# THE VETERINARY PATHOLOGY REPORT

Australian Society for Veterinary Pathology
S.A. Department of Agriculture
Central Veterinary Laboratories,
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## PRESIDENT'S REPORT

At the end of the current executive's first year in office I look back to see what has been achieved. The end result of the retrospective study is that we as an executive have not been wildly innovative but have managed to keep the Society's functions operative at, hopefully, an acceptable level. I am particularly grateful to Vui Ling Tham (Secretary), Tammy Utteridge (Treasurer), Robin Giesecke (VPR Editor) and Bill de Saram for their efforts during the year.

The contribution from members to the Veterinary Pathology Report has been strong and at times almost overwhelming. I thank all State Representatives for their support in getting material together. It is encouraging to note that our humble little publication is well received overseas and that Professor Don McGavin at Knoxville, Tennessee, has volunteered to be our North American correspondent.

Trying to organise a Sydney conference by remote control from Adelaide has not been easy, however, it all seems to be coming together with "local" keynote speakers Terry Rothwell, Gary Cross and Phil Ladds providing the backbone of the papers. There are other promised papers (one actually received!) from such noted people as Bill Harley, Ian Links, Cor Lenghaus, Richard Whittington and Paul Canfield, however, more are required and required quickly!

The year's greatest achievement has been the establishment of the National Registry of Domestic Animal Pathology at Glenfield. Congratulations to Tony Ross and his committee for getting the Registry under way. It is now up to us to contribute to it, use it and support it so that it doesn't become a static museum piece, but a dynamic, relevant, functional resource. I am sure Tony Ross and the Registrar Bill Hartley has some plans for the Registry's exploitation, however, they would no doubt like some lively discussions and suggestions from all ASVP members at any time.

I would express thanks to Clive Huxtable for continuing to run the "Slide of the Month" so efficiently. Of course without contributions from the laboratories this activity could not continue to exist and provide the education and bit of stimulation that it does, so thanks to all contributors too.

Congratulations to three of our members Anne-Marie Crowley, Jan Thomas and Ian Jerrett who successfully negotiated the Australian College o£ Veterinary Scientists' Pathobiology Chapter examinations this year. The time is fast approaching I believe when Veterinary Schools must consider developing a course of study, perhaps by correspondence, which prepares candidates for A.C.V.S. exams. It will be an aim of the executive during the forthcoming year to at least initiate some thoughts in that area.

In conclusion I thank all members for their support and look forward to their continued dynamism in the coming year.

P.H. PHILLIPS
PRESIDENT

## ANNUAL GENERAL MEETING

ASVP Annual General Meeting, 14th May, 1988.

AGENDA

1. Opening
2. Apologies
3. Minutes of 1987 AGM (Circulated in VPR No. 17, July 1987)
4. Business arising from minutes
5. President's Report
6. Treasurer's Report
7. Membership Report (Secretary)
8. Election of Office Bearers, - nominations must reach the Secretary 7 days before the meeting.

   The following nominations have been received to date -

| Position | Candidate | Nominator | Seconder |
|---|---|---|---|
| President | P.H.Phillips | P.R.Giesecke | W.G. de Saram |
| Secretary | V.L. Tham | P.H. Phillips | P.R. Giesecke |
| Treasurer | T.D. Utteridge | P.H. Phillips | V.L. Tham |
| Committee | P.R. Giesecke | P.H. Phillips | V.L. Tham |
| Committee | W.G. de Saram | P.H. Phillips | V.L. Tham |

9. General Correspondence
10. Membership fee.
11. Veterinary Pathology Report - format
    - State Representatives
12. Slide of the Month
13. National Registry of Domestic Animal Pathology - (Tony Ross)
14. Australian College of Veterinary Scientists Pathobiology Chapter
15. General business
16. Next Meeting and Annual Conference
17. Close

NATIONAL REGISTRY OF DOMESTIC ANIMAL PATHOLOGY

The good news is that from 1st February 1988 our Society has opened the long discussed National Registry of Domestic Animal Pathology for business.

Accumulated top class material is being catalogued by our first part-time Registrar and Society member Dr W. J (Bill) Hartley. Bill is guaranteed one year's half-time salary by the NSW Department of Agriculture. By mid-1988 the National Registry , should contain a creditable range of material and should be actively operational in the "mind-expanding" business for Australia's veterinary pathologists. In early 1989 it will be transferred to its permanent home at the Elizabeth Macarthur Agricultural Institute at Camden south-west of Sydney.

However, you should plan to catch a glimpse of this amazing metamorphosis in 19881. Don't forget to include in your Bicentennial Itinerary a visit to the Registry at the Veterinary Laboratories, Roy Watts Road, Glenfield. NSW 2167. Telephone 02-605-1511.

To assist in your planning, up to and including the ASVP meeting on 14-l5th May in Sydney this year, the following dates are those on which Dr Hartley will be working
at the Registry.

March 7th - llth
March I8th - 31st
April 5th - 8th
April 25th - 29th
May 2nd - 6th
May 14th - 15th - ASVP Annual Meeting
May 16th - Mid June - Bill away overseas
June 27th - July lst

Please note Bill will otherwise be located at TARONGA ZOO (Tel 02-969-2777 Ext 249) where the Native /Zoo Animal Registry has been established should you wish to speak with or visit him there.

The Registry Management Committee (Bill Hartley, Tony Ross, Keith Walker and John Glastonbury) invite and encourage a11 members to offer their current or past "classical" cases for inclusion in the Registry, especially during this year of active establishment.

HISTOTECHNOLOGY NOTES

MICROWAVE RADIATION FOR DECREASING REACTION TIMES FOR METALLIC STAINING

Silver stains are valuable for the demonstration of spirochaetes, fungi, basement membranes and melanin pigment. Using conventional techniques, the oxidation, development and impregnation steps are protracted and delay reporting on sections.

Methods have been published for reducing the reaction times for metallic staining by microwave radiation (Brinn, 1983, Schaffner, 1986). Modifications to these techniques have been made in the Central Veterinary Laboratories, resulting in reduction of staining time to 5-10 minutes without loss of detail. Using these modifications, success has been obtained with Warthin Starry, Gomori's Methamine Silver, Grocotts and Masson-Fontana stains. Some success has also been obtained with Perl's stain and with Ziehl-Neelsen, with absence of background staining.

Details of these modifications can be obtained from Mr. Ken Randall, Central Veterinary Laboratories, Department of Agriculture, GPO Box 1671, Adelaide. S.A. 5001.

References:

Brinn, N.T. (1983). Rapid metallic histological staining using a microwave oven. J. Histotechnology 6 : 125.

Schaffner, R. (1986) - The Perl's iron staining procedure for use in the microwave oven, using a temperature probe, J.. Histotechnology. 9 : 107.

## TRAINING COURSE - ELISA TECHNOLOGY IN DIAGNOSIS AND RESEARCH

A practical training course will be held at the Graduate School of Tropical Veterinary Science at James Cook University, Townsville Queensland, from 29th August - 9th September, 1988. Course members will be limited to 20. Registration (excluding accommodation) will be $1,200.

The course will consider veterinary and medical applications of ELISA technology. Further information can be obtained from Dr. Graham Burgess at the School, phone (077) 814 328. Facsimile (077) 796 371 or Telex AA 47009.

## NEWS OF MEMBERS

Barry Munday has retired from Mt. Pleasant Laboratory and the Tasmanian Department of Agriculture to take up a position as a Lecturer in Aquaculture at the Tasmanian State Institute of Technology. His contact address will be School of Applied Science, Tasmanian State Institute of Technology, P.O. Box 1214, Launceston, Tasmania 7250. Phone (003) 26 0201.

