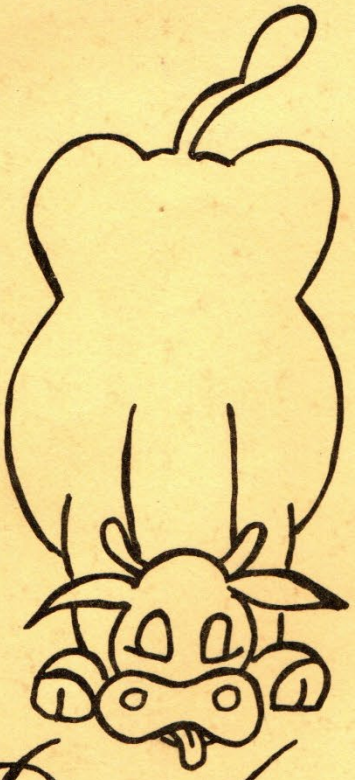
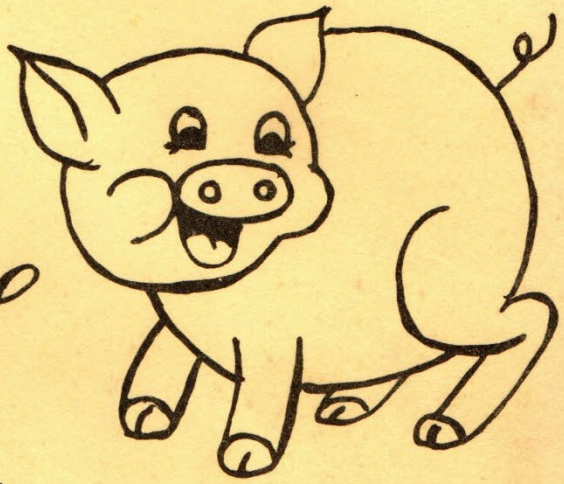
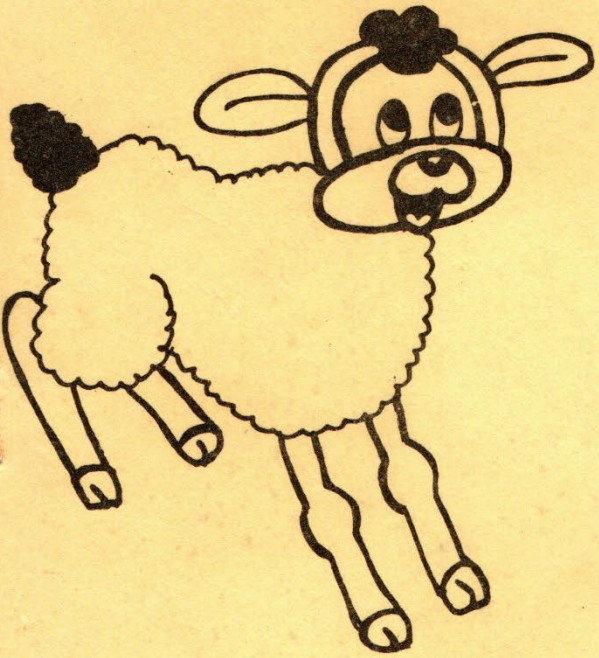
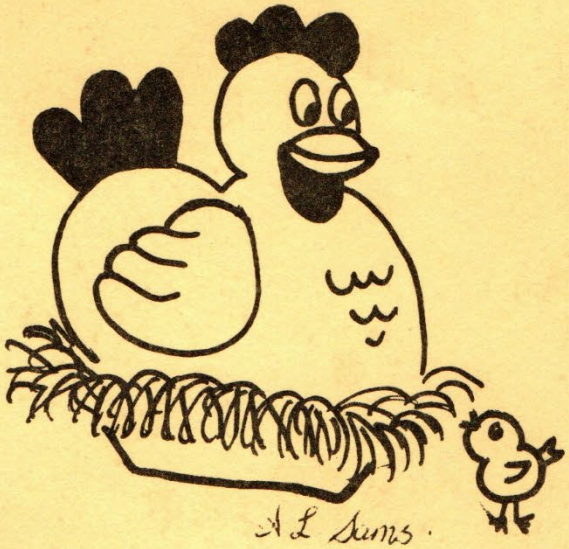
Bulletin of the N.S.W. Association of Agriculture Teachers





B.A.A.T.





Vol 11. 1987



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PRESIDENTS REPORT

After the last BAAT Ian and I realized that something was missing, "The Presidents Report"

Welcome..... to all the association members. Looking at the current list of financial members, my welcome is going to very few people. Approximately 50 out of a past membership of 250 plus. If you are one of the MAJORITY receiving your second copy of BAAT please.....consider the associations operating costs. Our fees are very reasonable compared with many other associations, and remember the fees are tax deductible at the end of the financial year.

Ian mentioned in his last Editors Message that he would greatly appreciate articles from the masses. As yet he has had a very poor response to his request. The only people to contribute so far have been,

* Glenn Innes
* Pymble Ladies College
* Merriwa Central
* Morisset High
* Bruce Ramsay (Studies)

Ian has put a mammoth effort into the production of BAAT. He deserves our support and congratulations.

Planning for the next Biennial Conference is well underway. Tocal has been tentatively booked as the venue for the conference. The college at the moment is compiling a possible list of services and facilities to suit our proposed theme, "Hands on Agricultural Experiences" Even though the conference is a long way off, I will endeavor continue to keep everyone in touch with the planning.

On the personal side, I am writing this report from the Cabrummurra Ski Club, after a great day on the snow. Heather, my daughter, now almost one is in her second year on the snow. Last year, at 5 weeks of age, she was fairly quiet on my back. She now giggles and jumps about as we travel over the bumps. She improved her vocab today, from cow, bird, sheep, etc... with the addition of snow and a version of mountain.

IVAN GANT
Merriwa Central.

EDITORS MESSAGE

Amidst the Half yearly exams and the Trial HSC this issue comes out of the computer, via some different channels to you. In an effort to cut costs, the executive have been exploring alternative ways of publishing and posting BAAT.

We have found that "The Joint Council of NSW", a recently formed body, will take on the publishing and posting of BAAT, as well as send reminders to those of you that have not YET paid your subs. If all goes well you should receive this issue in the 4th week of term. We are hoping this will enable the association to produce a professional document worthy of the energetic staff spread across the state.

Often we get depressed in that we are a small department within the school, usually forgotten and infrequently receiving a pat on the back for a job well done. Well dont DESPAIR.... I have written to the ABC in the hope of gaining some publicity for the innovative and challenging syllabus that we are spending so much time developing in the senior school.

