India has changed.

Various schemes were implemented on a much more comprehensive and integrated basis. Cattle breeding centres were established in contiguous villages where improved bulls and cows of suitable breeds are located for upgrading and pure breeding. The pedigree bulls and cows were supplied to the progressive and cattle-minded farms for breeding purposes at subsidized rates in order to create interest in the programme. Where the Animal Husbandry work was virtually in a primitive stage, the animals of pure breed were provided free of cost to the progressive breeders. In Many places bulls were owned by village councils and the villages were encouraged to use them. Well-to-do farmers purchased bulls and were assisted with their maintenance costs.

The breeding work by the pedigree bulls would have been just a drop in an ocean unless indiscriminate breeding by scrub bulls stopped.

Indiscriminate breeding was stopped by free castration of scrub bulls with burdizoo and the farmers bring their bulls to the nearest veterinary institutions for this purpose.

In addition to progressive farmers, artificial insemination was made available free for breeding programmes.

Today, in almost every district, there is an artificial insemination centre where the semen from the pedigree bulls is collected, preserved, and after dilution, sent to different sub-centres for use.

For dairies the semen from the Friesians and Jersey bulls is imported in moderate quantities from overseas. In this regard British Semen Exports Ltd., a British firm, had just concluded record years for sales of semen to India, Australia and New Zealand.

In addition to these breeding programmes, the farmers are provided with ideal models for construction of silo pits for silage preparation and preservation, and also improved designs of cattle sheds. In some cases financial assistance in the form of subsidy or loan is also given.

The need for good, cheap milk under Indian conditions is obvious and acute. Every vegetarian Indian accepts and relishes it. More than half of the milk produced in India comes from domesticated buffaloes which descended originally from wild water buffaloes.

It is estimated that the total world population of buffaloes is in the vicinity of 110 million, and almost half are concentrated in India.

Many Indian specialists and observers outside India are convinced that the potential is still largely unexploited, and that, with improved husbandry, nutrition and application of the simple routines of selective breeding, both the yield and quality of the milk could be substantially improved.

It is not known why there is a preference for buffalo milk over cow milk. It is probable that typical dietetic habits and certain qualities of buffalo milk, which is undoubtedly rich in its composition, might account for its acceptance.

The average composition of buffalo and cow milk is:—

	Water	Fat	S.N.F.
Buffalo	83.46%	7.05%	9.49%
Cow	87.4%	3.9%	8.7%

It is of interest to know that superior types of buffalo have been maintained in Indian cities for many years.

To improve the management of these animals in cities, which was necessary for public hygiene, they were evacuated to better surroundings.

The pioneer attempt "The Aarey Milk Colony, Bombay" was made in 1949 with unprecedented success. 15,000 buffaloes and cows in the city of Bombay were moved to an area of waste land near to Bombay city in the village Aarey and 32 modern dairy farms were constructed with all necessary amenities including residential accommodation, electricity, transport, banks, schools, etc.

Cattle owners, called "licencees", are allotted space for their cattle, but cannot acquire the legal rights over accommodation.

Veterinary aid and artificial insemination services were made available, and, with young stock, their number is now 22,000.

The milk produced is pasteurized, bottled and supplied to the cardholders in the city of Bombay.

In view of the richness of the buffalo milk, some portion of it is blended with water and imported non-fat solids to reduce its fat percentage to 3.5, but maintaining its level of solids not fat, and this milk is sold in bottles at comparatively cheaper rates.

The exceptionally high average yield of milk, which is about 2,500 litres in the Aarey colony, is the criterion for use of its surplus progeny for the animal husbandry development programme. All

the surplus male stock born at the colony are purchased by the Government at a specified agreed price and used for a breeding programme of village buffaloes.

Today there are about 17 milk producing units in India working in nearly similar ways.

Although sheep farming is not a primary industry in India, still it has its importance in the field of Animal Husbandry programme, Sheep breeding forms a major vocation of the inhabitants where the agriculture is precarious, especially in the north-west of India and in the western portion of eastern ranges, i.e., in the Deccan Plateau.

The Indian sheep does not produce fine wool, but mainly produces carpet and medium coarse wool. From the total number of about 40 million sheep, nearly 11 million kgs. (1 kg. = 2.2 lb.) of raw wool is exported for carpet making, chiefly to U.K., U.S.A., U.S.S.R., France and Belgium.