Richard Whittinqton will be spending 12 months in the Immunology Section at CVL Glenfield before doing his PH.D on ovine footrot.

Sue Friend and Peter Lording have a new address. The Central Veterinary Diagnostic Laboratory has moved to 1 Cottage Street, Blackburn, Victoria, 3130. Phone (03) 894 1144. Fax (03) 894 1142.

Tammy Utteridge left Diagnostic Laboratory Services (Adelaide) to join the Queensland Department of Primary Industry, initially at Yeerongpilly, but with the Intention of Joining the Toowoomba Regional Laboratory. However, she was offered a position with the South Australian Health Commission in Adelaide and has returned to her home town.

Professor M.D. McGavin is prepared to act as ASVP's North American correspondent and can be contacted at the Department of Pathobiology, College of Veterinary Medicine, P.O. Box 1071, Knoxville, Tennessee 37901-1071.

## CONFERENCE UPDATE

Scientific Programme

PATHOLOGY OF LYMPHORETICULAR TISSUES

Keynote speakers will be:

TERRY ROTHWELL : Structural and Functional Relationships of Mammalian Lymphoreticular Tissues
PHIL LADDS : General Pathology of the Mammalian Lymphoreticuler System
GARRY CROSS : Structural and Functional Relationships of Avian Lymphoreticular Tissues
General Pathology of the Avian Lymphoreticular System

Other papers received for the scientific session include –

* Generalised Protothecosis in Dogs
* Granulomatous Splenitis and Lymphadenitis in a Dolphin
* Probable Storage Disease in Kangaroos
* Cervine Lymphadenopathy
* Immune Memory in Mammals without Lymph Nodes
* Immunocytochemistry and in situ DNA Hybridisation in diagnosis of Aujesky's Disease
* Lymphoreticular Neoplasms in Koalas

## STATE REPORTS

**SOUTH AUSTRALIA -** Peter Phillips

CENTRAL VETERINARY LABORATORIES – ADELAIDE

BORDER DISEASE IN LAMBS (Robin Giesecke)

Twin week-old Border Leicester x Merino lambs showing tremor and fleece changes were submitted for necropsy. The ewe lamb weighed 4.7 kg., had hairy fleece over the entire body and showed a mild tremor of the head and hindquarters. Her male twin weighed 3 kg., showed hairiness of the fleece over the lower abdomen, and exhibited a severe tremor involving the whole body. Apart from the fleece changes no gross lesions were noted at necropsy.

Histopathology showed a moderate gliosis and mild hypomyelinogenesis, particularly of cervical and thoracic spinal cord of both lambs. Pestivirus was isolated from the blood, brain, spleen, kidney and faeces of the female and from blood, heart, spleen, nasal secretion and faeces of the male. No antibody to bovine pestivirus was detected in serum. This is believed to be the first time pestivirus has been isolated from South Australian sheep although Hairy Shaker lambs have been seen previously.

Recent studies of Border Disease in California (Anderson et al. 1987) have suggested that hypomyelinisation may be due to depressed levels of circulating thyroid hormones secondary to non-inf1ammatory infection of the thyroid gland by the virus. Electron microscopy on the thyroid glands, together with thyroid hormone assays, is in progress on the South Australian lambs.

Reference

Anderson, C.A., Higgins, R.J., Smith, M.E. and Osburn, B.I. (1987) - Border Disease - Virus-induced decrease in thyroid hormone levels with associated hypomyelination.
Laboratory Investigation S7.(2).168

SOUTH EAST REGIONAL VETERINARY LABORATORY – STRUAN

FESCUE FOOT - (Mike Hindmarsh)

An endophyte has recently been found on Williams grass (tall fescue) which may be associated with a lameness syndrome of sheep and cattle in the South-East.

The fungus is suspected of producing a toxin which reduces blood flow to the extremities and skin above the hooves becomes cold and dry. In cattle it has been noticed that the left hind foot becomes affected first and symptoms appear 7-14 days after grazing the Williams grass.

HAEMORRHAGES IN LAMBS (Mike Hindmarsh)

Meat inspectors at an export sheep abattoir processing lambs from a feed lot found widespread petechial haemorrhages in the leg, neck and diaphragm muscles and in heart, abdominal and thoracic viscera. Of the 750 lambs in the batch 7 were condemned and remaining carcases required extensive trimming.

Histology confirmed recent haemorrhage and areas of mild hyaline degeneration were seen associated with haemorrhage in some muscle groups. Normal blood selenium but low Vitamin E levels were detected in one lamb.

**WESTERN AUSTRALIA** - David Pass

SCHOOL OF VETERINARY STUDIES - MURDOCH UNIVERSITY

BULLOUS PEMPHIGOID IN A DOG - (J Thomas)

A four year old border collie X female spayed dog was presented with a 2 week history of acute skin lesions in the interdigital areas and lips. These lesions consisted of variably sized bullae, ulcerations with exudation and scab formation, erythema and alopecia. The lesions were painful.

Histologically, there was hyperplasia, focal coagulation, necrosis and focal, basal dysplasia in the epidermis. There was massive oedema and necrosis in the subepidermal region with bullous formation. The basement membrane appeared intact though there was marked thickening focally. The dermis contained a moderate infiltrate of neutrophils and macrophages with occasional eosinophils and lymphocytes.

Immunofluorescence was performed on 3 µ paraffin embedded sections and this demonstrated the presence of IgG in a linear arrangement along the basement membrane. This confirms the diagnosis of bullous pemphigoid. I

ALBANY REGIONAL LABORATORY - Ruth Reuter

Botryomycosis

Formalised material submitted from two different cases resulted in a diagnosis of Botroyomycosis on microscopic examination. The first was a biopsy from the udder of a mature cow. Portions of a fibrous mass which was difficult to remove from the udder were submitted with a provisonal diagnosis of neoplasia. On histology the characteristic granulomatous inflammatory reaction with giant cells and mononuclear cells surrounding club colonies filled with gram positive cocci was seen.

The second sample was a circumscribed lump from the left carpus of a mature sow. The histologic picture was essentially the same as that in the first case. Material was not available for culture in either case.

Osteomyelitis in a Bull

A two and a half year old Angus bull which was clinically normal was found down one evening, and next morning, with hind legs stretched behind him. He was bright and alert, but unable to stand and, despite various treatments and intensive nursing, showed no signs of recovery. Euthanasia was performed when the bull began losing condition. On post mortem a large, circumscribed, fluctuant swelling was found at the level of thoracic vertebrae 6 and 7. On incision this was identified as an abscess containing foul smelling greenish fluid which yielded Corynebacterium pyogenes on culture. Both vertebrae were necrotic and the spinal cord was compressed at the site.

Ameloblastoma in a Bull

A large ulcerated lump 12 cm x 10 cm x 10 cm was found at the proximal extremity of the mandible of an 18 month old bull. The mass penetrated the mandible, involved the gingiva and enveloped six incisor teeth. The regional lymph nodes were not affected. Histology identified cords of cells resembling dental epithelium, islands of osteoid and masses of cells resembling enamel epithelium. These tumours are reportedly relatively common in cattle and may occur at any stage.

Neonatal Death in Fallow Deer

Ten out of 19 fawns born to a group of fallow deer died within a week to 10 days of birth. The deer were run amongst pine trees in a plantation, and stocked at a rate of approximately 50 does on 10 acres. There was little undergrowth around the trees and the animals were being handfed hay and some grain. The post mortem findings were dehydration and acute enteritis with E. coli the primary isolate on culture. Shifting the animals to a larger paddock with tall grass and provision of straw bales behind which the fawns could shelter resolved the problem.