The executive, with the help of others are also working very hard to provide support and recognition for Agriculture on our behalf. An exciting inservice has been planned by Bruce Ramsay, for the Hunter Region, on the 28th of July at the Singleton Teachers Centre. This promises to be a rewarding experience, providing some REAL support in the implementation and evaluation of the senior ag syllabus. TRY and be there.

For those of you who may have missed out on the first edition of BAAT, or have forgotten who to contact, I can be contacted,

(a) At School -

Ian Foreman
C/O Morisset High School
Bridge Street
Morisset 2264.
Phone: 049-731101 OR

(b) At Home -

Ian Foreman
55 Lake Road
Balcolyn 2264
Phone: 049-731624 OR

(c) FOR FREE -

Via Telememo, (ie using the modem, and the word - processor on the computer, to my mailbox, IA.FOREMAN

PLEASE.. We all have good ideas that we use, take five minutes to jot them down on paper so that we can share them around. This bulletin is what YOU.... make it. Please send in any articles or information for the third and final edition for this year, ANYTHING WELCOME.

The other members on the executive of the association,

1. THE PRESIDENT - Ivan Gant.

FROM: Merriwa Central School
Merriwa
Ph: 065-487237 (AH)

2. THE SECRETARY - Bob Derrick

FROM: Coolah Central School
Coolah
Ph: 063-771227 (AH)

3. THE TREASURER - Nigel Cox

FROM: Singleton High Schl.
Singleton
Ph: 065-722023 (AH)

HAVE YOU SEEN ??

We all get snowed under with paper work and official looking documents, however, Bruce Ramsay has sent me a collection of the more recent documents that really deserve a second look before they are filed in the round filing cabinet... There is some good support material that either dont land on our desks or we simply ignore.

1. The 1986 HSC examination Report - Bruce has spent a lot of time and effort, to make sure that the comments are meaningful and helpful to us on the front line. Even to the extent where not all questions are commented on, to avoid repetition.

2. Administrative Circular No 58 1986 - The deletion and substitution of Electives in the 3Unit Agriculture Course.

3. Memorandum To Principals 2/9/85 - Risk Of Contracting Q Fever.

4. Curriculum Ideas - Practical Work and the BSSS Agriculture Course.

5. Curriculum Ideas - Agriculture in Secondary Schools

6. Curriculum Ideas - Effective Skills teaching in Agriculture.

GOSSIP AND NEWS

I haven't received ANY.....

On the local scene, John Hurst and myself have experienced another classic example of bureaucratic red tape. In an effort to reduce the drainage problem on the school farm we borrowed a plumbers backhoe to dig drainage lines. We also purchased a rear 3pt linkage scoop for the tractor to fill the agpipe drains with gravel and then cover the drains with topsoil.

In this effort to cut costs, we must have offended some of the local contractors, for after about 30 minutes work, the local Department of Industrial Relations Inspector arrived on the scene. Prompted by complaints of students riding on the mudguards of the tractor - a claim he could not substantiate, (probably from contractors). He then asked to see Johns Backhoe operators certificate (which he did not have). He then asked me - wait for it, for my earthmovers certificate.

The inspector then handed us numerous application forms, (all of which had to be accompanied by a $20.00 fee) and warned us of the severe nature of our actions.

So what of our initiatives in this venture. After we consulted the Principal, the Inspector turned up at the office, (omitting to inform the Principal of his arrival) and at the present time, he is still trying to decide if in fact Ag teachers need earthmovers training/certificates.

Implications - John and I feel that we all should apply to the Department for 6 months off to train for our earthmovers certificates in some central spot like Brisbane.....

IAN FOREMAN

J. A. SUTHERLAND AWARD.

The N.S.W. Agricultural Teachers Association is responsible for making this award. The award was initiated to bring educator recognition to an innovative teacher in agriculture.

The N.S.W. Agricultural Teachers Association committee reserves the right to present the award on a bi-ennial basis.

When this award was originally initiated some of the following ideas were suggested as guidelines :

- outstanding teacher
- creation and sharing of material etc
- promotion of Agricultural education etc..

To help the committee to finalise the J.A. Sutherland Award, submissions would be appreciated. Mail you suggestions to the President (Ivan Gant). Include in your submission the following,

1). Name of the worthy Teacher/Educator of Agriculture.

2). A brief resume

3). A vitae, keeping in mind the reason for the award.

This is a great way to provide recognition for people who have made contributions far and beyond the call of duty in the education of future agriculturalists. PLEASE help us, by submitting suggestion for this award, so that it can be presented at the next Ag teachers Bi-ennial conference.

AGRICULTURE TEACHERS SPECIAL INTEREST GROUP

The NSW Teachers Federation has a Special Interest Group for teachers of Agriculture. If you are unable to attend SIG meetings, you can be a corresponding member and receive minutes of meetings and have an opportunity to participate in the meetings by correspondence with the Federation.

The SIG is able to have an input into Federation policy because it has direct access to the Federation executive.

WHAT DID THE SIG DO IN 1986?.

* Regular meetings were held.

* An official Federation deputation, led by Senior Vice President Phil Cross, met with two senior Departmental officers. Although no full reply has yet been received, the following matters were raised:

* Class sizes including related safety aspects applicable in Agriculture teaching.

* Concessional periods for Agriculture teachers who are responsible for farm management and curriculum development and programming in Agriculture.

* Request as to the status of, and any planned implementation programme for the two documents headed. Safety in Agriculture Courses and Animal welfare. Both documents have far reaching implications in relation to costs and working conditions.

* The future of Agriculture consultancy and support services.

* Request that the Diploma qualification from Hawkesbury Ag. College be gazetted as satisfying requirements for appointment as Head Teacher Agriculture.

To date, the only matters where any result has been seen are:

1. The Hawkesbury Ag. College Diploma in Applied Science (Agriculture) has been gazetted - 14 August 1986, gazette number 14, page 129.

2. An Agriculture consultant has been retained for 1987.

3. In a memorandum to Principals (dated 18th September 1986, signed by BS Gillet, Assistant Director General, reference 86/181 [s-580]) Agriculture was specifically nominated, on page 5, as a subject where concessional periods could be allocated in acknowledgement of additional work created by the nature of the subject.

WHAT WILL YOU, AND THE SIG, NEED TO DO IN 1987?.

1. Write to the Federation and become a member of the SIG.

2. Request from your Principal a concessional period allowance of at least periods per week to administer your subject within the school. If unsuccessful, you are advised to consider refusal of such duties as stock records, farm duties over weekends and vacations, ordering of feed and equipment etc.