Besides wool, live sheep, sheep casings and sheep skins form important items for export. Total foreign exchange earnings during 1966-67 from sheep was nearly \$A28.25 million.

In order to boost the industry, the Government has implemented intensive sheep development schemes.

To produce quality stud rams of indigenous breeds as well as superior exotic breeds, nearly 600 sheep and wool extension centres were opened, and 200 supplementary breeding centres established in different states.

The Central Sheep and Wool Research Institute, under the administrative control of the Indian Council of Agricultural Research (organization similar to C.S.I.R.O.), has been set up with a view to conducting research on various aspects of sheep husbandry. It supplies improved exotic rams for cross breeding, shows improved methods of shearing, wool grading and marketing of wool on a quality basis, the scheme being implemented in Rajasthan State of India. All the above schemes were assisted by the Food and Agricultural organization of the United Nations.

In view of the very good response and results, there are now proposals for eight large sheep breeding farms with the sheep strength of 5,000 to 15,000 sheep, besides expansion of the existing farms. There is also a proposal to add 50 sheep and wool extension centres to the existing number of 600 already functioning.

Artificial insemination of sheep was undertaken to obtain quick results on a large scale. In view of encouraging results, artificial insemination of sheep is now popular in many states.

Besides this simple husbandry techniques and management of the flocks are also being advocated. Mobile shearing units are being introduced for the benefit of the nomadic sheep flocks.

With the introduction of intensive poultry breeding programmes on scientific principles, the picture of the poultry industry in India is changing very rapidly.

Because of tremendous differences between the potentialities of country fowls and improved breeds like White Leghorn and Rhode Island Red, many farmers started upgrading programmes by introducing White Leghorn cocks in the flock. Now there are large numbers of farmers who sell hatching eggs and day-old chicks.

To promote the industry, which definitely supplies animal proteins of required value, the Government has set up intensive poultry development blocks in many districts where financial assistance for establishment of poultry units to private individuals is given. For marketing, necessary help and guidance is given by specialised staff of the department or by extension workers of the community development programmes.

Animal health is another aspect of production not overlooked.

To control Rinderpest, from which mortality is 100%, an intensive mass vaccination campaign was launched and nearly every animal vaccinated and branded. This brand was as good as the international health certificate of Rinderpest, ensuring the price of the animal, thus there was a fantastic response. Now India can claim to be free from Rinderpest.

Many of the other communicable diseases of cattle, like Haemorrhagic septicaemia, Black quarters, Anthrax, diseases of sheep like Enterotoxaemia, Haemorrhagic septicaemia, Sheep pox, diseases of poultry, Raniket (New Castle Disease), Fowl pox, etc., are brought under control by preventative inoculations.

Many veterinary dispensaries and veterinary aid centres were established, while for research work on animal diseases the Indian Veterinary Research Institute at Izatnagar has been expanding its work on production of sera and vaccine, and our National Dairy Research Institute has also expanded its activities in the dairy research field and an animal virus research laboratory in the vicinity of existing human virus research laboratory is in progress.

Even though the development programmes are at full speed, the work of development will never end, and as the sciences advance the work of development in the field must follow.

S. V. PACHALAG, Central Sheep and Wool Research Institute,
Malpura, Rajasthan State, INDIA.

KING RANCH IN AUSTRALIA

The King Ranch organization is owned by the Kleberg family from Texas in United States of America. Once confined to Texas, the Kleberg's have now spread abroad to become the world's largest land holders with 9,754,000 acres in Australia, 970,000 acres in United States, 513,000 acres in South America and 7,000 acres in Africa.

The advancement in tropical and dry arid countries was initiated by the development of Santa Gertrudis cattle by King Ranch. They were first recognised as a breed in United States in 1940. In the early 50's they moved abroad to Australia and formed the company King Ranch Australia Pty. Ltd. with capital outlay in Australia estimated at about \$15,000,000.

Their first purchase was "Risdon," 7,500 acres, 320 miles west of Brisbane near a town called Warwick, followed closely by 1,060 square miles in numerous adjoining properties near Clearmont 500 miles north-west of Brisbane. This purchase was in partnership with a packaging firm under the name of Associated Stations Pty. Ltd. The next move was to import 200 Santa Gertrudis heifers and 73 young bulls as a nucleus for their stud herd. (This was the first new cattle breed to enter Australia in a century). In 1956 after a blue-tongue epidemic overseas, an embargo was placed over import of cattle into Australia which has not been lifted.