Salmonellosis in Turkey Poults

Seven hundred, one week old turkey poults were brought in from the eastern states by road transport to be used for grasshopper control on a pine plantation near Albany. On arrival 46 poults were dead and losses continued at the rate of five per day for eight days before samples were submitted. On post mortem consistent lesions were pale livers, large gall bladders and unresorbed yolk sacs. Salmonella saintpaul was cultured from several birds. This organism has been incriminated in occasional cases of human illness associated with consumption of poultry. It has also been isolated periodically from the water reservoir which supplies the Town of Albany and is suspected to be linked to the large number of King Skinks which inhabit the surrounding bush.

Other Miscellaneous Conditions include

* Erysipelas arthritis in sheep.
* Dematophilosis in goats.
* Nephrocalcinosis, cataracts and lymphosarcoma in rainbow trout.
* Hepatic coccidiosis, embryonal nephroma, arteriosclerosis and gastric ulcers in rabbits.

Animal Health Laboratory Perth - (R. Peet)

RHABDOMYOLYSIS IN SHEDDED SHEEP ASSOCIATED WITH LOW PLASMA ALPHA-TOCOPHEROL

"Sharlea" sheep are superfine merinos, shedded and fed a predominantly grain diet in attempt to produce top quality wool (Hucker, 1987). Twelve of 500 of these died recently in a shed near Perth over a 6 week period.

Six were presented to Animal Health Laboratory for post mortem examination. The animals were in good to fat body condition and usually found dead. All had been vaccinated against clostridial diseases including enterotoxaemia. Luckily, the first 2 submitted to AHL were alive. They were recumbent but alert and did not appear blind. All sheep had red to port-wine coloured urine which proved to be myoglobinuria (Blondhelm et al, 1958) and these 2 had C.P.K. values of 195,000 and 300,000 U/L respectively. Apparently pale skeletal muscle ("fish muscle") was evident in the hind limbs of only 1 of the sheep necropsied but severe rhabdomyolysis was evident histologically in all 6 sheep. This was characterised by myonecrosis with some aggregates of PMs and interstitial oedema. Regeneration attempts were evident in only 2 sheep. Blood plasma alpha-tocopherol levels taken from 24 apparently healthy sheep from pens in the shed where fatalities had occurred ranged from 0.2 to 1.10 (0.56 ± 0.05) µg/ral. Alpha-tocopherol levels of less than 1 µg/ml are considered indicative of inadequate intake of this vitamin. (McDonald and Caple, 1983).

Liver selenium levels of two sheep necropsied were 1.63 and 1.14 ppm dry weight respectively. Blood glutathione peroxidase activities in the 24 apparently healthy sheep (80 ± 3 I.U./g Hb) were also considered to be more than adequate and the C.P.K. levels of these sheep ranged from 100 to 4680 (448 ± 183) U/L.

Vitamin E therapy is currently being attempted and evaluated.

References

Blondheim, S.H., Margo1iash, E. and Sharfrir, E. (1958) JAMA 167: 463.
Hucker, D.A. (1987) Aust. adv. vet. Sci. p. 82.
McDonald. J. and Caple I, (1983) Proceedings No. 67 Sheep Production.
and preventative Medicine, p. 233 - Postgrad. Ctee. Vet. Sci. Uni. Sydney

**NORTHERN TERRITORY** - Lorna Melville

BERRIMAH AGRICULTURAL LABORATORY

Equine Abortion due to EIA virus (L. Melville)

A thoroughbred mare, under surveillance as a known equine infectious anaemia reactor, aborted a female foal at 9 months gestation. The foal was received in good condition and gross examination was unremarkable except for petechial haemorrhages on the liver, kidney and heart.

Bacterial cultures were performed on liver, lung and heart blood but no significant isolations were made. Serology for EIA on heart blood gave a moderately strong positive reaction.

The major histological changes were found in the liver where there was extensive diffuse hepatocyte necrosis and mononuclear inflammation. Some of the mononuclear cells in the portal tracts and sinusoids were suggestive of immature red cell series. The only other lesion was in the spleen where there was central follicular lymphocyte necrosis and phagocyte replacement.

EIA virus has occasionally been reported in the literature as causing abortion, however, the histological lesions have not been described. Since antibodies do not cross the equine placenta the positive reaction in this foal is highly suggestive of an intra utero viral infection.

Type C Botulism in Ducks (L. Melville)

Type C botulism was diagnosed as the cause of death of 60 ducks (the entire stock) on a small farm south of Darwin. Turkeys on the farm were also affected.

Birds submitted to the laboratory showed typical flaccid paralysis and mouse inoculation and protection tests confirmed the presence of type C botulism toxin in the sera of affected birds. The source of the infection could not be identified.

AZRI ANIMAL HEALTH LABORATORY. ALICE SPRINGS (D. McEwan)

Leg paralysis in parrots

This condition occurred in 2 superb parrots and 2 Major Mitchell cross Sulphur-Crested Cockatoos. The superbs were mature birds, both had a sudden onset of paralysis from the region of the hock down. As a result they were unable to perch or grasp but could fly. One recovered after several days confinement in a small cage. The second bird appeared to panic when unable to perch and crashed, killing itself. Autopsy findings were unremarkable.

The M.M. x S.C. birds were just 8 weeks old. Onset of paralysis was again sudden. The birds remained healthy with good appetites for 2-3 weeks. Treatment with Vitamin B complex and Amoxil was unrewarding. One bird was euthanased, autopsy revealed haemorrhages in the central spinal cord in the lumbar region. There was also an acute splenitis.

Kangaroo clostridial infection

A swarming Clostridium sp. was isolated from a large gaping wound in the hock region of a red kangaroo. The lesion was intensely pruritic, oozed a serosanguineous discharge and the upper part of the leg was swollen. Treatment with various antibiotics was unsuccessful.

Equine stillbirth

Haemolytic E.coli was recovered. from the liver, lung, spleen and stomach contents of a full term stillborn foal.

Hepatogenous photosensitisation in bovines

Some 30/60 Friesian x heifers exhibited photosensitisation lesions while grazing a green crop of Sabi/Urachloa grass. Two died. Autopsy of a 3rd animal revealed a slightly swollen mottled liver, enlarged gall bladder and enlarged discoloured hepatic lymph node. It was estimated time of onset of photosensitisation lesions was 7-14 days previously. Liver histology showed mild bile duct proliferation and portal fibrosis. (Heifer was only mildly affected-sacrificed because of bilateral pinkeye). Cause of the condition was not determined.

Canine Babesiosis (M. Pearce)

During late December, 1987, two out of a litter of four six-week-old Australian cattle dog cross puppies were presented to a practitioner in Katherine, N.T. Both were anaemic and lethargic. Faeces were examined for hookworm eggs. There were none. Both pups were treated with a multi B vitamin and iron preparation.

One of the puppies improved. The other, a male, was presented again the following day, vomiting. It was icteric, passed dark urine, yellow faeces and died shortly after. The dog's liver was forwarded in 10% NBF. Sections prepared were stained with haematoxylin and eosin.

There was generalised centrilobular degeneration and necrosis of hepatocytes. Peripheral to these areas, hepatocytes exhibited hydropic change. Many of the bile ductules and the bile ducts were engorged with bile. Large numbers of neutrophils and numerous active Kupffer cells were in the sinuses. Scattered erythrocytes in the sinuses and central veins contained small, pale blue bodies about 4u wide.

In Australia, Babesia canis is thought to be transmitted by Rhipicephalus sanguineus, a three-host tick and the piroplasm can be passed through the tick egg. The Australian disease is much less virulent than that found in Africa. Typically, one or two puppies from a litter are affected as In this case and infection can be rapidly fatal. Clinical signs reflect an acute haemolytic anaemia and diagnosis is best confirmed by taking peripheral blood from the ear flap, making a smear and staining it with a Romanowsky stain.