3. Any school wishing to conduct a campaign to reduce practical class sizes in agriculture will receive Federation support and advice in the conduct of their campaign.

4. Write letters to the Minister for Education, members of parliament and the Director General of Education about problems experienced by teachers of Agriculture, particularly highlighting the safety aspects involved.

5. Attend your local Federation Association meetings and make our colleagues aware of Agriculture teachers problems.

IF YOU ENCOUNTER ANY PROBLEMS IMPLEMENTING ANY OF THE ITEMS IN THIS BULLETIN, CONTACT YOUR FEDERATION ORGANISER.

Authorised by Vic Baueris
General Secretary NSW
Teachers Federation.

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SENIOR AG SYSTEMS WORKSHOP

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The senior Agricultural syllabus currently in schools was distributed for implementation with few support materials. Initially, it appeared that the syllabus required teachers to cover a great deal of content while devoting more time in class to practical work. A common complaint was that there was as much content to cover in too little time.

However, in teaching the Agriculture syllabus, teachers have access to an effective and powerful method of learning. Practical skills are, necessarily, emphasised so that students experience agriculture and learn by doing. But this is not where it stops. Students should be able to experience, learn from those experiences, develop ideas from their experiences, link ideas, question, make conclusions, seek out further information, conceptualise and apply these concepts. This is the philosophy of the senior Agricultural syllabus. In doing this, some areas of the course would be covered in far more detail than others.

The real advantage of the course is that students, learning in this way, should develop a process or method of learning which can not only be used in Agriculture but in all aspects of life in and out of school

Signed: An Enthused Agriculture Teacher.

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THE PURRFECT ANSWER

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Faced with unending threats to their industry, the nations's sheepmen have secretly been seeking alternative production to counter animal libbers, big business, and trade unionists.

According to a document doing the rounds of the Sheepmeats Council, cat ranching will be the livestock industry of the future.

On the proposed pilot ranch there will be an initial population of 1m cats, each producing 12 kittens a year. Assuming an average price of 30c per hide, the sale of 12mm hides after one year will return $10,000 a day.

However, if a man can skin 500 cats a day at a wage of $40 a day, the 100-man labour force will reduce the net profit to only $6000 a day.

For cat food, a rat ranch is proposed, in which rats multiply four times faster than cats, so there are four rats per cat per day. The rats in turn will survive on the cat carcasses at the rate of one quarter of a cat per rat per day. In this self supporting enterprise the cats will eat the rats, the rats will eat the cats, and the skins will be sold as profit.

Extra income is also expected from a government grant of 4c per rat tail, not to mention the by-product of gut for tennis racquets and whiskers for wirelesses.

And, the document concludes, an exciting new prospect is the crossing of cats with snakes so they can skin labour costs and doubling the output.



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1987 NATIONAL CONVENTION AGRICULTURAL AND VETERINARY CHEMICALS

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This year the Agricultural and Veterinary chemicals (AVAC), representing 57 companies involved in the production and Marketing of farm and household chemicals, will open the doors of the industry to the public at its National Convention.

A new Approach

For the first time, AVAC will hold its National conference with a *Public Open Day*, as well as a major *Public Information and Education Display*.

The Sydney showground has been selected as the venue to allow maximum public attendance and to provide the facility for the demonstration of the many aspects of farm and household chemical use, regulation, testing etc.

The concurrent National Convention and Public Display will be held November 8 - 10.

Convention

The National Convention will feature a line-up of informative speakers from the industry and outside, including overseas guest speakers.

In the Public Display the emphasis will be explaining to the public why chemicals are used; how they should be used; how they are tested and regulated; how they are safely transported, stored and controlled etc.

AVAC will widely promote the Public Day. The Convention will be held in the Banquet Hall at the Sydney Showground.

Public Display

The Public Display will be held adjacent to the Convention in the Ford Pavillion. It will be open on Sunday November 8 to facilitate Public attendance and will be promoted through the media.

The display is being mounted in the Public interest and already a number of major media have indicated support for the concept.

AVAC has recently carried out public opinion research and findings indicate that there is widespread anxiety in the community about the use of Agricultural and veterinary chemicals, as well as home products.

Research shows that this concern and anxiety is based largely on ignorance. People do not know what testing is done on chemical products, or on food to detect any residues. Some doubt there is adequate testing. The public is unaware of the regulatory procedures and standards that exist. In many cases, people see the need for chemical products, but are frightened of them.

AVAC believes that this Convention and Public Display will be an important turning point in better informing people about vital issues relating to their health and environment.

How The Display will work.

The Public Display will be staged with two types/levels of involvement:

a. Participants. Key Government and regulatory bodies including the National Health and Medical Research Council, the Federal Department of Primary Industry, the Department of Health, CSIRO and State Departments of Agriculture (which monitor food residues at state level) will be invited to mount displays or information stands in the Public Display at no charge other than their own setting up costs.

Already, several major departments or groups including the NHMRC, DPI, CSIRO and the NSW Department of Agriculture have indicated they will support and participate in the Public Display.

The Minister for Arts, Heritage and Environment, Mr Cohen, the Australian Federation of Consumer Organisations and the National Farmers' Federation also expressed support for the concept.

b. Sponsors. Obviously, such a major undertaking has to funded. At the same time, the industry needs to demonstrate how it self-regulates; how chemicals are developed, tested, manufactured, transported and stored safely, etc... Therefore, companies will be selectively invited by the Organising Committee to mount displays that are informative and in the public interest.

These will be based around a theme designed to best inform people visiting the display in issues of concern to them. (see Plan of Public Display attached).

Schools Day.

Tuesday, November 10 will be designated a Schools Day. The Convention will be closed to industry on this day to allow industry planning and discussion. The public display will continue with special guides available for school groups to conduct them through the display and answer questions or assist project groups.

EDUCATION

Although a wide variety of full-time, award courses is offered by higher education institutes throughout Australia, the participation rate of country people in tertiary education remains very low.

This is the central point of a submission to the Minister for Primary Industry, John Kerin, and the Education Minister, Susan Ryan, by a delegation of agricultural education academics from across Australia.

They point out that only 7 per cent of boys and 10 per cent of girls from country schools go on to higher education, compared with 27 per cent of both boys and girls in urban areas. In a wider context, just 25 per cent of Australia's Rural community undertake any education or training past year 10, a rate that compares very unfavorably with participation of 90 per cent of the EEC's rural community in further education, and 50 per cent of rural people in the USA and New Zealand.

The reasons for this low rate of participation are complex, including isolation, lack of access to colleges lack of time, and lack of "relevant" courses. The biggest obstacle, however, seems to be lack of motivation. According to the submission, there is little realisation in Australia of the importance of higher education to the community's and the country's economic and social success.

