

Association Officers

President	Peter Young
Vice-President	Rob Jenner
Honorary Secretary	Stephen McGoldrick
Honorary Treasurer	Pat Blackall
Policy Councillor	Clive Jackson
Editor Dander	Trevor Faragher

The Australian Veterinary Poultry Association is a Special Interest Group of the Australian Veterinary Association.

Membership is available to individuals and groups working in or showing an interest in any veterinary aspect of poultry.

The annual subscription is \$30.00.

Enquiries to the Honorary Secretary

Dr SJ McGoldrick
Inghams Enterprises
Lytton Road
Hemmant, Queensland 4174
Mobile 0419 670 267 Fax 07 3824 3211

Contributions to this newsletter are welcome. Please send as typed copy and, preferably, also on disc to Trevor Faragher
28 Parlington Street
Canterbury, Victoria 3126
Tel/Fax (03) 9882 6412

The Publisher, the Australian Veterinary Poultry Association, does not hold itself responsible for the statements made in the newsletter by contributors. Unless so stated, material in the newsletter does not reflect the endorsement, official attitude or position of the Australian Veterinary Poultry Association or the honorary editor.

Avian pneumovirus infection: questions still unanswered

In a guest editorial, RC Jones 1996 Avian Pathology 25:639-648, reviewed the experiences in the UK of more than 10 years of this comparatively new disease in turkeys and chickens and considered the gaps in our knowledge.

He reviewed the nomenclature (or mis-nomenclature as it has happened), virus, epizootiology, immunopathogenesis, diagnosis and control by vaccination, concluding:

"It has been an interesting experience to watch the evolution of a new virus disease of turkeys and chickens, and to observe the various research contributions. An unfortunate but inevitable consequence of the extensive commercial commitment of most researchers working with avian pneumovirus infections is that much of the free exchange of information so essential in science has been stifled. Also, in the race to develop commercial vaccines, many important aspects of the infection have not been studied in any depth. In this review, several areas of ignorance have been identified and are now summarised.

"The importance of pneumovirus infection in the chicken is poorly understood, including its role in the development of 'swollen head syndrome' of chickens, its influence on egg production and quality, and its interaction with other respiratory and immunosuppressive viruses. More needs to be known about the immune response of the chicken and turkey to the pneumovirus, including whether the virus itself is immunosuppressive, and which components of the virus are most relevant for vaccine development and ELISA technology. Improved diagnostic methods are needed for speedy detection of the virus: it seems likely that this will develop mainly from PCR methodology, made more easy to use and tailored to identify the virus subtype. Type specific Mabs could also be used for indirect immunofluorescence on tracheal or nasal scrapings or sections. There is considerable scope for research on ELISAs, so that we may be able to screen for antibodies to one or both field types or to particular vaccines.

"A study of the role of free-flying birds in transmission of the infection could enable us to understand geographic distribution.

"Because of the widespread nature of the pneumovirus, control will depend mainly on vaccination. Conventional vaccines will continue to be used until recombinant ones are developed which are proved to be at least as cost-effective."

Abstracts of papers presented at the Scientific Meeting of the AVPA, Melbourne, 21-22 November 1996

Greg Underwood has provided the following abstracts of two papers that were presented at the meeting

Investigation of an outbreak of ILT on a Victorian commercial layer farm

Greg Underwood, Gordon Nash, Dennis Grix and Debbie Donald, Victorian Institute of Animal Science, Mickleham Road, Attwood Victoria 3049

On the 11 July 1996, 22-week-old commercial layer chickens were submitted to the Victorian Institute of Animal Science for evaluation of a respiratory disease associated with moderate mortality. The presenting signs included respiratory distress and gasping with an occasional clearing cough. All birds had been vaccinated twice during rearing with Websters A20 by eyedrop at 6 weeks of age and with Websters SA2 at 9 weeks given in water. Isolation of infectious laryngotracheitis virus and histopathology supported a diagnosis of ILT.