More land was required and Kleberg had his eye on the harsh bush country of the Northern Territory. He bought the 4,700 square mile property, Brunette Downs. Water was a big problem and with fresh water of 300-600 foot, 120 wells were sunk at a cost of \$12,000 each, such that at no time was any animal more than 7 miles from water. In all \$2,000,000 was spent on improvements. It now carries more than 50,000 head. The number of calves carried past weaning to branding increased 50% two years after Santa Gertrudis bulls were introduced.

Then Associated Stations bought three more adjoining properties in the Barclay Tablelands: Barclay Downs, 3,300 sq. ml.; Lake Nash, 4,700 sq. ml.; and Georgina Downs, 1,265 sq. mls. This gave the Klebergs some 14,000 sq. mil. carrying some 130,000 cattle. They are

also negotiating another 2,000 sq. mil in the Kimberlies in Western Australia.

The stud herd at "Risdon" was moved to its new premises, "Milton Park" at Bowral, 8 miles south of Sydney — some 1,500 acres, and the purchase of an adjoining property increased the size to 3,000 acres. Then "Deltroit," a 6,000 acre property on the New South Wales-Victorian border, was purchased, followed by "Bugilbone" 15,000 acres, 400 miles north-west of Milton Park.

In 1962 they contemplated the rain forest area in Northern Queensland, with an annual rainfall of 170 inches, never before thought of as cattle country. Thousands of dollars went into research and survey of the area to see if cattle could be fattened in the area. "Tully River Station" was developed—51,000 acres of forest cleared and sown to tropical legume — grass pasture at Tully 100 miles south of Cairns. Tully is estimated to carry 30,000 cattle with an estimated annual turnover by 1972 of 25,000 head.

On the Continent of Australia, King Ranch Incorporated has made a kind of continent of its own, the holdings being found throughout Australia's climate and geography from flat country to rolling hills and from arid landscapes to rich tropical forests.

TONY GERLACH

HOLY NAPALM

See him lie there suffering,
He is beyond help, and will die,
Slowly,
As his skin bubbles and burns,
And fills the atmosphere with smell;
A revolting and sickening smell.
No, he is not a Guy Fawkes, burning.
He's not a burning monk, protesting.
He wants just life—
But Fate has given it to him to be
The victim of this hellish thing:
War.

GRAHAM PRISK

THE R.A.C. PANTOMIME — 69 VERSION

“DOWN ON THE FARM . . . WHAT HARM?”

THE TIME OF THE PLAY —

1969 — Farmers' Day, 10 a.m.

THE SCENES OF THE PLAY —

ACT 1:

The front of the main building looking towards the front entrance, with the front portals shut on their fictitious hinges.

ACT 2:

A barren plot (rather like that of our play).

ACT 3:

An industrial workshop.

ACT 4:

A darkened stage, with a pencil beam that illuminates various sections of the stage at a time.

ACT 5:

A large open space cluttered with rubble, and with much brick dust in the air.

EPILOGUE

A blacked out empty stage.

THE END (I thought that we would never get there).

THE AUDIENCE:

Mainly a gathering of yokels, toss pots and pot-wallopers, with a sprinkling of milk maids, two politicians and a parson in a pear tree. (Sing Hey Nonnie Nonnie.)

THE CAST:

(An excellent description, for so they should be; or culled in the order of their appearance if not of their importance.)

The Lord High Administrator (I think I will be away . . .)

“Little King” (Father says . . .)

The King Emperor (I must be obeyed staff-wise, student-wise, college-wise . . .)

The Prime Minister and Keeper of Archives (I know all . . .)

The Lord of the Bedchamber (Empty that . . .)

The Keeper of the Purse Strings (Don't be a goat . . .)

The Weather Ledger Lord (Twenty points and windy . . .)

Fairey Phone (No, he is not answering . . .)

Phoney Fairey (Not -!½;x)o/ likely . . .)

The Advisor of Economy (That will not pay . . .)

His Supporter, a Waler (Yes, it's yellow! So what . . .)

The Chief Animal Director (Have some oxy-something-or-other . . .)

His Scouring Master, his Immediate Attendant (Wash and squeeze, dry in the . . .)

Heather, his Fairey in Camera (All is dark . . .)

The Incivil Engineer (Give her a push, mate . . .)

His Cog in Chief (Won't it go? Eh, bah goom . . .)