**QUEENSLAND -** Fraser Trueman

University of Queensland

Following the Jubb report on the Veterinary School, the administration has set up a Diagnostic Services unit, which incorporates the clinical pathology laboratory of the former Department of Veterinary Medicine, with the diagnostic pathology, bacteriology, toxicology and meat hygeine sections of the Department of Veterinary Pathology & Public Health. In line with trends elsewhere, the aim is to try to achieve some measure of self funding to ease the burden on the University. Stay tuned for further developments.

During a 10 month study leave in Uppsala, Sweden, Roger Kelly at last became more conversant with immunohistochemical techniques for diagnosis of viral infections (pseudorabies, rabies and canine distemper), mostly using high potency polyclonal antisera. For the records of the immunohistochemical registry held at RVL, Wollongbar, Roger has at Brisbane a limited supply of rabbit antisera against pseudorabies, distemper and rabies. The first two work well on paraffin-embedded, formalin-fixed sections without the need for enzyme pretreatment; the rabies schedule needs the sections to be trypsinised or pepsinised. He also has good blocks of experimental pseudorabies-infected pigs, and is prepared to send sections of them on request.

Some early success with the production of monoclonal pseudorabies antibody came to naught when the secreting clones passed away. In the meantime, however, a biotinylated pseudorabies DNA probe was successfully used to identify the virus by in situ hybridisation in paraffin-embedded, formalin-fixed sections. It seems that this technique, which is difficult and often insensitive at present, will eventually prove valuable in routine diagnosis of virus infections, especially in the (latent phase of herpes virus and retrovirus infections, where incomplete viral antigen expression in infected cells is usual.

ANIMAL RESEARCH INSTITUTE (Fraser Trueman)

Adenoviral enteritis was diagnosed in two Ayrshire calves that died in the paddock. The small intestine was congested and haemorrhagic and lymph nodes were enlarged. Histologically there was a moderate increase in numbers of round cells and eosinophils in the propria. Many intranuclear inclusion bodies were present in endothelial cells of vessels in the mucosa and submucosa of the intestine, and also in the lymph node. The presence of adenovirus was confirmed by electron microscopy.

IBR infection was considered to be the cause of disease in a milk vealer production unit. Calves were purchased at between 2 and 16 days and fed by foster mothers. About 7 to 10 days after arrival they developed runny nose, eye discharge and cough all of which increased in severity and resulted in purulent conjunctivitis and rhinitis. The problem has been occurring for 6 months and in the current batch of 50 calves 20 were sick and 1 died. IBR virus and Pasteurella multocida were isolated from nasal swabs.

Porcine Parvovirus Infertility. An abortion storm in a 100 sow piggery occurred over a 2 week period. Fifteen abortions were observed and a total of 50 sows were later considered to be involved with serious financial consequences. Abortions occurred at 47-110 days of gestation and mummified foetuses were a typical finding. Mummified foetuses of 16cm crown rump length were submitted to the laboratory. Abdominal viscera were positive (1/128) to the haemoglutination test for porcine parvovirus.

Colibacillosis

An ongoing problem of severe post-weaning diarrhoea and deaths at the rate of about 8 per week occurred in a piggery. Housing conditions were a major contributing cause. Comparatively small slatted areas were present in weaner pens, and pens containing different age groups adjoined with only a mesh partition. "Ecovac" was used in sows for prevention of sucker diarrhoea and "Autovac" an autogenous live E. coli vaccine was used in suckers for prevention of post weaning scours. Several deaths occurred in 3-4 week old suckers/ weaners as early as 2-3 days after use of "Autovac". Post mortem findings were consistent with acute colibacillosis, haemorrhage and thrombosis were seen histologically in gastric and intestinal mucosa; changes suggestive of endotoxin absorption. Haemolytic E. coli was isolated from upper and lower intestinal tracts of 2 piglets examined at the laboratory.

Cystitis and Pyelonephritis due to Proteus mirabilis

A four year old sow had a yellow mucus discharge from the vagina 3 days post-mating, which did not respond to terramycin, sulphamezathine or tylan therapy. Thick syrup-like urine was passed and progressive anorexia and weakness resulted in a decision to euthenase the animal about 3 weeks after onset of disease. At autopsy haemorrhagic and purulent cystitis was present and the infection has ascended the right ureter which was dilated, thick walled and tortuous and contained fibrin floccules in the lumen. The calyces of the right kidney were extremely hyperaemic and a fibrinous exudate adhered in the pelvis. The reproductive tract was unaffected and contained normal foetuses. Histological findings were:

* focal acute purulent and non-purulent pyelitis
* focal purulent nephritis
* acute mucopurulent cystitis with haemorrhage
* catarrhal inflammation of mucosa of the ureter

A pure culture of Proteus mirabilis was isolated from the kidney, pelvis and the bladder. The isolate was resistant to terramycin and sulphamezathine but sensitive to aminoglycosides, carbenicillin and cotrimoxazole.

In humans Pr. mirabilis is a less frequent cause of urinary tract infection than E. coli but is recognised to be more serious because of its predisposition to ascend the tract and cause kidney lesions. Rapid growth in urine, possession of a potent urease and motility are some of the reasons for this.

Verbesina encelioides toxicity was diagnosed as causing 4 deaths in a group of 55 stud Merino ewes. The ewes were spelled at Charleville trucking yards after travelling from South Australia. Two days later deaths were reported with white foam discharging from the nostrils. Necropsy revealed severe pulmonary oedema. Yellow daisy was available to the sheep at the spelling yards.

Ionophore toxicity, derived from increased levels of coccidiostats in broiler rations, was suspected on one property in 2 week old broiler chickens. The birds died in sternal recumbency with neck and hind limbs outstretched, a position reported to be characteristic of birds dying of monensin toxicity. Deaths had been occurring in a number of flocks over the previous few months. Mortalities in this outbreak reach 40 per day from a flock of 20,000.

Little pathology was seen grossly with one chicken showing haemorrhage in the upper leg muscles. Histologically, characteristic degenerative lesions were seen in skeletal muscle with necrosis of individual fibres, loss of striations and interstitial infiltration of round cells including phagocytes. The heart showed infiltration of the epicardium with macrophages.

Inclusion Body Hepatitis was diagnosed in a broiler flock. A total of 300 3-week-old birds had died from a flock of 60,000. The birds had shown typical signs of hepatitis with jaundice and depression. Histological examination of the liver revealed a severe hepatitis characterized by focal necrosis, mononuclear and

heterophil infiltration, haemorrhages and the presence of large solid basophilic inclusion bodies indicative of Inclusion Body Hepatitis.

ROCKHAMPTON VETERINARY LABORATORY (Grant Campbell)

Gastrolobium grandiflorum poisoning was diagnosed in a flock of 5000 agisted sheep. The property had been destocked for over 3 years, and losses started to occur 2 months after the sheep were introduced. Fifty deaths were reported when the situation was investigated. Focal myocardial degeneration was found histologically, and rumen contents comprised approximately 20% heart leaf poison bush.

Suspect Rubber Vine toxicity was diagnosed as the cause of death in 3 circus horses. The animals had been tethered close to an acacia tree overgrown by rubber vine. They had been fed hay on the ground which was littered with dried rubber vine leaves. Clinical signs included dullness, laboured respiration and muffled heart sounds. Death followed approximately 14 hours after clinical signs were observed.

Necropsy revealed severe epi, endo and myocardial haemorrhages, plus hyperaemia of intestinal mucosa with blood stained contents. Microscopic changes were extensive haemorrhages throughout the heart and acute myocardial necrosis.