Two commercial ILT vaccines were supplied from Cyanamid Websters Pty Ltd for comparison with the isolate. Chicken kidney cell cultures were used to amplify each virus. Cells were treated by sonication before centrifugation to purify the virus. Each virus was treated to purify the DNA before being digested using BAM-H1 restriction enzyme. The restriction patterns determined by gel electrophoresis showed that the two vaccines had identical patterns while the field virus had a clearly different pattern.

The outbreak was determined to have been due to incomplete protection with the technique employed for the administration of vaccine.

Keynote Address Broiler proventriculitis, wet litter and stunting syndromes

Rod Reece, NSW Agriculture EMAI, PMB 8, Camden NSW

There are many different types of proventricular disease but transmissible infectious stunting associated with proventriculitis is a major concern of industry in NSW and is now occurring in other States. The disease is associated with reduced growth rate, poor performance, deteriorated quality of litter, and significant financial loss. Affected chickens have pendulous abdomens, poor weight for age and perhaps pasting around vent. They may void poorly digested faeces and/or excess watery (mucoid) faeces. There may also be associated mild osteodystrophies, poor feathering, reduced carcass pigmentation. Intestines are distended with poorly digested contents, the proventriculus is swollen and thickened, while the thymus and bursa may be smaller than anticipated. The cut surface of proventriculus may reveal cystic distended glands. Histologically, lymphoplasmacytic infiltration into lamina propria, septa between lobules, and within lobules particularly around central ducts, are seen. In USA, ultrastructural studies of a similar disease have revealed intranuclear viruses in affected proventricular alveolar gland cells. These glands are atrophied and/or cystic.

The presentation described this disease in detail and summarised possible avenues of investigation. In addition, there was considerable information on development of the avian gastrointestinal tract, and a summary of the three distinct forms of transmissible stunting now recognised. Detailed notes are available from Rod (tel 046 293327; fax 046 293400).

A tale from Mother Goose

The French have come up with an explanation for the excellence of French pâté de foie gras, that expensive delicacy traditionally served at Christmas in Europe.

Native French geese are genetically predisposed to bountiful storage of triglycerides in their liver. Their fatty liver (foie gras) is twice as big as the liver of their main rivals, the forcefed Polish geese.

Workers at the Institut National de Recherches Agronomiques reported to the annual meeting of the French Nutrition Association in Lyons that geese from Landes in southwestern France have a naturally high concentration of high density lipoprotein cholesterol (mean 6.33 g/L) compared with 4.97 g/L in Polish geese.

When the grey Gallic geese are forcefed for 2 to 3 weeks, their livers accumulate lipids rapidly reaching an average

weight of 1005 g. By comparison, the livers of white Polish geese reach an average of 485 g.

The fatty liver of the French geese contains about 95% triglycerides. Overfed Polish geese channel less triglyceride into their liver and more under their skin.

Geese, in common with many migratory birds, have a natural predisposition to store lipids in their liver before a long journey. Geese from the Landes region seem to have an inborn defect of phospholipid synthesis and a tendency to synthesise lipids in the form of high density lipoproteins. These are believed to limit cellular hypertrophy and contribute to cell membrane fragility.

Polish geese currently contribute little to the foie gras market in France. Hungary has become the main competitor, producing more foie gras than France.

International outbreaks of foodborne disease

The world is truly a global village with respect to microbes. One factor is the change in the food industry. Foods, like many pathogens, are more likely than ever to cross national borders, and a single meal can combine products from many countries.

One unintended consequence is that when food becomes contaminated the resulting outbreak can span continents. Indeed, *Salmonella agona* first spread around the world as a consequence of the use of contaminated Peruvian fish meal in chicken feed (Clark et al 1973 Lancet ii: 1).

In the past, foodborne outbreaks of disease were often thought of as local events affecting a group of people who all ate at one restaurant, attended one social event or, as in the recent and worst *E coli* outbreak in Europe in which 421 Scots were infected and 16 died after eating steak pies from the shop of a prize-winning butchers, ate food from one retailer. These outbreaks are the easiest to detect because the victims themselves and the doctors they consult en masse can quickly perceive the clustered nature of the illnesses.