His Universal Planner (Won't it fit? Try your levels . . .)

Sundry Supporting Gnomes, Elves and Pixies — Big Tree, Glue Pot, Cement Mixer, Ozone Annie and Hairy Son

The Envy of Milk Maids (Let it down girls, let it . . .)

Lord Bull (That's what I call a short horn, you jokers . . .)

Peter Porker (Trot along you little trotters . . .)

Early Ram (Upsey Daisey and Ivy too . . .)

The Foul of the Air : the Fairey Queen (A hen by any other name . . .)

The Great Spirit (You have never tasted anything like . . .)

Jack of the Veggies. (And her little graft . . .)

The Prime Spirit of the Week or Puck (Whoops . . .)

The Footie Fanatic (I'm for ever roving . . .)

The Alchemist (Phew . . .)

The Lord of the Earth (Get moving, mowing, plaining, hoeing . . .)

The Lord of the Flies (Get my killing bottle . . .)

The Demon King (Now into the post mortem room all of you . . .)

Also Doubles as the Dame (That's a sporran, you clot . . .)

THE PLOT (The lot, you clot)—

ACT 1:

(From without a claxon biales). A scurry of pigeons rises above the audience and discharge from within.

The main doors slowly open and the Lord High Administrator squeezes his way out onto the top step. He is dressed in a glass case and carries a bank passbook.

He speaks: "Did Shakespear say the college is a stage and all the staff merely players, please?" (They are a good smoke for my money). "If so, how now brown cow."

He steps back inside the doors and there seems to be some jostling before three other figures appear, and arrange themselves from right to left or left to right thus.

The "Little King", the King Emperor, the Prime Minister. The King Emperor, or Rex Imperatrix, or R.I., takes a step forward, he is dressed in a wreath of smoke, carries a length of pipe in one hand and on his head is a fedora. (What is a fedora? It is a hat, of course).

R.I. speaks: "Welcome, welcome, well-come, one and all, all and one, everyone."

"Little King" now steps beside him, his garment is of sacking, he bestrides a new bicycle, and on his head is a stetson or John Deer stalker.

He speaks: "Say, buddies, lend me your ears, especially those with awns, and I will show you how by taking the grain in my hot little hand, there will emerge such a bounty of cereal wealth that you will never be able to dispose of it except at a total loss."

The Prime Minister joins the other two, he is dressed in a journal and carries a label in each hand, one marked This Week and one Last Week.

He speaks: "Now, youse blokes, listen and I will tell you all—we need go no further, father; here it is, all wrote down this week or last week. The best is anyone's pigeon." (A pigeon flies over illustrating this point at least once.)

These three characters (says you?) now stand to one side or the other, as a procession winds it's way through the open doors. First comes the Lord High Administrator, still clutching his bank passbook, as he makes his way down the steps towards his valiant chariot, muttering as he goes: "I cannot stay, I must away." And so he vanishes in a cloud of fumes and furore.

He is followed by the Lord of the Bed Chamber edging his way onto the steps inch by inch. At his heels is the Keeper of the Purse Strings who, turning to the Weather Ledger Lord, shrills, "Don't be a goat and stop being a jonah."

These three mere males are brushed to one side as Fairey Phone and Phoney Fairey dance down the steps to the tune of "I'm to be Queen of the May, mother." Or words to that effect.

For a moment all is jolly and fun, but there is a hush as a stern avised figure appears, the Adviser on Economics, supported by his new Waler.

The A.O.E. speaks: "Be quiet, I say; that will not pay; only by computation of the loft and pross can the ultimate be revealed. And then you will not like it. Remember, you are not here to enjoy yourselves, but to be regimented and instructed. So form up in groups or gripes, and you will then be conducted to a spot where you will be indoctrinated in that certain aspect in which none of you are interested."

The new Waler steps forward and calls upon the audience: "Now follow me, I have a bright yellow plate both fore and aft, so that you can see where I am going. Come, follow. If you do see a policeman do let me know in good time. Thanks ever so." Just as the parties move off there is a small rush from one side of the main building, and the Chief Animal Director approaches with his scouring master at his right side, brushing a few whisps of wet wool from his dome, while his particular Fairey in Camera pops in and out, varying the focus pocus.

The C.A.D. speaks: "Low and behold, or baa and look. Do not be distraught with what the Adviser on Economics says, for those who care come follow us and we will introduce you to things most fair."