Education is most often seen in the country as a springboard out of rural districts. This view is supported by the fact that almost all those children who go on to higher education leave the area never to return. Agricultural education itself is still resisted by many farming people, who have the idea that you don't need education to be a farmer.

The delegation stressed that the rural education programmes offered by agricultural CAE's are valuable. But members believe a variety of new courses should be developed to attract a wide cross-section of country people. The Agricultural CAE's want to innovate with a mixture of methods including open-learning, informal outreach programmes. These would use new communication technology, including computers, satellites, electronic mail and the like, to reach as many people as possible and allow them to participate in education at home.

The emphasis in the new rural education programmes will be on informing people. They will concentrate on training leaders, and will increase understanding of market forces, the world economy, change in the community, and many other matters that affect rural life. The delegates point out that an educated rural community, able to adapt to change, will play a pivotal role in Australia's future social and economic development.

THE 1986 CHARLES MULLAVEY MEMORIAL AWARD

PRESENTED BY THE NSW ASSOCIATION OF AGRICULTURE TEACHERS

Each year, the Agriculture Teachers Association presents a cash prize and a memorial shield to the Higher School Certificate candidate who scores the highest mark in the 2 unit Agriculture paper. This year, the

award was presented to Tanya Vincent, of Telopea, who gained 100 marks in this subject - the maximum marks available !!!

The award was given to Tanya by Mrs Mullavey at a special assembly at James Ruse Agricultural High School on Monday 18th May. The late Mr Mullavey was an Inspector with the Department of Education for many years. His major responsibility was the administration of Agriculture teaching in NSW.

Tanya studied Agriculture at James Ruse Agricultural High School. Her teacher was Mr Michael Denham. Tanya is currently studying Medicine at Sydney University. She says that the understanding of Science and Biological systems obtained from the study of Agriculture at school are proving helpful to her in her University studies.

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STATEMENT ON "WHAT CONSTITUTES AN EXPERIMENTAL UNIT"

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It is important, particularly in animal experiments to recognise exactly what is an experimental unit and what is a sampling unit. For instance, in a comparison of rations for either chickens or calves or lambs, if the animals are being fed a common ration, then an experimental unit is the pen of the animals NOT the individual animal. Therefore, if group feeding of animals is being undertaken, then a replicate of each pen would be required, thus, if ten chickens are penned together and fed the same ration, more pens of ten chickens are needed before measurement of the variation among units treated similarly can be made. This holds even if measurements like body weight are made on an individual chicken basis.

There are times, however, when individual animals can be regarded as the experimental unit, examples of this are if the animals are fed individually (a difficult undertaking for most schools) or if a particular treatment is being applied to each individual animal within the pen. For instance, if you are comparing the effect of giving a trace element or vitamin by individual injection, then your experimental unit is the animal.

There are times when you will need to take a sampling unit. For instance, if you are trying to measure the quality of fruit or vegetables, when taking sampling units from within the experimental unit, one has to be careful that the sampling unit is taken strictly at random. Teachers and students are urged to read or obtain photocopies of chapter 6 'Principles of Experimental Design' in Steel and Torrie "Principles and Procedures of Statistics with special reference to Biological Sciences", McGraw-Hill Book Company, New York.

Professor H. Lloyd Davies
Professor of Pastoral Science
University of News South Wales

COMMERCIAL POULTRY BREEDING



Of all the livestock producing industries, the poultry industry undoubtedly has had more scientific technology infused into it than any of the others. In meat chickens, in just over 20 years, the growth rate of the broilers has been doubled, and the amount of feed required to produce a given weight of broiler meat has been halved. Large improvements have also been made in the layer, turkey and duck performances. Some of this improvement has been brought about through improved husbandry, improved disease control and improved nutrition, but a significant contribution has also been made by the application of genetic theory.

There are two important formulas that need to be kept in mind when considering poultry breeding.

Firstly, the phenotype of the individual is determined by its genotype and environment. Even though geneticists are vitally concerned with the genotype they must also pay a large amount of attention to the environment. This is so that they can limit the effect it has on the bird in order that the phenotype is as representative as possible of the birds genotype, making the identification of superior genotypes possible.

Secondly, the amount of progress made in improving one character is dependent on the heritability of the character, the selection differential (how much the selected group differs from the population average) and the time between successive generations.

Poultry lend themselves extremely well to the application of genetic theory. Their size is ideal, enabling large numbers of individuals to be housed under the same "environmental" conditions not being too small to make identification and measurement of characters difficult. They have very high reproductive rates enabling high selection pressures to be applied and they also have relatively short generation intervals. A comparison of these features with cattle serves to highlight the advantages poultry have from the genetic viewpoint.

The modern poultry industry began about the mid 1950's when the industry first employed geneticists. At this time the broiler birds were the discard cockerels produced from layer matings. Today layers and meat chickens are very different from one another and there are also many different types of birds with differing production capabilities within each type. Specific types have been developed for different markets, e.g. in layers there are brown egg producing birds and white egg producing birds.

The present Australian Poultry industry tends to be confined to a relatively small number of companies. In meat chickens the main companies are Inghams Enterprises, Steggles and the Hyline/Westons Group. These companies are fully integrated poultry producers in that they control the whole operation starting with basic breeding, moving through the grandparent and parent stages, to

commercial broiler growing and finally processing and marketing their own birds. In layer operations notable breeders are Tegels, Hyline, Steggles, Hazletts and Rochadale. These companies supply either parent stock or commercial day olds or started pullets to commercial egg producers. Steggles and Tegels are the main breeders and producers involved in turkeys accounting for a very large percentage of the total Australian production. The same two companies are also involved heavily in ducks but there are a large number of other small producers and breeders as well. Game birds area bred by smaller companies only.

In commercial breeding companies there are generally a number of different levels involved in the breeding programme.

Nucleus

Grandparent

Parent

Commercial Bird

This system enables strains with different characteristics to be used at the stage where they are economically best suited, and can enable more emphasis to be given to the characters that are important at that stage in those particular strains.

This structure obviously necessitates a time delay from nucleus to commercial level and generally this is of the order of 18 months to 2 years. With such a time delay it is important that the breeder is looking well into the future to try to predict future changes. If he has to make a change in the emphasis of his programme, he will need probably at least a 3 year lead in time and with 2 years of stock already in the pipeline it will be 5 years from now before he can probably make the change.

Commercial breeding programmes need to ensure that they produce the maximum gain per dollar invested and that they pass improvements made at nucleus level through to the commercial product as quickly as possible.