Contamination of centrally produced foods that are widely distributed can lead to a diffuse outbreak, affecting people scattered over a wide area. More sophisticated public health surveillance is needed to detect this signal amid the back-

ground noise of many unrelated illnesses. For this reason, routine subtyping of some foodborne pathogens, coupled with analysis of surveillance data at a regional and national level, has become a powerful procedure for detecting such outbreaks.

Ready to eat savoury snacks are not usually regarded as sources of outbreaks of foodborne disease. Killalea et al 1996 Br Med J 313: 1105, described how a small outbreak of *S agona* infection in England in December 1994 and January 1995 was traced to a ready to eat savoury snack manufactured in Israel. A large outbreak of more than 2200 cases of this infection occurred in Israel from October 1994 to January 1995, but was not recognised until February 1995, when the English outbreak was reported.

Indistinguishable strains of *S agona* of the same phage type were isolated from the snack and cases in Israel (Shohat et al 1996 Br Med J 313: 1107), England and North America. After control measures were increased at the factory, the incidence of *Salm agona* infection in Israel declined to levels before the outbreak.

The outbreak shows the importance of both national surveillance and of international collaboration between public authorities.

Get-rich ostrich warning

The regulatory authorities have handed out a warning to anyone thinking of getting into the ostrich and emu investment game.

The Australian Securities Commission said that potential investors should be conscious of the risks inherent in emu investment schemes. "Along with emu schemes, investors have been attracted to ostrich schemes by the steep rises in prices of breeding stock," the ASC stated. "The most speculative investment in ostriches is one where the investor hopes to ride on a rising market price for breeding stock."

Rather than putting their head in the sand, the ASC said that punters should investigate whether recent high prices flowed from demand for breeding stock, and whether these levels could increase.

The ASC also warned promoters of the schemes to comply with the law.

The Victorian Division of the AVA has advised members that practitioners should be cautious in the credit terms extended to clients with ostriches and should be aware of the potential cause for concern about the welfare of the birds in a situation where cash flow may sharply diminish.

Efficacy of ts MG and MS vaccines in Australian flocks

The development and use of live, attenuated, temperature-sensitive (ts) strains of *Mycoplasma gallisepticum* and *Mycoplasma synoviae* has enabled both broiler breeder and commercial layer operations in Australia to achieve performance objectives free of the detrimental effects of mycoplasma-related disease. The achievement has been under farming conditions – single-age sheds but multi-age sites – that previously had been unable to achieve and maintain mycoplasma-negative status. The number of settable eggs was increased, hatchability was improved and the incidence of fowl cholera was curtailed in relevant flocks.

The vaccines [MG (ts-11) and MS-H] (Vaxsafe® Bio-properties (Australia) Pty Ltd) were administered by eye-drop at three weeks of age. Provided due attention is paid to the appropriate handling and application of these vaccines, only one vaccination is required to ensure life-long protection of parent breeder stock.

This is a summary of a conference paper given by Peter C Scott, Jillian F Markham and Kevin G Whithear at the NCAPC, USA, in Columbus, Ohio, in 1996.

Detection and differentiation of IB viruses

Ignatovic and Ashton 1996 *Avian Pathology* 25: 721-736, have described the development of a sandwich ELISA (sELISA) that reliably identifies infectious bronchitis virus in field samples and simultaneously discriminates between antigenically different strains. The sELISA employs four monoclonal antibodies as capture and IgG from egg yolk of hyper-immune hens as detecting antibodies.

After vaccination with the recommended dose of two IBV vaccines, IBV antigen was not detected.

This sELISA has been used routinely in the authors' laboratory to identify antigenic variants and vaccination failures. To that end it has been a valuable method for the differential diagnosis of IBV.

Salmonella vaccine – a minus is a plus

Scientists in Melbourne, led by Professor Peter Coloe, have developed the world's first live, gene-deleted vaccine against salmonellae in food-producing animals. The vaccine was produced at the Royal Melbourne Institute of Technology (RMIT) in collaboration with the biotechnology company, Bioproperties (Australia) Pty Ltd.

A vaccine for poultry has been approved and is now on the Australian market under the trade name Salvax®. A similar product for cattle has completed field trials and should be available soon.