"By joves, chappies, that's right," intones the Scouring Master, while his Fairey bemoans that "All is dark."

Again there is a disturbance, this time from the other side of the main building, whence a cloud of dust emerges with much noise. When the dust settles, it is seen to have covered a posse, consisting of the Incivil Engineer seated within a vintage chariot, which is propelled along mainly by the exertions of the Cog in Chief, muttering to himself, "I am a lad from Lancashire," and the Universal Planner breathing heavily down his own theodolite. While behind them, spent in mind and body and estate, come their particular attendants: Gluepot, Cement Mixer, Big Tree, Ozone Annie and Hairy Son.

Leaping from his chariot, with some difficulty, the Incivil Engineer calls: "Stop! Tarry a while. Be not put out by economists, or animals, but come to our 'ome, where you can weld, plane, oil or hammer to your heart's content and run around with no clothes on. We will show you how to make doors that will not open, windows that will not shut, ploughs that will not furrow, and combine harvesters that will combine with anything. Thus to the engineering empire right away, do not dally nor delay." Thus the audience wavers, some this way and some that, all is confusion.

(Too -!½/x)? right, mate.)

END OF ACT 1—(I never thought we would get there.)

ACT 2:

Enter the Adviser on Economics, followed by his new Waler, followed by no other body at all at all.

A.O.E. speaks: "What none are here, none wanterbe lern? I mean, does no one wish to be taught? This is most discouraging. However, as you are here, my new Waler, you shall be taught: so listen. It is part of the economics of each state that the use of the roads are paid for by registration fees . . . eh, where are you going?"

The new Waler, retreating from the plot, "All this I know too well as daily, almost, the dame does me inform." He leaves the stage and the A.O.E.

END OF ACT 2—(That was nice and short.)

ACT 3:

In this workshop fitted up with all the latest gadgets, a few members of the audience are seen poking here and there, and two are trying to lift something from a pit.

The Engine Driver blows a whistle. "Now while I play a symphony you can all get along with whatever interests you. Do lift that body out of the pit, and in future watch where you are stepping backwards. It makes such a mess and does the oil no good."

The audience is left to its own devices to wreck anything that they wish.

END OF ACT 3—(Again short, but rather noisy.)

ACT 4:

The stage directions are a little complicated.

The stage is blacked out. The sole illumination being a pencil beam first directed to the top left side, where the Chief Animal Director is shown perched on a microscope stage supported and held in place by his Scouring Master and the Fairey in Camera.

The beam now flashes to another part of the stage leaving the C.A.D. in darkness so his supporters must be warned lest he be allowed to fall, and so upset the even tenor of his whey.

As each scene flashes before the eyes of the audience, they are spellbound or dumb providing, of course, there is an audience. Anyway, it is all very dark and uncertain.

SCENE 1:

The C.A.D. on his micro stage.

SCENE 2:

(The beam now flashes to another sector of the stage.)

The envy of milk maids rushes madly around amongst his cows in the milking shed, calling all the time to this one and to that one, "Let it down, push it up, move over, come here, get up." All is movement on the lines of modern ballet with music provided from an old wireless set going full blast, with intrusions of dull wet splashes.

SCENE 3:

(Beam moves to yet another sector.)

Lord Bull resting in a cow yard crush, and pointing to an animal or part of an animal, "Now, you jokers, that's what I mean by a real short horn. What about it, Early Ram?"

"Yes, yes, I agree, right to the tup tip, or tip tup," E.R. replies.

SCENE 4:

(Beam moves to yet another sector, if there are any left?)

Peter Porker gazes languishingly into the eyes of a sow. They both have their fore limbs resting on the edge of the pen. "If you were the only girl in the world." The sow: "Grunt, grunt."

SCENE 5:

(The whole stage is re-lit, or bursts into sight.)

In a flutteration of feathers the Foul of the Air, or Fairey Queen, trips onto the stage. (So would you if you wore overboots, protective clothing and drove a hold Olden.)

She speaks: "Come in, come in and wash your feet. If you must breathe then be discreet, for these birdies are delicate, and easily succumb to things they ate."

The stage is plunged into darkness.

END OF ACT 4—(A bit confusing but is it not?)

ACT 5:

The scene is changed (thanks be for that, anyway).