When designing a breeding program, many factors need to be known and taken into account. Firstly there are many factors that the breeder would like to improve - these are virtually all the features of the bird, and the list would be endless. However, the more characters one selects for, the less overall progress will be made. Therefore the number of characters receiving attention has to be reduced to a workable few, with the most important economic factors receiving the most attention.

Secondly, genetic correlations between characters need to be known. If 2 desirable characters are positively correlated, if we select for one only, the other will improve as well. One example of this is growth rate and feed conversion ratio in meat birds. However, if 2 desirable characters are negatively correlated then by selecting for one of them we reduce the other. If this is the case, ways have to be devised to try to not let one deteriorate too much.

Thirdly, the heritability of the character is important. For characters with high heritabilities the individuals phenotype is a good measure of its genotype and a simple mass or individual selection programme can be used. If the character has low heritability then selection methods based on the performance of the individuals relatives must be used, involving a more complicated pedigree programme.

It is also important to know how the character is controlled whether it is controlled by a single pair of genes (simple mendelian inheritance) or whether it is a multigene character. Characters controlled by single gene pairs are obviously easier to select for. The recessive gene is easier to select for than the dominant form, since the dominants may be carrying hidden recessive genes unless they have been eliminated by testing to 'tester' line. Examples of mendelian inheritance in poultry are the dominant white gene used to ensure white broilers,rapid and slow feathering (sex linked) used to sex day old layers and broilers, and silver and gold (sex linked) which can be used to colour sex. Unfortunately, many of the reproductive traits and production traits are controlled by many genes, making selection more difficult.

Dominant White Gene

LL ii
White sire Coloured Dam

Li
White Chickens

Rapid vs. Slow Feathering Gene

kk K_
Rapid Sire Slow Dam

kk slow cockerel

K_ rapid pullet

Another very important point to consider when designing a programme is to ensure that the character cannot be improved by means other than genetic, e.g. through nutrition, husbandry, environmental control or disease control. To this end the geneticist must be in constant liaison with these disciplines to ensure that valuable selection pressure is not wasted. Any genetic solution is likely to be a slow and costly one. The programme must also fit into a workable farming structure, allowing all the recognised systems of husbandry and disease control to operate.

The actual systems of selection vary from company to company depending on the level of sophistication of the programme and the monies available.

Strain or breed selection is a relatively simple method of selection. The method relies on seeking out strains or breeds which, when cross, give better performance than the current cross. As there may be 10 or more strains in a programme there are many different combinations that can be tested when it is possible that reciprocal crosses can give different results (i.e. A0 x B0 may give a different result than B0 x A0). Such testing is normally a regular part of the breeding programme.

Developing inbred lines (with a view to producing significant heterosis in the offspring) is a selection technique used by some breeders. However, difficulties can arise in maintaining the pure inbred lines as inbreeding generally results in a depression of fitness characters.

Reciprocal recurrent and recurrent selection are also techniques that can be used.. Here birds are selected for their combining abilities by performing reciprocal crosses or crossing to a tester line, and retaining those birds which give the best performance.

By far the most common method of selection is within strain selection and this is the back bone of most commercial breeding programmes. The method is based on the principle that the desirable genes involved in the multigene traits are gradually accumulated together in the line.

Breeders generally use 3 methods to measure their genetic improvement. Control lines which are unselected, can provide a measure, although maintaining a truly random bred population is often extremely difficult. In addition, space may be at a premium and it may not be possible to afford the expense and space of running a control line. A second method is to compare each generation under the same sort of conditions. This is difficult, particularly under commercial conditions where many factors change from year to year. The third method is to compare birds against independently maintained control lines and competitors stock in random samples tests which are conducted regularly by Departments of Agriculture.

Applications of genetic breeding to practical High School experiments I feel is limited. Because of the quarantine restrictions imposed by most commercial breeders to protect their stock, it is not generally possible to visit breeding farms. However, it may be possible to visit some commercial farms where the end product can be seen. Little can be done in setting up crosses to demonstrate feathering or colour sexing as it is difficult to obtain birds with the correct genotypes. It may be possible, however, to obtain commercial broilers or layers which are feather sexable, sex these at day old and verify the sexing at 6-7 weeks when the birds can be sexed visually. A further experiment may be to grow commercial broilers alongside laying stock to demonstrate the differences in growth rate and body conformation.

FA Piggot

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AGRICULTURAL EQUIPMENT

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Ivan Gant, like most Ag teachers is always on the lookout for equipment, "On the Cheap...." to enhance the educational potential of the Ag plot. Most of us have found great second hand machines, only to be faced with red tape that prevents us from obtaining funds to purchase this gear.

Recently Ivan purchased a second-hand, 3 row precision seeder for $200.00 from a clearing sale. When the Department was approached for funds, they stated that a NEW machine must be purchased. When Ivan sent the brochures and the $4000.00 price tag in, the obvious reply came back, that the seeder was out of the question.

The following copy of a reply from Duncan Sutherland, may provide some hope for future *"Bargains"*,

"Thank you for your letter raising the matter of purchasing second hand equipment. I have raised the matter with the Director, Audit and I hope to produce an amendment to the School Manual on Financial Management to allow the purchase of certain types of second hand agricultural equipment in specified circumstances.

In the interim, your Regional Director may approve specific purchases provided that it can be made clear that the following conditions are met:

(a) the worthiness of the item can be certified by an appropriate person - usually a dealer:

(b) the purchase is for an item not-in-contract or not on the requisition - this rules out tractors and rotary hoes;

(c) the purchase represents considerable economic saving; and

(d) there is a sound educational rationale - this means that the item will assist in the implementation of an educational program being planned or taught in the school.

D. SUTHERLAND.
Inspector of Schools

5/6/87.

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EXAM COMMITTEE REPORT

TO THE AGRICULTURE SYLLABUS COMMITTEE

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The Board publication, "1986 H.S.C. Examination report - Agriculture" discusses the responses to, and the marking of, a selection of questions from the 2 unit and 3 unit courses and the research project. In addition, the Board has agreed to publish a selection of graded sample answers to the 1986 paper. This is something which has often been requested by teachers. It will be especially useful to those who do not have the opportunity to participate in marking.

Examination marking was conducted from 12th November until 26th November. There were 47 assistant examiners and six senior assistant examiners. There were 1,996 2 unit candidates and 241 3 unit candidates.

The procedure for marking is that the Examination Committee initially nominates a marking scale for each paper. The S. A. E.'s select the sections of the paper they would like to coordinate. The specific questions or parts of questions are than allocated to particular assistant examiners (A.E.'s) or groups of examiners. Expected responses are then developed for each question. Pilot marking then commences. This involves the recording of marks for particular responses as a "trial". These are compared statistically and when uniformity is achieved, marking the scripts can start. The pilot marking may reveal a need to adjust the marking scale. This happens very rarely and in those circumstances, the proposed changes are referred to the Examination Committee.