The poultry vaccine uses a mutant of *Salmonella Typhimurium* with a deletion of the *aro* gene. Day-old chicks can be vaccinated orally, through the drinking water, or by injection. After vaccination, the vaccine is shed by the chicks for only a few days.

There are other live vaccines against salmonellae in food-producing animals on the market in Europe and the USA. However, the RMIT vaccine is the first constructed using a strain with a genetically-engineered gene-deletion. It has the advantage of needing to be administered once only and it can also be used to vaccinate immuno-compromised animals. Unlike other live poultry vaccines, it can be injected subcutaneously or in ovo. As only a very small amount of vaccine is needed to vaccinate an embryo, in ovo vaccination offers a very cost-effective and efficient way of immunising a flock.

Professor Coloe believes that industry and the public now accept the use of live vaccines because they are more effective than the killed equivalents and break the cycle of transmission of salmonellae from animals to humans. The Australian vaccines, containing gene-deleted *Salmonella* strains, are very safe because there is almost no chance of the bacteria reverting to the wild-type, which can replicate and cause disease.

Color Atlas of Avian Histopathology, Christopher J Randall and Rodney L Reece, London, Mosby-Wolfe, 1996, 232 pp, £95, ISBN 0-7234-20874

This book was reviewed by Oscar J Fletcher (1996) *Avian Path* 25 (4): 845. Some excerpts: The stated purposes - to illustrate a range of lesions in birds and to demonstrate the use of pathology in the diagnosis of avian disease - are met by the number of conditions and diseases covered and by the quality of the 800 photomicrographs in colour and of excellent quality. The atlas is organised by body systems in 13 chapters, each presenting normal histology then illustrations of non-infectious and infectious diseases. The index, which seemed complete and accurate, provides references to multiple illustrations of multisystem conditions.

Birds fell invaders of their space

Birds struck more than 1000 planes over the UK in 1995 and the number of strikes is increasing everywhere and every year. The birds have no preferences, recognising neither aircraft logos nor international boundaries.

Since the first bird strike in 1908, this hazard has cost at least 190 human lives and millions of dollars.

Many methods have been used to scare birds away from the range of runways, including trained raptors flown from the wrist. In New York, teams of airport employees with shotguns shoot the gulls that plague Kennedy Airport. In New Delhi, airport authorities waged a campaign against open-air butchers shops near the cities two main airports, which, it was thought, were attracting vultures and kites.

Grass on airfields is best kept at a height of about 20 cm because birds do not like standing in long grass as it stops them seeing approaching predators. Other methods included playing bird distress calls over loudspeakers, firing exploding cartridges and netting rubbish tips that attract scavenging gulls.

Seagulls pose a unique problem for aircraft because they are large and have no natural enemies. They breed prolifically and can live as long as 30 years. The first fatal bird strike, in 1912, was caused by a gull hitting an aircraft built by the Wright brothers.

Most bird strikes occur during takeoff and landing but an aircraft over the Sahara hit a vulture at 37 000 feet. Most strikes involve birds but on one occasion an aircraft hit a rabbit at 1000 feet. The animal had been snatched from the ground by a bird of prey, which dropped it into the engine of a jet passing below. Whether this air-to-air missile was guided is unknown.

Coming Events

Australian Veterinary Poultry Association AGM and Scientific Meeting

12-13 February, Sydney
contact Clive Jackson, tel 02 9899 2111, fax 02 9899 2151

46th Western Poultry Disease Conference

1-4 March, Sacramento CA, USA
contact Lina Caparas, Conference & Event Coordinator,
University of California, Davis CA USA 95616,
tel 916 757 3331, fax 916 757 7943, or visit web site
<http://www.vetmed.ucdavis.edu/vetext.html>

AVA Annual Conference - Challenging the Boundaries

5-9 May, Brisbane
contact Doreen Culliver, AVACOS, 7 Phipps Place, Deakin
ACT 2600, tel 06 285 3600, fax 06 285 3916,
email: avacos@ava.com.au, or visit the AVA web site
<http://www.ava.com.au>