GRADUATE SCHOOL OF TROPICAL VETERINARY SCIENCE JAMES COOK UNIVERSITY OF NORTH QUEENSLAND (P. W. Ladds)

HISTOLOGICAL STUDY ON DISEASES OF MACROPODS

An MSc project being undertaken by Ms J Donovan In association with Dr. R. Speare is nearing completion. Included in the study was material from 241 animals examined between 1980 and 1987.

Many changes, including the following lesions and incidental changes were found:
necrobacillosis, sarcocyst-1ike cysts, toxoplasmosis, cataracts, keratitis and retinitis, poxvirus, superficial mycoses, presumptive candidiasis, coccidiosis, lesions due to gastro-intestinal nematodes, gastric and duodenal ulceration, presumptive bacterial enteritis, "amoeboid bodies", Schmorl's-positive hepatocellular pigments, durikainemiasis and changes associated with other filarioid nematodes, hepatocellular necrosis and hepatitis, echinococcosis, presumptive hepatoma, pancreatitis, glomerulonephritis and renal tubule-interstitial diseases, Klossiellosis, renal mineralisation and tubular epithelial intranuclear inclusion bodies, mild sero-fibrinous pulmonary changes due to inhaled particles, and more severe bronchopneumoniasis, lobar pneumonias and interstitial pneumonias, presumptive mycobacteriosis nocardiosis, a bronchiolo-alveolar tumour, mild cardiomyopathy and cardiomyositis, vascular mineralisation, thymic atrophy and presumptive ectopic parathyroid tissue in the cervical thymi.

No distinct variability between species in susceptibility to specific diseases was found, except perhaps for coccidiosis; however, of the three best-represented groups the most important lesions in captive joeys were infectious in nature, involved thymic atrophy and in many cases were associated with septicaemia. In captive adults infectious conditions included those of a more chronic nature such as mycobacteriosis, and some parasitic lesions in common with those seen in wild animals. Wild adults showed little tendency to infectious disease other than parasitic disease; parasite lesions and incidental histological findings formed a large proportion (at least 80%) of the changes seen in this group.

There was a difference between the apparent importance of diseases such as herpes virus necrobacillosis and toxoplasmosis as portrayed by the volume of literature, and that seen in the histopathological study. It was concluded that this difference was probably environmental rather than directly related to species differences.

Poxvirus lesions were seen in four species including common wallaroos (Macropus robustus); presumptive durikainemiasis in four species including red kangaroos (Macropus. rufus). The overall importance of respiratory tract lesions in all groups was highlighted.

Cases of interest

Necropsy of a 20 year old Shetland mare with a history of colic revealed a 6x7cm subcutaneous swelling in the inguinal region which histologically was adenocarcinomas, probably of mammary origin. Other lesions in the same mare included several intestinal leiomyomas, pheochromocytoma and nodular hyperplasia, adenoma of the thyroid gland.

An unusual mast cell tumour in a cat was diagnosed by visiting pathologist David Williams. The neoplasm had exceptionally large cells with excessive eosinophilic cytoplasm which lacked granularity in H&E sections. Eosinophils were also absent. Rhabdomyoma was considered a possibility but Giemsa staining confirmed the large cells as mast cells.

TOOWOOMBA VETERINARY LABORATORY (John Gibson)

The laboratory has established a strong clientele and receives 40-50 batches of specimens per week. Pigs, cattle and poultry are the major species handled.

Warfarin poisoning was confirmed as the cause of a haemophilia syndrome in weaners on a 150 sow piggery. Seventeen pigs died and a further eleven had clinical signs of epistaxis, retrobulbar haemorrhage and spontaneous subcutaneous and intramuscular haemorrhage. Prolonged bleeding was noted from trivial cuts and abrasions, two dead pigs submitted for necropsy had pale mucous membranes with extensive subcutaneous and intramuscular haemorrhage around the head, neck and axilla. Warfarin was detected in liver (1.6 mg/Kg); stomach contents (0.1 mg/Kg) and the creep ration (2.6 mg/Kg). Deaths occurred in two episodes, five and eight weeks after a commercial warfarin baiting programme for mice. Losses occurred only in two pens and only after heavy rain. Further investigation revealed that feed hoppers in the pens were contaminated by rainwater leaking into the shed and washing warfarin gel, laid on overhead beams, into the pens. Treatment with Vitamin K, both parentrally and in the feed was very successful.

Suspect Vesicular Dermatitis was diagnosed in a group of backyard chickens. Grossly the lesions were restricted to combs and wattles, and consisted of superficial moist scabs and what appeared to be ruptured vesicles. Histologically there was superficial to full thickness necrosis of the epidermis and oedema of the dermis with early vesicle formation in the stratum corneum. These lesions are thought to be photosensitisation and have been reported in chickens eating parsley (Cymophterus spp.). Further questioning of the owner revealed these birds had access to and were ingesting large amounts of parsley.

Psittacine Beak and Feather Disease (PBFD French Moult) produced a marked feather loss in 5% of adults and 100% of nestlings in a group of 100 lovebirds. Lesions were confined to feathers and the associated epidermis of the feather follicle with necrosis and large numbers of amphophilic cytoplasmic inclusions. Numerous small, 20mm virus particles were seen on direct E.M., however, culture was unsuccessful.

Swainsona poisoning

A goat owner reported the loss of approximately 200 animals over a period of months. Affected animals would collapse and die when being driven or would develop hind limb ataxia. Two goats were submitted to the laboratory. One in lateral recumbency, the other with moderate hind limb ataxia. Both animals showed moderate to marked vacuolation of neurones, particularly in the Purkinje cells of the cerebellum. There was some axonal degeneration and spheroid formation in the white matter. Some mild vacuolation was also present in hepatocytes and Purkinje fibres of the heart. The lesions were suggestive of a lysosomal storage disease. The herd was feral and has access to Darling Pea (Swainsona spp.). On the basis of the lesions detected and history of access, a diagnosis of Swainsona poisoning was made.

**NEW SOUTH WALES** - Jim Rothwell

REGIONAL VETERINARY LABORATORY – GLENFIELD

Gossypol Poisoning in Calves (Jim Rothwell)

A number of sudden deaths, followed by illthrift, and further deaths were seen in a group of 100 dairy calves being raised for veal. The animals were raised on milk replacer and a concentrate for 5 weeks, and then weaned onto the concentrate, being 33% cottonseed meal 64% crushed barley and 3% minerals. Some poor quality straw used as bedding was also available.

Acute deaths were seen at 6-10 weeks of age in about 15 calves. The primary lesion seen was acute periacinar hepatic necrosis. Later on in the course of the disease outbreak, many animals presented with rough coats, stunted growth and ascites or death. At necropsy there was also hydrothorax, hydropericardium and what was interpreted as generalised myocardial fibre atrophy. Unusual vascular lesions were seen in the lungs with fibrinoid change in an occasional pulmonary vessel, and pronounced oedema of all vessel layers in many.

About 170mg/kg (170ppm 0.017%) free gossypol was present in the feed with considerable sample variation possibly due to the dry mixing of the components. Death has been recorded in calves fed 0.035% free gossypol in a concentrate with ad lib lucerne hay, (A.F. Hollon et al. J. Dairy Sc. 41: 286, 1958). Gossypol is a cumulative toxin and we believe the history, clinical and pathological findings along with the high free gossypol levels in the diet clinch the diagnosis. We are attempting to get liver gossypol analysis undertaken. Deaths in calves on similar levels of cotton seed meal have also been reported in Ireland and Israel. Young calves, being similar to monogastric animals should be treated as such, and it is recommended that pigs and poultry receive no more than 100 pprm free gossypol in their diet. Another complication could be the dissociation of bound gossypol under acidic conditions in the stomach.