Here now is a large open space cluttered with rubble, and with much brick dust in the air. On a series of tressles are displayed a variety of glass bottles of all shapes and sizes. Away at the back seated upon an up-turned barrel is the Great Spirit, while clustered around him are a mixed lot of relations or near and dear friends—Jack of the Veggies, doing a little quiet grafting, the Prime Spirit of the week or Puck, and his bosom pal the Footie Fanatic, roving here and roving there with never a ruck in the passing.

The Alchemist, as usual surrounded by his stinks.

The Lord of the Earth and the Lord of the Flies. The L.O.T.E. hums to himself the dotty ditty, "Get Moving and Mowing, Planting and Sowing, just a tiny bitch more." The L.O.T.F., looking into his glass, mutters, "It looks like my killing bottle but it tastes better."

And so we leave the audience (if they have not already left), fresh from their travels and travails, refreshing themselves, with Murray water before returning to their own 'omes, wherever they may be.

THE END OF ACT 5

The end of the Pantomime. (Cheers, I thought we would never get there.)

EPILOGUE OR POST SCRIPT. (No, no more. Please, no more. I cannot bear it.)

What of the Demon King cum Dame? Well they are like Santa Claus, and Old Nick, it's only daddy being silly.

Good night.

ZANE TARTAN

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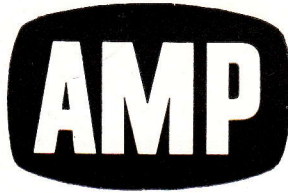
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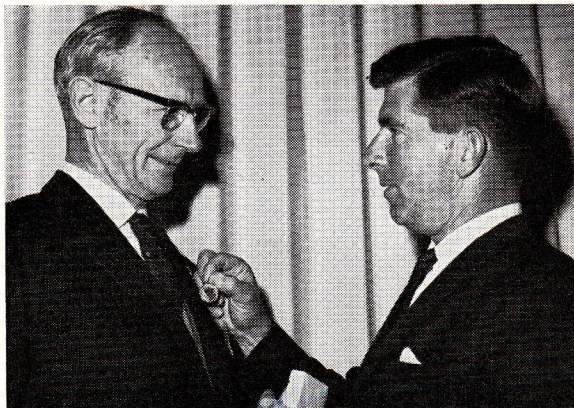


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R.O.C.A. AWARD OF MERIT



Jack Reddin receiving Award from the then president, Ray Norton.

The 1969 Award of Merit has been presented to John Willard Reddin. Jack has had a most distinguished career in agriculture in this State, particularly in relation to the many aspects of our meat industry. To appreciate his abilities, one has only to look at his record in all phases of activity in a busy life.

While at Roseworthy Jack was a member of a premiership cricket and football team, captained the first tennis team to bring the Inter-Collegiate Shield to Roseworthy, and in his final year became Senior Councilman. On graduation he began a close association with Mr. W. J. Dawkins and his Newbold Dorset Horn stud, and married into that family.

In World War II Jack was commissioned in 1941, became a platoon commander in the Middle East, then an Intelligence officer and eventually Company Commander, serving in Syria, New Guinea, Borneo and the Celebes. He even found time for sport in the army, at one stage becoming camp champion welter-weight and taking out a rifle shooting trophy.

His association with the famous Newbold stud has been for 30 years, but his interests did not stop there. He was an architect in the formation of the Aust. Poll Dorset Association, writing the constitution and serving a two-year term as president. He has been a member for over 20 years of the Aust. Society of Breeders of British Sheep, being a Past State President. He was the inaugural Chairman of the State Lamb Committee in 1960, is a director of the progressive Nelsons and Producers Meat Market, is a delegate to the National Farmers Union of S.A., has judged Poll Dorsets from N.Z. to almost anywhere you care to mention in Australia, and has written articles about and addressed many distinguished groups on his views on many aspects of agricultural production. Incidental committees which he takes in his capable stride are school, Gawler Show and Agricultural Bureau.

Roseworthy has always held Jack's interest and he has served as President of ROCA, and at a particularly active time in its career was on the Chapel Building Committee. He has served on the Advisory Council since 1961 and is currently extending his interest in education as a representative on the Standing Committee enquiring into Agricultural Education in S.A.

In addition to being such a useful person in the agricultural community, Jack is an extremely approachable, pleasant personality who has made many friends in the industry as well as in our Association. It is pleasing to many, therefore, to know that Jack Reddin joins the ranks of so many other distinguished servants of agriculture in this State and becomes the 1969 recipient of the Award.