4th International Symposium on Avian Influenza

28-31 May, Athens GA, USA
contact Dr DE Swayne, USDA-ARS, Southeast Poultry
Research Laboratory, 953 College Station Road, Athens,
Georgia 30605 USA, fax 706 546 3161,
email: dswayne@uga.cc.uga.edu

XIth WVPA Congress

18-22 August, Budapest
contact Hungarian Academy of Sciences, Office of
International Cooperation, XIth WVPA International
Congress, H-1051 Budapest, Nador u. 7 Hungary,
fax 361 117 2840 or 361 117 2575

Sweden drops plans to ban poultry batteries

Sweden has abandoned plans to ban battery cages for poultry from 1 January 1999. Instead, it will stipulate that hens must be kept in a manner that ensures that they can behave naturally.

The policy change follows a government-commissioned analysis by the Board of Agriculture of the proposed ban's impact on the Swedish poultry industry. The announcement of the Board's recommendation has been welcomed by the egg producers but, to the surprise of no one, has brought angry reactions from animal welfare organisations.

According to the Board's report, the conversion to alternative systems has not occurred at the expected rate, with the result that only 10% of all hens are kept in floor-management systems. The experts concluded that the pending ban has, in fact, delayed the development of improved welfare conditions, rather than hasten their arrival.

The Board therefore proposes an alternative policy whereby an alternative investment in existing cage systems continues to be prohibited, but with the possibility of individual exemptions. For investments in new facilities, a so-called 'function requirement' is to be introduced, with the intention that hens should have the opportunity to exercise aspects of natural behaviour, such as laying eggs in nests and having access to perches and sandbaths.

British songbirds out of tune

Are songbirds in Britain going deaf because of the roar of traffic? It is reported that the calls of wrens, blue tits, woodcock and pheasants have become so off-key that they fail to repel intruders from their territory, and their breeding is affected because they cannot attract a mate. The Royal Automobile Club and Shell will be asked for funds to investigate.

Do cormorants spread their wings and fry?

It has long been known that the common cormorant (or shag) lays its eggs in a paper bag. (The reason as you know no doubt - it is to keep the lightning out.) But what these unobservant birds have never noticed is that herds of wandering bears may come with buns and steal the bags to hold the crumbs.

Another Anon asserted that loitering cormorants spread their wings to dry because their feathers are not waterproof - and we all believed that. Not so, reported Dr David Grémillet at Neumünster Zoo in the *Journal of Avian Biology* last year. He found that birds fed cold fish sat with wings spread for about 20 minutes. Less than one-quarter of those fed fish that

had been warmed to body temperature spread their wings, and even then they spread them for only a few minutes. He concluded that full frontal exposure of their black bellies enables them to soak up more heat from the sun and so speed digestion. Coincidentally, they may, being good and attentive flight-path attendants, tell their fellow cormorants that there is food nearby.

Perhaps this is a northern hemisphere phenomenon. Three of the five species of Australian wing-hanging cormorants have white bellies, whereas among darters, which also stand with spread wings, males have black bellies and females white bellies. A different drawing-board?

Let them eat goose

Let the long contention cease, wrote Matthew Arnold. Geese are swans, and swans are geese.

Not in Clarkstown, New York State, whose citizens have been driven to desperation by a plague of Canada geese that snap at picnickers as they graze the grass before they deposit their daily half pound of droppings on parks, fairways and bowling greens. There may be nothing finer than a flight of Canada geese in V-formation but these ones remain on land, turning ball parks into no-play areas. This is causing a more sustained emotional response than the flight of Canada geese translated by radar into Soviet missiles that nearly started a third world war back in the days when there was a USSR.

Ever since Alfred Hitchcock, the Americans have had mixed feelings about birds but the real threat remains not an excess of birds but the many threats to their survival. In March, ten countries signed the Brisbane Initiative, which seeks to protect the great flyway from the Arctic Circle down to southern New Zealand. In Europe, however, the World Wildlife Fund reports that only France, Spain, Britain and Sweden have begun to implement EU habitat-protection measures for migratory birds.