Sections 1 and 2 of the 2 unit paper are "check marked" and section 3 of the 2 unit and all of the 3 unit are double marked. Check marking means that a second marker evaluates the marking of each question on completion by a first marker. Discrepancies are discussed. Double marking means that each question is marked independently by two markers, without the second having access to the marks allocated by the first. The two sets of marks are then compared. Answers with discrepancies above a pre-determined tolerance are re-marked by a third marker (this is often done by the S.A.E.).

I am pleased to report that the Agriculture marking procedure was complimented by the board's senior officers as being of a very high

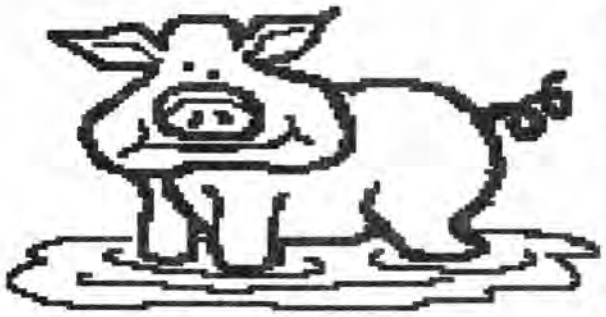
standard with regard to statistical reliability and administration. My own assessment is that there was a general feeling amongst the people working at the centre that the job was being done well. The marking period often places pressure on the markers. Additional work at school always needs to be done and people are working under demanding conditions at the marking centre. It is to the credit of the staff at the centre that all the tasks were accomplished within the target schedule and with goodwill. I would like to acknowledge the professional dedication of the markers and especially the S.A.E.'s on whose support I relied unashamedly. 1986 was also the last year for Mary Aspinall, our supervising clerical officer. I pay tribute to her dedication to accuracy during the years she has worked at the Agriculture marking centre.

Bruce Ramsay,
Supervisor of Marking.
Chairman of Examination Committee.
15/5/87.

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NOT RAISING HOGS.

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A letter written to a US Senator by a US farmer in connection with the US Government's policy subsidising certain farmers not to produce.

Dear Mr Senator,

My friend Bordeaux over in Pims Country received a $1,000 cheque from the government this year for not raising hogs. So I am going in the 'not raising hogs' business next year. What I want to know is, in your opinion, what is the best kind of farm not to raise hogs, and the best kind of hogs not to raise?.

I would prefer not to raise razor-backs, but if that is not a good breed not to raise, I will just as gladly not raise any Berkshires or Duvecs.

The hardest work in this business is going to be in keeping an inventory of how many hogs I haven't raised. My friend Bordeaux is very joyful about the future of this business. He has been raising hogs for more than 20 years and the best he ever made was $400 until this year when he got $1,000 for not raising hogs.

If I can get $1,000 for not raising 50 hogs, then I will get $2,000 for not raising 100 hogs. I plan to operate on a small scale at first, holding myself down to about 4,000 hogs which means I will make $80,000.

Now another thing; those hogs I will not raise will not eat 100,000 bushels of corn.

I understand that you are also paying farmers for not raising corn, so will you pay me anything for not raising 100,000 bushels of corn, not to feed the hogs I am not raising?.
I want to get started as soon as possible as this seems to be a good time of the year for not raising hogs.

signed: OCTAVE BROUSSARD

P.S. Can I raise 10 or 12 hogs on the side while I am in the not raising hogs business - just enough to get a few sides of bacon to eat?.

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ESSAY WRITING TECHNIQUE

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So here you are trying to prepare yourself for the Higher School Certificate Examination by learning what is meant by the term "Essay Writing Technique". Everyone talks about it saying things like "You'll fail if you can't write a decent essay !!!"

Why have essays in an exam anyway ??? You must remember that the examiners are trying to find out more than just what knowledge you have retained. Do you *understand* what your teachers have been giving you for the past two years ??? Can you take elements from the past two years of your course, relate them and draw conclusions ??? This obviously requires much more skill than knowing how many days make up the gestation period of a pig.

WHO ARE THESE EXAMINERS ?

Usually referred to as "they". The examiners are, in fact, a group of practicing teachers who are remarkably sympathetic to students. They will spend much more time trying to decipher you handwriting than your own teachers probably would. Remember that they have been through the system themselves. They know all about exam nerves.

A BASIC CONCEPT

An essay is not a chance to show how many big words you know, or how many pages you can write in 30 minutes. It is a chance for you to show that you have achieved a level of understanding that places you with the best students in the state.

Think Positively - here is your chance to show that you can relate information to a central theme and raw logical, concise conclusions. You usually dont get many chances like this, in a normal classroom situation, you most often answer questions with a single word or sentence.

Thinking negatively is your greatest danger.... For any question the examiners do not have a set of big words or a prescribed number of pages that you must write to pass. It is important for you to realize that examiners read 20 or more essays before they start to record the types of responses that they expect from candidates. Therefore dont compare yourself to what you imagine the examiners know, rather, compare yourself to fellow candidates.

Now having got yourself in the right frame of mind - How to tackle the question.....

READ THE QUESTION

The most common fault, often causing severe loss of marks, is not reading the question carefully. Many candidates see a few words and interpret the question as being some question that they have previously answered. A common example is as soon as the word *Photosynthesis*, appears in the question the candidates will immediately write down the technical details of the Photosynthetic process regardless of whether they are required or not.

Read the question several times, underline the key words,

and then ask yourself....

"What is the examiner after ??"

To prepare yourself for this, make sure you understand what is meant by,

- Discuss
- examine critically
- comment
- compare
- critically evaluate

You will notice that these words usually require some sort of *evaluation*. This means a reasoned case for and against, with a *logical proven conclusion*.

I have deliberately left out of the list the word "Describe". Few questions ever have this word alone. Sometimes "Describe and Discuss"... And yet.... this is what most students will restrict their essays to. They will give longwinded, technically correct descriptions, but leave it to the examiner to draw his/her own conclusions.

PLAN YOU ANSWER

Most students spot a question that they think they can answer, and set their pens moving before they have put their brains into gear. Then they suddenly discover that they have not answered the set question. If you have 30 minutes to answer a set question, then take at least 5 minutes to plan your answer....

Firstly you must do what has been suggested above, that is read the question several times and underline the key words. Then write your plan down. If your plan is written down then you are not asking your brain to remember all the points you wish to make. You may then concentrate on one point at a time.