REGIONAL VETERINARY LABORATORY - WACGA (John Glastonbury)

CATTLE

Bovine malignant catarrh - A 16 month old Murray Grey heifer which had been grazing annual rye grass for six weeks during December 1987 displayed convulsions and a staggering gait for one week prior to death. Annual rye grass toxicity was suspected by the owner but histological examination revealed segmental fibrinoid necrotising vasculitis accompanied by infiltration of mononuclear leucocytes in a number of organs. The only significant gross post mortem finding was extreme hypertrophy of the lymph nodes in the head and neck regions.

Tuberculosis

An aged Hereford cow which cane from Queensland via Dubbo was slaughtered at Wodonga and found to have lesions consistent with Tuberculosis. Material for laboratory examination finally arrived at the RVL one month later. Histological examination revealed multifocal chronic granulomatous lymphadenitis in the mesenteric lymph nodes and the lesions contained a small number of organisms with a morphology consistent with Mycobacterium bovis following staining by the Ziehl-Neelson method. The results of cultural examination are awaited.

SHEEP

Lupinosis/Pyrrolizidine Alkaloidosis/Chronic Copper Poisoning

Uncomplicated lupinosis was diagnosed on 4 farms and the morbidity and case fatality rates-varied from 2 to 12% and 44.6 to 66.7%, respectively. Histologically, in the liver, periacinar fibrosis, karyomegaly,

lipidosis, pigment accumulation in macrophages, bile stasis and individual hepatocyte necrosis were observed. Abnormal mitotic figures were extremely scarce. On a further 4 farms, lupinosis was diagnosed in association with histological lesions strongly suggestive of chronic copper poisoning. The morbidity and case fatality rates on these 4 farms were 1.6 to 10% and 42.9 to 100% respectively. Additional histological changes included a more severe degree of megalocytosis, accumulation of copper-like pigment in the liver and haemoglobinuric nephrosis.

Hepatogenous chronic copper poisoning was diagnosed on one farm.

Degenerative myelopathy and encephalopathy

During summer each year a small number of cross-bred hoggets on a district farm developed posterior ataxia and die within 14 days. In one animal submitted to the laboratory, severe demyelination was observed in the ventral and lateral columns of the cervical and thoracic segment of the spinal cord. Central chromatolysis was observed in the reticular formation of the medulla oblongata and ventral horn neurons. No likely cause has been identified.

GOATS

Mastitis - Two outbreaks of Staphylococcal mastitis were investigated during December 1987. On the first farm approximately 5% of 200 Saanans developed mastitis over a 3 month period. On the second farm 4% of 150 Saanan milking does developed clinical mastitis over a 6 week period. Milk was obviously abnormal, production diminished and the udders were warm and swollen. Culture of milk samples from both farms yielded heavy pure growths of Staphylococcus aureus.

REGIONAL VETERINARY LABORATORY – ARMIDALE

BOVINE SQUAMOUS CELL CARCINOMA OF THE RUMEN (Barbara Vanselow and Elsa Willis*)

Bovine ocular squamous cell carcinoma is frequently seen in Hereford cattle but there are no reports of squamous cell carcinoma of the rumen in Australia although it has been reported in other countries, often with a high incidence. In this case, the tumour occurred in a 10 year old Hereford cow from the Warialda district of NSW. Clinically the cow was emaciated, anaemic and jaundiced. On post-mortem examination, the carcase was jaundiced and the rumen had a large proliferative swelling about 20 cm in diameter on the dorsal surface. There were several smaller but similar lesions rostrally on the rumen and loosely adhered to the liver and diaphragm. The epithelial lining appeared largely unaffected, with the tumour bulging from the serosal surface. Throughout the abdominal cavity, but particularly on the left side were numerous (up to 30) round 3cm x 1cm thick lesions on the peritoneum. The liver was adhered to the diaphragm and had 7 focal hard yellow lesions approximately 3cm in diameter.

Histologically, the masses in the rumen, liver and peritoneum were well differentiated squamous cell carcinomas with a moderate mitotic index. There was marked keratin pearl formation and stromal fibrosis. In the piece of ruminal tumour submitted the ruminal epithelium was covered by a thick layer of Keratin and had deep rete pegs descending into the underlying fibrous stroma which contained islands of malignant squamous cells.

With the lack of other lesions in the carcass it appeared that the rumen was the primary site and that the tumour had infiltrated the ruminal wall and seeded onto the liver and peritoneum.

In Scotland, squamous cell carcinomas of the rumen have been associated with prolonged grazing of bracken fern. The cow described here had never had access to bracken but had access to rockfern. It is possible that rockfern may be carcinogenic in a similar way to bracken fern. Prolonged consumption of bracken by cattle has led to the development of cancerous tumours in the bladder and resultant haematuria. In the Tenterfield district of NSW, circumstantial evidence has suggested that cases of haematuria were

associated with large amounts of rockfern in the pasture. In the case described here rockfern may have been the source of a carcinogen or co-carcinogen involved in the pathogenisis of squamous cell carcinoma of the rumen.

* Private practitioner, Warialda

MALIGNANT MELANOMAS IN ANGORA (Steven Hum)

An unusual incidence of malignant melanomas was seen in an angora flock. Four out of 70 animals have been diagnosed as having this tumour within 4 months. The affected animals were over 3 years of age. On 2 animals the tumour appeared on the ear and in the other 2 the perineal region.

Grossly they were 1-2cm in diameter, pigmented, had an uneven surface and, on the ears, were ulcerated. The histology of cell growth appeared similar and consisted of extensive proliferation of epithelioid and spindle shaped cells containing various amounts of melanin. Polymorphism was marked with frequent mitosis and areas of intraepithelial growth.

In one animal 3 months following the removal of the tumour from the ear, metastases developed and large lumps appeared around the submandibular region causing sever dyspnea. She was euthanased. The others were under observation.

REGIONAL VETERINARY LABORATORY – ORANGE

LUPINOSIS IN SHEEP (J.T. Seaman)

Lupinosis has been seen as a significant cause of sheep mortalities in the Central West of New South Wales for the first time this year. At initial investigation, on individual properties, eight cases have been confirmed at RVL Orange with mortalities of up to 150 sheep (15%). Liver lesions have varied from diffuse lipidosis to the characteristic severe hepatopathy with marked centrilobular fibrosis.

The disease has been associated with relatively mild summer temperatures and good rainfall during January promoting growth of the Phomopsis fungus on Lupin stubbles. In many cases deaths continued for several weeks after the sheep were removed from the stubble. In two cases the field reports indicated there was plenty of alternative feed available in the paddock and sheep seemed to select the lupin stubble in preference to the other feed.

REGIONAL VETERINARY LABORATORY - WOLLONGBAR (Paul Gill)

Plant poisonings in cattle: A considerable number of cases of scouring and death in calves this summer have been attributed to bracken fern (Pteridium esculentium) poisoning. Black bean (Castanospermum australis) poisoning was diagnosed in a herd with diarrhoea and illthrift. Woolly Pod vetch (Vicia villosa was incriminated as the cause of scouring, skin wheals and death in 6/40 animals in another herd. There was granulomatous nephritis with infiltration by eosinophils.

Haemophilus somus pneumonia in a calf: Two five-week-old Herefords died due to diffuse, fibrinous pneumonia associated with Haemonphilus somnus infection.

Encephalitozoon cuniculi in a rabbit: Diffuse non-suppurative meningoencephalitis and nephritis due to Encephalitozoon cuniculi infection was diagnosed in a domestic rabbit. There has been increased practitioner interest in rabbits since the recent proposals regarding commercial breeding.