None of this has moved the people of Clarkstown. Previous efforts to budge resident populations of Canada geese in North America have been singularly unsuccessful. A few truck loads of them were once removed from a Long Island golf course to Maine. They were back on the fairway before the trucks got home. The folk in Clarkstown did find one solution, but it raised more questions than it answered. Birds were shipped to a processing plant, ground up and sent back in frozen packages – to be distributed to the poor. The geese were in no condition to beef.

Tom Lehrer, the American academic mathematician and entertainer, advocated poisoning pigeons in the park. Another academic, Paul Curtis at Cornell recently discovered that a chemical used to flavour bubble gum sends geese packing. Methyl anthranilate (MA), a naturally occurring plant compound, tastes sweet to people but not to birds – it keeps fruit-eating birds away from cherry orchards and geese off the grass. Geese that tasted grass treated with 1% synthetic MA headed for nearby ponds to preen and cleanse their palates. Later, many departed altogether heading for, as Milton said, “fresh fields and pastures new”.

MA has received EPA approval for non-food uses but isn't a perfect repellent against nuisance geese. Regular treatments would be expensive but Curtis says that the compound may work with other strategies, such as replacing succulent turf with foul-mouthed ground covers, such as tall fescue, periwinkle or ivy, which are distasteful to geese. Dogs, trained but hungry to lower their faecal output, would be another strategy.

IBD: antigenicity and virulence

Studies in Belgium by van den Berg et al 1996 *Avian Pathology* 25: 751-768, using immunological and molecular methods, have confirmed that the recent European failures of vaccination against infectious bursal disease (IBD) were not related to antigenic variation, but to increased virulence of the circulating IBD virus strains.

Neutralising monoclonal antibodies (Mabs) showed the vaccines of ‘intermediate’ virulence and the hypervirulent strain 849VB had a similar pattern of reactivity in β neutralisation tests. Four distinct epitopes could be defined in serum neutralisation tests and addition ELISA. All neutralising Mabs bound to the structural VP2 protein only in its native form. Moreover, Mabs that did not neutralise some strains precipitated the VP2 protein from extracts of cells infected with the same virus. This suggested that slight changes in the conformation of the epitope were sufficient to allow the virus to escape neutralisation.

Results of VP2 sequencing confirmed that the neutralising epitopes are clustered in the variable domain which is highly hydrophobic and flanked by two major hydrophilic peaks.

Comparison of the VP2 sequence of 849VB strain with other highly virulent isolates showed that they are close together and distinct from classical strains. In a previous study, these authors showed that vaccine PBG98 (Intervet) seemed poorly attenuated for a ‘mild’ vaccine. This was confirmed by the present study. Similar considerations came from the finding of two different populations in the strain SAL (Solvay). These findings indicate that these vaccines had probably not been cloned and that, therefore, a better characterisation of vaccine strains at the molecular level should be necessary to avoid the risk of antigenic drift.

Ostrich farming in Germany

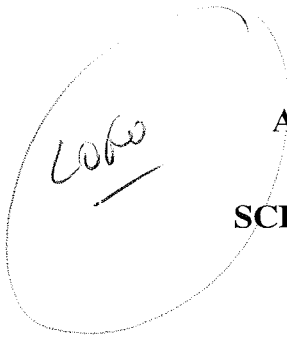
The Federal Association of Veterinary Surgeons in Germany has called for a ban on farming of ostriches. Concerns were raised after a survey revealed that 29% of ostrich farms were not rearing the birds in a satisfactory manner.

Veterinarians had found a number of problems at ostrich farms, including bad housing conditions, injuries, wrong feeding programmes and careless management.

Use of in-feed antibiotics in Sweden

The Swedish government has asked the head of Sweden's State Veterinary Medicines Institute to investigate whether the general use of antibiotics in animal feed could pose a health risk to humans.

Since 1986, antibiotic use in Sweden has been subject to veterinary prescription and in-feed antibiotics have been banned. Under the terms of accession to the EU, Sweden has until 1988 to justify the ban.



AUSTRALIAN VETERINARY POULTRY ASSOCIATION
SCIENTIFIC MEETING AND ANNUAL GENERAL MEETING

12 – 13 FEBRUARY 1997

UNIVERSITY OF SYDNEY, HOLME AND SUTHERLAND ROOMS

WEDNESDAY 12 FEBRUARY

ANNUAL GENERAL MEETING and AVPA DINNER.