INTRODUCING R.O.C.A's PRESIDENT



Ross Ford graduated from Roseworthy in 1960 with Second Class Honours. He spent some time after his graduation working as a seeding contractor on some A.M.P. blocks in the Upper South-East, but became interested in the Weeds Section of the Dept. of Agric. He moved from here to Roseworthy as Pure Seeds Officer. While at College Ross worked hard for ROCA, particularly becoming the mainstay of the Digest as editor. While here he also became interested in Accountancy and has now almost completed his course. This field has led him to seek employment with the Commonwealth Development Bank, where he is at present working as a Rural Officer. He is continuing his efforts as Digest editor, for which he must be commended, and in addition this year has accepted the job of President of ROCA. Those who know Ross realise how he will apply himself to the position and look forward to a year or two under his guidance.

PAST PRESIDENTS REPORT

It is my pleasure to present the 71st Annual Report of the Roseworthy Old Collegians Association.

As with any other association, each year we receive notification of deaths of members and naturally, from among the ranks of older men. It is with deep regret, however, that I include in this list Christopher Hurn, who graduated with his R.D.A. in 1967, was Dux of 1st Year Oenology in 1968, and would have graduated this year. He was killed returning to Angaston from captaining the college cricket team.

Other losses from our ranks included:

- W. Motteram, 1904-1907 (deceased 1967).
- A. L. Taylor, 1896-1897 (deceased April, 1968).
- S. C. Green, Associate Member (deceased September, 1968).
- L. T. Cowan, 1905-1907 (deceased October, 1968).
- W. E. Hawke, 1891 (deceased November, 1968).
- A. F. M. Mair, 1922-1925 (deceased April, 1969).
- W. G. Inglis, 1934-1935 (deceased April, 1969).

We naturally extend our sympathy to the families of these men.

OUR MEMBERSHIP at September 1st

	1969	1968
Life Members	626	621
Ordinary	211	211

This is an almost static situation, and I would commend to members an effort to influence other eligible men to join.

THE AWARD OF MERIT

I am extremely pleased personally to be able to present the 1969 Award of Merit to Jack Reddin. I have always admired his vitality and interest in all manner of pursuits with which he is associated. In the words of one of his sponsors, "Anyone capable of beating him for the honour would be a very worthy recipient indeed." The recommendation of the Selection Committee will meet with accord throughout our Association. Congratulations, Jack!

STUDENT AFFAIRS

The OLD STUDENTS' CUP was won this year by James Cooper, and a note of thanks was received from him by the Association for making the award possible.

GRADUATION BALL

I attended as your president and a guest of the students. I would commend it to all old students to enable them to see just how well present students can organise and conduct themselves.

OPEN AND FARMERS' DAY

These are days in which I am inevitably involved, but Open Day (Saturday, 18th October) is wholly student organised with an aim to publicise *their* college of which they are just as proud as we were. I might add they disclaim being so, probably just as much as we would have, but it shows. The football procession through Gawler proclaiming their undisputed ability in many activities, not only football, bears witness to this.

SUBMISSION BY ROCA TO THE COMMITTEE OF ENQUIRY INTO AGRIC. EDUCN. IN S.A.

The original committee of John Gore, Bill Edge and Frank Pearson found it difficult to meet so a sub-committee from the executive of John Gursansky, Cliff Hooper and myself as Chairman/Secretary, considered the question at length and finally presented a submission and in addition one in its entirety from Brian Wesley-Smith. I have here a few copies of our report should anyone be interested.

AGRICULTURAL TECHNOLOGISTS OF AUSTRALASIA

As a report on this is on the agenda and you have to hand a report which I have compiled, I feel no more need to be said except that a Federal Association does now exist to which John Gore and myself are delegates.

AGRICULTURAL EDUCATION FOR ABORIGINALS

The sub-committee formed at the last A.G.M. has met only twice but we have been in contact. A lot of leg-work has been done and a scheme involving the three Departments of Aboriginal Affairs, Education and our Agricultural College, with help from individual members of ROCA, is in the offing.

BRANCHES

As your State president I attended both the Upper Murray and West Coast Reunion, and although I wangled a trip to Naracoorte at the normal reunion time, a meeting didn't eventuate. The later date on which it was held found me in bed with pneumonia. I would commend to all branches, as I did in the May Digest, a pattern from the West Coast branch who run an informative, well organised and entertaining reunion and much of the credit goes to the hard working secretary, Des Habel. Formation of a Northern Branch is being attempted by Bruce Wigney (Box 50, Riverton). He would have made a plea for members himself but has been recently married.