**VICTORIA -** Sue Friend

CENTRAL VETERINARY DIAGNOSTIC LABORATORY – MELBOURNE

ACTINOBACILLUS SUIS IN A MARE (S. Friend, P. Lording)

Actinobacillus suis was isolated from the uterus of an 18 year old mare which had aborted 2 sets of twins over the past 2 years. Actinobacillus suis was isolated from uterine swabs taken after the second abortion and just before service. There was no evidence of endometritis and the mare was clinically normal.

Actinobacillus suis causes septicaemia, meningitis, pneumonia, pericarditis and arthritis in piglets and pyometritis in sows, and has been reported as a cause of infection in horses (Carter 1904). Organisms of the Actinobacillus genus occur as commensals in the alimentary, respiratory and genital tract of animals. The A. suis isolated in this case may have been a commensal. However, the mare is thought to be in foal and her clinical course is being monitored.

Reference:

Carter, G.B. (1904) - Diagnostic procedures in Veterinary Microbiology 4th Ed.
Charles C. Thomas, Springfield, Illinois.

REGIONAL VETERINARY LABORATORY – BENALLA

HAEMOPHILUS PLEUROPNEUMONIA IN PIGS (Rolly Bennett, Bronwyn Smits)

Sudden deaths of 40 - 50 grower pigs occurred over a hot weekend in early November. Post mortem examination revealed a severe pleuropneumonia with bloody pleural fluid and adhesions. A severe diffuse fibrinous bronchopneumonia and pleuritis was diagnosed and Haemophilus pleuropneumoniae was isolated.

MALIGNANT CATARRHAL FEVER IN DEER (Angus Cunningham, Bronwyn Smits, Malcolm Lancaster and Laurie Denholme).

An outbreak was diagnosed in Rusa deer which began in June and ended in September/October. Mortality reached 10%. Most affected animals suffered a short illness with scouring, dehydration and inco-ordination, or were found dead. On histopathological examination blood vessels showing fibrinoid necrosis and vasculitis of varying severity were seen in most tissues. The outbreak was unusual as MCF usually occurs sporadically.

REGIONAL VETERINARY LABORATORY – BENDIGO

CAMPYLOBACTER HYOINTESTINALIS - PATHOGEN OR PASSENGER (R.T. Jones)

Swine dysentery and Campylobacter infections are commonly diagnosed in pigs at RVL Bendigo. Treponema hyodysentiae has been isolated from the majority of Swine Dysentery cases.

Campylobacter infection manifests as proliferative haemorrhagic enteropathy (PHE) porcine intestinal adenomatosis (PIA) and necrotic enteritis (NE). The lesions in all 3 syndromes involve the terminal lesion, though caecum and colon may be involved in a small number of cases. Five years ago difficulty was expressed in culturing Campylobacter from the lesions, and isolates were invariably C. sputorum. Now isolation is easy and nearly all isolates are C. hyointestinalis.

On 4 farms swine dysentery has been diagnosed on gross and microscopic lesions and culture but C. hyointestinalis was recovered from the ileum in all cases and from colon in one, as well. There were no lesions indicative of Campylobacter infection.

This raises a number of questions that need to be answered:

* What is the role of C. hyointestinalis in PHE, PIA and NE?

* Can C. hyointestinalis exist as normal flora, in the absence of disease, on farms where Campylobacter infection occurs?

* Has C. hyointestinalis any role in the pathogenesis of swine dysentery?

* Can C. hyointestinalis produce colitis without T. hyodysenteriae and in the absence of ileal lesions?

HAEMORRHAGIC ENTERITIS OF TURKEYS (J. M. Lee)

An outbreak of haemorrhagic enteritis was diagnosed in turkeys in January and February in a flock of 7,000 eight week old birds at Wycheproof. Clinical signs were depression, pallor and sudden death with blood around the vent, the mortality rate was 1% over a 4 week period. There was no response to treatment with sulphonamides and oxytetracycline.

On post mortem examination 2 birds had mottled livers with focal areas of haemorrhage and 3 birds showed swollen, mottled spleens and intestines distended with dark content. This was a severe haemorrhagic enteritis of the duodenum and jejunum with blood clots present in the lumen.

Histopathology confirmed a severe haemorrhagic enteritis with sloughing of villi. There were large single intranuclear inclusion bodies present in macrophages in the lamina propria. Spleens showed hyperplasia of the white cell precursors but a relative deficiency of mature lymphocytes. Parasitological and bacteriological examinations were negative. A diagnosis of haemorrhagic enteritis due to adenoviral infection was made.

REGIONAL VETERINARY LABORATORY – BAIRNSDALE

WEANER COLITIS IN EAST GIPPSLAND (C. Button)

Many farms in the vicinity of Bairnsdale have experienced their usual midsummer problems with scouring Merino weaners. Diagnoses have included helminthiasis, yersinia enterocolitica infections, 'weaner colitis' and combinations of these.

Weaner colitis is a transmissible enteropathy suspected of being caused by Campylobacter sp. In the natural acute and experimentally induced disease the surface of the caecum and colon are lined by numerous Campylobacter-like organisms with little inflammatory response. The organisms can be readily demonstrated in colonic smears. The condition is responsive to sulphonamides.

The last season the more usual histopathological picture has been: variable squamous to cuboidal transformation of the large intestinal epithelium, dilated crypts containing scattered inflammatory cells, debris and a few Campylobacter-like organisms, variable mucosal lymphoid hyperplasia and a low grade diffuse neutrophil infiltration of the lamina propria and variable proliferation of the connective tissue of the lamina propria. This picture is usual in weaners which have been scouring for several weeks - and is suspected of being the sequel to the acute disease.

CSIRO AUSTRALIAN ANIMAL HEALTH LABORATORY

HUMAN RABIES (Peter Hooper)

The laboratory took part in the diagnosis of a recent case of Rabies in a 10 year old Queensland boy who had died with clinical signs of, and histopathological confirmation of, meningitis and encephalitis. Medical opinion at the time leaned toward post-measles encephalitis or possibly arboviral infection.

Some time after the death, material (sera, CSF and 1 paraffin embedded block of formalin-fixed brain tissue) was sent to this laboratory. Histopathological examination of the brain showed clear cut evidence of non-suppurative meningoencephalitis with diffuse and focal gliosis and perivascular cuffing. Negri bodies were present in highly variable numbers. Some foci had a number of neurons affected and occasionally multiple Negri bodies were seen in one neuron.

Some fields were devoid of Negri bodies. Classical Rabies was confirmed by immunofluorescence and immunoperoxidase tests on trypsin-treated sections. Paired sera showed a very striking rise in titre to Rabies during the illness (0 - l: 1796 in 7 to 10 days).

The boy had been in Asia the previous year but had been back in Australia for over 8 months. His only known bite had been from a monkey in India 14 months before he became ill. During the illness he showed irritation at the site of the bite. American epidemiologists have not discounted this bite as the possible origin of the infection.

Work has continued by medical and veterinary departments in Queensland to monitor possible dangerous contacts and AAHL is doing the actual tests.

REGIONAL VETERINARY LABORATORY, HAMILTON

POST MORTEM OF A MATURE SPERM WHALE (Jonathan Webber, David Williams, Cor Lenghaus )

The laboratory is increasingly seen as a resource for investigating disease and death of wildlife. Over the past year or so we have handled penguins, falcons, ducks, swans, mutton birds, freshwater fish, snakes and lizards, bandicoots, macropods and koalas, and a dolphin. Last December we were presented with our biggest challenge, a mature male sperm whale beached in the shallows at Narrawong near Portland. The whale had died overnight so was fresh enough to warrant a detailed post mortem examination. Many hours were spent attempting to pull the whale onto the beach. Success was only achieved after a large, wheeled tractor was used to lever the whale out of the sand and roll it onto the beach using the tractor's earthmoving blade.