6.00 - 7.00 pm – Annual General Meeting (and OGM) at Holme and Sutherland Rooms, University of Sydney.
 (Note: This meeting follows the Australian Poultry Science Symposium to be held in the Bosch 1A Lecture Theatre on the 11th. and 12th. of February, concluding at 5.00 pm)

7.00 for 7.30 pm – Dinner at the University of Sydney, Holme and Sutherland Rooms – Part sponsored by Cyanamid Websters, Castle Hill – limited to 50 people only.

THURSDAY 13 FEBRUARY

SCIENTIFIC MEETING AT THE UNIVERSITY OF SYDNEY, HOLME AND SUTHERLAND ROOMS

8.45 am Registration

9.15 am Scientific program on **Coccidiosis Control – Coccidiostats and/or Vaccines?**

9.20 am ~~CHAIRMAN~~ – *PETER GRAY, BAIKOVIA POULTRY*
 Welcome and introduction of guest speaker Dr Patricia Augustine, Parasitology and Epidemiology Department USDA. Dr Augustine is a coccidia specialist and will speak on recent research on ~~the investigation~~ and development of coccidia and the control of the parasite. *infection*

10.10 am Discussion

10.30 am Morning tea

11.00 am Current methods of coccidiosis control and some recent research on coccidia in Australia (15 min each).

- ~~CHAIRMAN~~ *BY*
- Poultry company veterinarian (Peter Gray, Inghams to confirm) ✓
- Coccidiostat manufacturer (Dr Barry Philps, Elanco) ✓
- Vaccine manufacturer (Dr Grant Richards, Bioproperties Aust. P/L) ✓
- Research Scientist (Dr John Ellis, University of Technology, Sydney) *Right*

12.00 Noon Panel discussion

12.45 pm Lunch

1.45 pm - Scientific session reconvenes

... continued on page 8

1.50 pm **Case Histories on Recent Problems in Poultry Health** (15 minutes each)

- * Mycotoxicosis (Dr Bruce Remington, Consultant)
- * Mortality patterns in imported and Australian layer strains (Dr Robin Cumming, UNE)
- * Erysipelas ~~in~~ ⁱⁿ ~~emus~~ (Dr Greg Underwood) ^{VAs}
- * Vacant ^{OUTER ABISSIN VECTICIA}

3.05 pm Afternoon tea

3.30 pm **Research Reports** (15 minutes each)

~~CHAIRPERSON - CLIVE JACKSON~~

- * Marek's disease in ovo vaccination (?) (Dr. MANUELA KATH) & Fax here!
- * Bone mineralisation in broiler chickens (Dr Greg Parkinson)
- * Vacant (Dr MANUELA KATH)
- * Vacant (WENDY MUIR) ← 93517651 (T)
- * Vacant

4.45 pm Meeting concludes

Clive Jackson
 Convenor
 Cyanamid Websters Pty. Limited
 23 Victoria Avenue
 CASTLE HILL NSW 2154
 Tel: (02) 9899 2111 Fax: (02) 9899 2151

**Additional speakers can be placed in the
 vacant slots for case histories and research reports**
Contact Clive

Accommodation:

Special rates have been negotiated at the following motels:

- 1) Camperdown Travel Lodge
 Missenden Road
 Camperdown NSW 2050 Tel: (02) 9516 1522
 Room rate is \$110.00/ night.
- 2) University Motor Inn
 Broadway Tel: (02) 9660 5777
 Room rate is \$95/night

~~KATH (Fax)~~
~~MUIR (Aino)~~
~~BELLS (Aino)~~
~~two vacant slot~~
~~copy of handbook~~
~~MISS of head~~
~~copy of program (re~~
~~related program)~~

Fees:

- 1) Registration Fee: **\$20.00** for full day (13/2/978)
- 2) Dinner: **\$30.00** only (12/2/97)
 (subsidised by Cyanamid Websters)
- 3) Total cost:

(NOTE: PLEASE PAY AT REGISTRATION
 DESK ON THE DAY)