THE COMMITTEE

No president can function without a committee. I sincerely thank all members for interest and attendance. It is considered ill-advised to single out people I know, but no member will begrudge mention of Cliff Hooper—stalwart enroller of new members, treasurer, and general fund of information. John Gursansky — keeper of records, good memory of what has gone before and always willing to organise, and Ross Ford, who efforts with the Digest, despite two changes of address, one change of job and spare time studies, has ably edited our publication which has done so much to liven up our Association.

In conclusion, I would like to thank those members who have responded to requests by the committee. This term in office has been a most pleasing one for me. It has seen a few things being done in the name of ROCA and to further the interests of diplomates generally.

I would hope that this stirring within this Association will continue.

RAY NORTON

STUDENT ROLL 69

R.D.A.T.

Fourth Year

McCALLUM, K. A.
McGOWAN, C. J.

OENOLOGY

BABIDGE, M. H.
BATTAMS, W. R.
CHAN, A.
FALKENBERG, B. A.
GLAETZER, J. C.
SCARBOROUGH, I. R.
SHAW, P. L.

YEAR III

BASS, A. W.
BROOKMAN, G. T.
BURNE, P. M.
DORMAN, R. K.
ELLIS, J.
FRIEDRICH, P.
FROMM, D. J.
GERLACH, A.
GOODE, C. B.
HANSEN, D. E.
HEIN, W. R.
HODGSON, P. J.
INVERARITY, G. R.
KAESLER, F. E.
LIEBELT, W. J.
LUCK, B. K.
MACZOWIACK, R. I.
MILLER, R. C.
OLIVER, A. T.
PEARCE, G. J.
PICK, A. W.
POLKINGHORNE, B. T.
REDDEN, P. F.
STEWART, R. J.
ULBRICH, M. D.
WOOD, M. A.
WURST, C. D.

YEAR II

ASHTON, B. L.
ASHTON, P. M. S.
BARNES, A. J.
BLACK, I. H.
BOLTO, A. T.
BOURNE, G. J.
BOWEY, P. H.
BRIDGE, T. J.
CARROLL, P. D.
CHAPPEL, J. B.
CHRISTOPHERSEN, N.
CROSBY, J. R.
CUMMING, A. G.
DAWSON, R. P.
FEHLBERG, R.
GRAVESTOCKS, D. W.
GROWDEN, B.
HOLMES, N. A.
HOPKINS, C. E.
LOXTON, F. J.
MANSFIELD, P. J.
McLAREN, L. D. M.
OLSEN, C. D.
PEARCE, I. S.
PRANCE, T.
RADY, G. L.
RAY, M. A.
RUMBALL, P. J.
SHALLOW, M.
SNODGRASS, D. W.
SPENCER, D. C.
SULLIVAN, J. C.
WAKE, T. M.
WRIGHT, L. D.
YEATMAN, T. M.

YEAR I

ALLEN, T. J.
ANDERSON, A. J.
ATYEO, W. V.
BOTH, J. E.

BROWN, J. C.
BURGE, G. W.
BURROWS, G. K.
BYRNE, T. P.
CAMERON, J. S.
CHAMBERS, D. R.
CLARK, M. M.
COOMBS, I. L.
COWELL, I. A.
COX, D. L.
DOHNT, S. J.
DUFFIELD, G. J.
DUTSCHKE, K. E.
EVELY, J. R.
GRAUE, I. E.
GREGURKE, A. W.
HABNER, K. K.
HANNAY, J. N.
HERBERT, P. J.
LIEBICH, D. K.
MADIGAN, M. C.
McCAULEY, A. E.
McFARLANE, A. G.
McLENNAN, D. J.
MICHELMORE, C. H.
MUGFORD, J. D.
NOURSE, R. B.
PATON, D. A. G.
PRISK, G. J.
REVELL, M. B.
RICHARDSON, A. H.
RYMER, P. J.
SCHICK, P. C.
SHEEHAN, G. H. G.
SPRIGG, N. R.
SMITH, D. H.
SMITH, J. P.
SMITH, R. N.
SNEWIN, A. J.
SYMES, G. I.
THOMAS, C. A.
THOMSON, R. H.
TURNER, J. F.
UPPILL, A. O.
WILKINSON, R. J.
WILSON, K. L.
WRIGHT, S. J.