The whale was presented in right lateral recumbency and was of truly impressive proportions, more than 13m long, and 2.5m diameter at the head end. Estimates as to its weight started at 20 tonnes. It was decided to first explore the abdominal cavity, via a left flank incision, as it had been reported that the whale had "passed blood" before dying (? dysentery, ? haematuria, ? trauma).

It was soon apparent that our equipment was inadequate for the job. Knives were quickly blunted on the 15-20 cm thick blubber and dense collagen layer immediately under the skin, and through abrasion with send. The blubber had to be laboriously excised in blocks, as manpower with bale hooks was not sufficient to strip it from underlying muscle. The muscles were of similar thickness but were more easily cut. After entering the abdomen we removed more than 45m of intestine, which had the consistency, weight and flexibility of filled, canvass fire-hose. This gave us good access to the liver, kidneys, gonads, stomach and bladder.

We were unable to enter the thoracic cavity in the time available before nightfall. The blubber and muscle layers over the chest wall were even thicker than over the abdomen, and we could not remove enough of the liver to gain access via the diaphragm.

In the blubber there were numerous 1cm diameter "burrows" containing Phyllobothrium delphini larvae. The stomach contained numerous ascarid-type nematodes (Anisakis simplex) as well as "bucket loads" of squid beaks. There was no undigested food in the alimentary tract. Intestinal contents were liquid and pale green proximally, dark and tarry in the rectum. The whole intestinal tract except for the rectum contained broad transverse folds at l-2cm intervals, which could presumably act as valves. An acanthocephalan (Bolbosoma sp.) was recovered from the intestines as well as minute fluke-like worms l-2mm long, as yet unidentified.

The kidneys were roughly spherical, >lm diameter and composed of discrete lobules about 5cm diameter. The liver was extremely congested and had pronounced rounded edges. A gall bladder was not found.

Histologically the tissues were recognizably mammalian in structure and organization. The liver had dilated sinusoids 2-5 times the width of hepatic cords. The inner, circular smooth muscle layer of the intestinal tract comprised 60-70% of the gut wall thickness, compared with rather scant and incomplete outer longitudinal smooth muscle layer.

We could not establish what disease process had ultimately lead the whale to beach itself. We are still awaiting results on tissues processed for toxicology. Microbiology did not yield any readily recognized mammalian pathogens.

Anyone seriously contemplating post mortem examination of such a large animal would need to be well prepared, with suitable flensing knives and traction to remove the blubber layer, and wet weather gear so as to stay warm and dry. Before any autopsy is contemplated the whale should be removed from the water. The skin is extremely slippery when wet and it is also difficult to maintain one's footing in the surf.

OBSTRUCTIVE UROLITHIASIS IN "SHARLEA" SHEEP (Cor Lenghaus)

After several years of essentially trouble-free operation, one "Sharlea" (housed, fine wool) sheep enterprise experienced 3 fatal cases of urinary tract obstruction in 6 year old wethers in the course of one week. The only apparent change had been the introduction of a new batch of oats 4 weeks previously. Biochemical analysis of several urinary calculi showed 20% calcium oxalate, with the remainder probably organic material, since they charred during the flame test.

The water supply was quite potable, with a low salt level. The owner accepted that there had been restricted access to the drinking trough and that the water had occasionally become fouled. Modifications which apparently resolved the problem included increased trough space, more rigorous inspection and cleaning of the water trough and addition of 0.8% limestone and 1% salt to the ration. The limestone was to redress a perceived Ca/P imbalance, and the salt was to increase water intake and urine flow.

"Obstructive urolithiasis" should be added to an already impressive list of diseases commonly encountered in the Sharlea sheep industry including copper poisoning due to excess copper in the diet, nutritional myopathy due to selenium or Vitamin E deficiency, wool biting through lack of roughage in the diet, enterotoxaemia and polioencephalomalacia.

NEMATODIASIS IN FALLOW DEER (Cor Lenghaus)

Three of 50 fallow deer died after a 4-5 day history of weight loss and diarrhoea. There was some suggestion that affected deer responded short term to antibiotic treatment, and the owner was very concerned about Yersiniosis, a common cause of bacterial enteritis and death in deer. Malignant catarrhal fever had also been diagnosed previously.

The 7 month old buck which was presented was severely dehydrated, and had clear, watery diarrhoea. There were focal haemorrhages in the small intestine. Localized foci of peritonitis made it impossible to strip the intestine from its mesentery. An abomasal worm count revealed nearly 100,000 nematodes present, mainly immature Trichostrongylids.

**TASMANIA** - Judith Handlinger

MT. PLEASANT LABORATORY - LAUNCESTON

IS CAPE BROOM (GENISTA SP.) A TERATOGEN? (Barry Munday)

Background

Over a number of years a "weekend" farmer in the south of Tasmania had recorded a relatively high level of contracted tendons affecting the pasterns of calves on his property. The history was that this occurred in all breeds of beef cattle used and did not occur on adjoining properties.

The overall nutrition of the cattle was reported to be good, but because the owner only visited the property from time to time, hand-feeding during winter was sporadic.

A number of veterinarians had investigated the problem and samples of blood and pasture had been collected and analysed for a wide range of minerals. None of these investigations; lead to a definite diagnosis of the aetiology of the problem.

A property inspection in early 1987 revealed that the lush paddocks on the property were colonized by genista (Genista spp, cape broom), presumably originating as garden escapees. A number of the Broom species contain the quinolizidine alkaloid cystine which closely resembles quinolizidine alkaloids known to be teratogenic.

Feeding trial

Genista collected on the property was fed to three pregnant goats from six to 40 days of pregnancy at the rate of approximately 500g per head per day. Four kids were born to these does and one of the singles had extreme hyperextension of the fetlock joints i.e. it was "down on its pasterns". Within a week this abnormality had corrected itself and the kid was not readily distinguishable from its peers.

Subsequent observations

During the winter/spring of 1987 more cases of contracted tendons occurred in calves on the original property and his full-time farmer neighbour reported two cases. Genista is also present on the neighbour's property.

Conclusions

As often occurs, the observations have probably raised more questions than they have answered.

1. Is one deformed kid out of four a significant observation?

2. Is there a relationship between hyperflexion of joints in cattle and hyperextension of joints in goats?

3. Do the Tasmanian genistas contain quinolizidine alkaloids, and are they teratogenic?

## JOB LINE

THE UNIVERSITY OF SYDNEY

Lectureship
Reference no. 06/21
Department of Veterinary Pathology

The appointee will be involved in teaching and diagnostic duties in pathology, histopathology and clinical pathology and will be expected to develop a strong research programme in one of these or ancillary disciplines. A postgraduate degree or diploma in veterinary pathology and experience in diagnostic pathology is desirable. A degree in veterinary science, registrable in NSW, is essential. Appointment will be available from 1 June 1988. Further information from Dr P. Canfield (02) 692 2020, Associate Professor T. L. W. Rothwell. (02) 692 2023 (after April 1988) and Associate Professor D. N. Love (02) 692 2454.

Appointments to lectureships have the potential to lead to tenure and are usually probationary for three years.

Salary: Lecturer $28,381 - $37,122 per annum

Method of application: Applications, quoting reference number and including curriculum vitae, list of publications and the names and addresses of three referees, to the Registrar, Staff Office, University of Sydney, NSW 2006, by 20th May 1988.

The University reserves the right not to proceed with any appointment for financial or other reasons.

Equal employment opportunity is University policy.

**CLOSING DATE FOR CONTRIBUTIONS TO JULY REPORT**

**FRIDAY 10th JUNE**