Most essay plans will use the following format somewhere along the line,

(a) Introduction - What you are going to attempt to show.

(b) Body of the essay - reasoned points for and against.

(c) Conclusion - summary of the arguments you have put.

This takes little time and is enormously helpful to write the plan down at the start of your answer. It may even take the form of a systems diagram that could form the introduction of the essay and be expanded on in the body of the essay. You plan will also give some indication of the time you should spend on each part of the essay.

SOME DO'S IN ESSAYS

1. Use paragraphs. Take a new paragraph for each new point you want to expand on.

2. Use numbered sentences if this helps.

3. Use headings, and Underline these.

4. Draw diagrams and graphs.

5. Write in your best handwriting, eve if this means that you have to write a little less.

6. Give examples wherever possible for each point in your answer.

FINALLY

Attack your questions with confidence - after reading it carefully, preparing a plan, and remembering that you are not trying to impress some examiner ..... show that you are as good as any other student.

SOME DONT'S IN ESSAYS

1. Leave it to the examiners to make conclusions.

2. Use such sentences such as,

"It is obvious...."
"I have conclusively proven ..."

3. Use abbreviations unless they are commonly accepted ones such as DDT.

4. Spend too much time one one essay at the detriment of another, that you may be able to score more marks on.

5. Write out the question as your introduction.

6. Use humour unless it has a valid meaning.

7. Pick a question because it looks easy, and does not require any detailed knowledge. You have probably missed the point that was required in the question.

8. Make broad sweeping generalizations. eg...

"All farmers make too much money ????....."

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MHS SYSTEMS DICTIONARY

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AGRICULTURE - A broad term covering a variety of production systems, designed to meet mans need for food, fibre and other materials.

AMMONIFICATION - The production of ammonia gas, NH_4 from complex nitrogenous materials, particularly proteins. The NH_4 is used by the nitrifying bacteria to produce nitrates, which are able to be used by the plants.

ANATOMICAL - Features associated with the parts or "bits" that make up the organism.

ANTIBODY - is a specialized protein capable of combining chemically with a foreign body (antigen), to render it harmless to the organism.

ANTIGEN - is a substance which induces the synthesis of antibodies.

AVAILABLE WATER - the available water content AWC, is that part of the soil water that is available for plant use. It is the difference between the moisture content (θ) at Field Capacity (FC), and the moisture content at Permanent wilting point PWP.

$$AWC = \theta FC - \theta PWP$$

BACTERIOPHAGE - a virus that invades a bacteria, used to transfer genetic information in genetic engineering programs.

BIOLOGICAL EFFICIENCY - Ratio of inputs to outputs.

$$\text{eg. FCR} = \frac{\text{meat produced (kg)}}{\text{food consumed (kg)}}$$

BOUNDARY - Separates a system from its environment. This is decided by the observer. Where the boundary is drawn depends on the purpose of the observer.

CLOSED SYSTEM - one in which there is no movement of materials across the system boundary.

DECISION MAKING - a process which involves choosing between alternatives

DECOMPOSERS - organisms that convert organic material (ie dead plants and animals) into inorganic material, so that the carbon, nitrogen and other cycles can be completed.

DEVELOPMENT - a change in the relative proportions of the organism, usually associated with the specialization of cells and differential growth rates of different parts of the body. Tissues always develop in a certain order, Bone, then muscle, then fat.

DICOTYLEDON - a flower plant with two cotyledons in its seed, all have reticular veination, floral parts in in groups of four or five, vascular bundles on the form of a ring around the centre of a stem. All tress except palms are dicotyledons, and there are many more species of dicotyledons than monocotyledons.

DISEASE - any departure from the normal state of health.

ECOSYSTEM - A Biophysical system in which there is a recycling of matter and energy.

ECONOMIC EFFICIENCY - ratio of the value of outputs to inputs.

$$\text{ie } \frac{\$ \text{ value of outputs}}{\$ \text{ value of inputs}}$$

EFFICIENCY - a measure of the performance of a system.

EMBRYO - the developing offspring in the uterus between the zygote and foetal stages. ie: after the formation of the second cell, until the placenta is formed.

ENVIRONMENT - everything that lies outside the boundary of the system.

EQUILIBRIUM - A System in which the rates of processes taking place are constant. When a system is disturbed, (eg by a change in the level of the inputs) there will be a period of adjustment until a new equilibrium is established.

FAUNA - a collective term for any organism that may belong to the animal kingdom.

FEEDBACK - information about the performance of a system which can influence its operation either directly, or as a result of decisions based on this information.

FEED CONVERSION RATIO - a term that is used to express how efficiently the organism is converting inputs to outputs. A common expression is the weight of feed consumed per unit time, divided by the weight gain over the same time.

$$\text{FCR} = \frac{\text{weight feed consumed/week}}{\text{weight gain/week.}}$$

FERMENTATION - the conversion of sugars and other carbohydrates to alcohol, mainly ethanol. ie:

$$C_{12}H_{22}O_{11} + H_2O \longrightarrow 4C_2H_5OH + 4CO_2$$

FIELD CAPACITY - is the amount of water that the soil can hold back against the force of gravity, usually determined by the moisture content (θ) of the soil after it has been flooded and allowed to drain for 48hrs.

FIXED COSTS - costs of production that are independent of the scale of the enterprise, such as rates, phone etc.

FLORA - a collective term for any organism that may belong to the plant kingdom.

FOETUS - the developing offspring in the uterus after the formation of the placenta. (usually about 4 weeks into the pregnancy in humans).

FOLLICLE - a cell with half the genetic information, that grows and matures as a female egg or ovum. ie: a sex cell.

GOAL - the end which an individual or group may seek.

GROWTH - an increase in size of an organism, may take place by cell division and/or cell enlargement.

HARD SYSTEM - the kind of physical system usually associated with engineers. Boundaries and goals are clearly defined.

HIERARCHY - An arrangement in which smaller systems are described as parts of larger systems. eg a pasture system is a subsystem of the plant/animal production system.

IMMUNIZATION - the process of conferring a physiological mechanism which allows the body to recognize materials as foreign, and to neutralize or eliminate them. ie: this confers a resistance to disease causing microbes.

INFORMATION - knowledge about a system.

INNOCULUM - a culture of rhizobium bacteria that is coated on the seeds of legumes to increase the % of plants that will form nodules and successfully fix nitrogen.

INTERACTION - a situation in which one thing changes another an is itself changed in the process.

INPUT - anything which crosses the system boundary from the environment, eg materials, people, money, energy and information.

ION - a charged element or compound that has either lost or gained electrons.

PLEASE NOTE !!!!!

This is a section of a Senior Agriculture Dictionary that I have compiled with the assistance of my senior Ag Students over the past couple of Years.

If you think its is Good, Bad, or simply want to send me some extra terms that you think I should have included, PLEASE DO SO...

IF..... I get some feed back from YOU PEOPLE I will add to the list and organize to have a systems Dictionary printed.

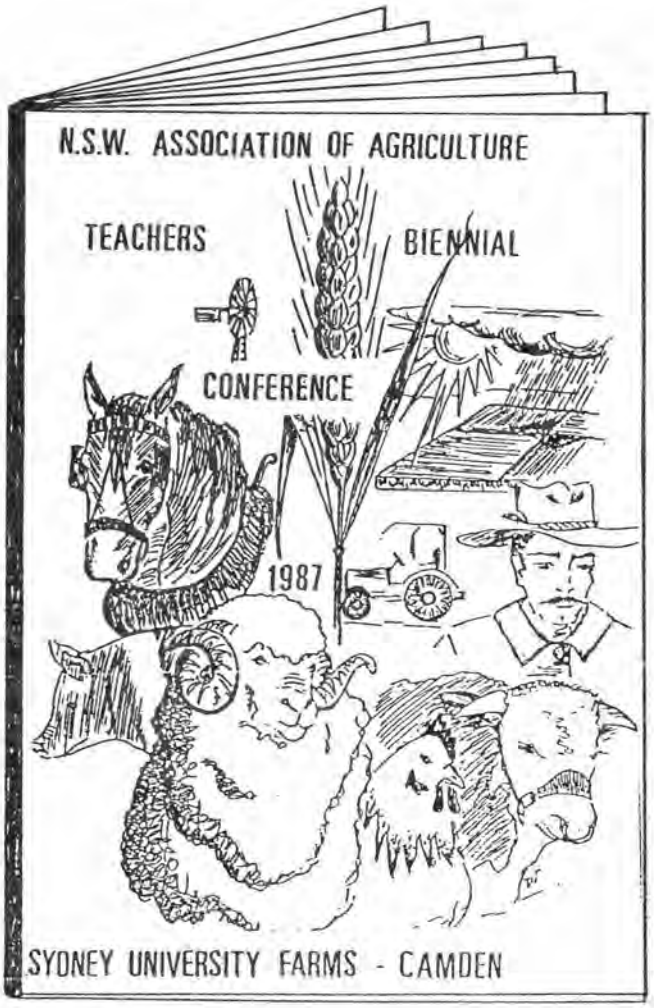
In a similar vein, I have put together the Essay Writing notes in an effort to get feedback on this important aspect of the course. Lets share our ideas and come up with some valuable resources for this subject.

Yours in Anticipation,
IAN FOREMAN.

PUBLICATION OF PROCEEDINGS OF N.S.W.ASSOCIATION OF AGRICULTURE TEACHERS BIENNIAL CONFERENCE 1987

Copies of many of the papers being presented at the conference will be available free to those attending the conference and will be available shortly after the completion of the conference.Copies of the proceedings may also be purchased from the conference co-ordinators at the following address for $12.00

82 Ingleside Rd.,
INGLESDIE, 2101.



N.S.W.AGRICULTURE TEACHERS ASSOC. ANNOUNCES THE PUBLICATION OF A SELECTION OF

"3 UNIT PROJECTS"

Seven 3 Unit projects were selected for publication from those completed for the 1986 Higher School Certificate.These 7 projects are now available in one publication from the following address:-

3 Unit Project Publication
c/- Angela Rutherford,
82 Ingleside Rd.,
INGLESIDE , 2101, N.S.W.

The cost of the publication is : $24.00 (Association members)
$30.00 (non-members)
(post free within Australia)

NAME _____

ADDRESS _____

I Wish to purchase ..... copies of the 3 unit publication and have enclosed a cheque/money order for $.....
(cheques and money orders to NSW Assoc. of Ag. Teachers)

COMPARING MONOCOTS AND DICOTS

DICOTYLEDONS	MONOCOTYLEDONS
* Embryo usually with TWO cotyledons, and seedlings with TWO seed leaves.	* Embryo with ONE seed cotyledon, and seedlings with ONE seed leaf.
* Leaves have reticular (netted) venation.	* Leaves have parallel venation.
* Leaves seldom sheathed at the base.	* Leaves often sheathed at the base.
* Petioles are usually well developed.	* Petioles very seldom developed.
* Vascular Bundles are usually borne in a ring, with a persisting cambium, cortex and pith are well differentiated.	* Vascular bundles usually scattered and seldom in 2 or more rings, usually without a cambium, and no defined cortex and pith.
* Primary root usually persistant and becomming a taproot, primarily woody in nature.	* Primary root of short duration, and soon replaced by adventitious roots, non-woody.
* Showy flowers with large and brightly coloured petals.	* Insignificant flowers with petals replaced with glumes, seeds borne in an inflorescence.
* Floral parts borne in sets of 4 or 5 (seldom 3 or fewer)	* Floral parts typically in sets of 3 (seldom 4 and never 5).
* Nectaries of various types frequently transformed stamens, and rarely of sepal type.	* Nectaries chiefly of the septal type and occur in the septa between the carpels.
* Stems are often branched	* Stems not branched, but secondary tillers are formed at the base of the main stem.

AGRICULTURE TEACHERS

IN THE

HUNTER REGION

An inservice course has been approved for your region to assist programming the senior Agriculture course

At the end of this inservice day, each participant will have a course stucture planned and at least one section of their teaching program fully developed.

PLUS

There will be a display of teaching resources, 3 unit projects, conference proceedings, association proceedings and much, much, more!

So come and meet your colleagues, enjoy the gossip and develop your Ag program all at the same time.

WHERE, WHEN AND HOW

Course name	:	Programming the Systems Agriculture Course
Course number	:	129
Date and time	:	Tuesday 28th July, 1987 from 9am until 9pm (!)
Venue	:	Singleton Teachers Centre, 33 Church St Singleton 2330 ph. 065/722722
Enquiries	:	Bruce Ramsay, Dept of Education, Box A242, Sydney South, 2000 Ph. 02/2660044
Applications	:	Send your Regional Inservice Application form (get one from the school office) to the Regional Services Officer, Inservice Training, P.O. Box 82 Adamstown 2289.

WARNING: Only 15 relief days are available - first applications in will get relief. Please send me a copy of your application (address above).

Morning/afternoon tea and dinner will be provided. We need to bring/buy our own lunch.

LOOKING FORWARD TO SEEING YOU THERE!

Bruce Ramsay
22/6/87.

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