

Report for BVA in recognition of HSB Scholarship 2003

**Food Animal Reproduction and Herd Health (FARHH) externship, July-Aug 2003
University Of California at Davis (UCD) School of Veterinary Medicine**

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Flying into Sacramento airport, the surrounding landscape looked very flat, brown and barren. At that point, I wondered how and where California could have so many dairy herds. It was easy enough to get on the Yolobus into Davis, a small town, dominated by the university campus. The place was full of students & bicycles and in fact quite similar to Cambridge – other than the weather- it was hot! Taking a map of the campus and walking with suitcase in tow, I went off in search of the Veterinary Medical Teaching Hospital (locally known, as I was to find out later, as the VMTH).

Orientation took place on the Friday before the rotation started. There were students of many nationalities – American, Danish, German, French, all there to do summer externships, in a variety of subjects ranging from avian to small animal medicine, surgery, pathology, farm animal, equine medicine and surgery. Pagers were handed out for our on-call duty. This was followed by tour of the campus, being shown all the departments by a current Davis vet student and being introduced to some of the people we'd be working with. The vet school was impressive. Away from the main vet school campus, Davis also had a dairy goat facility, a sheep facility & its own dairy & beef herds. UCD had also already sent a rather large handout to read several months before the rotation was due to start.

Student life in Davis was different to that here in the UK. Students generally rented an apartment rather than a room, within a complex, that came complete with pool, gym and laundry facilities!

The food animal medicine & surgery department had extensive facilities & equipment for hospitalisation including a purpose built barn with 7 cattle pens, all with milking facilities and on the opposite side, further cattle pens & smaller ones for any sheep, goats & pigs. The equine department dealt with any camelids. Outside there were grassed areas with a couple of outdoor pens (shaded) and two Aqua-Cow float tanks. There was a large prep-room with adjacent offices for the staff and 3 large rooms with farm animal examination facilities. One had specialised cattle stocks with head clamp & removable side-bars, another had a hydraulically powered tipping crush (locally known as a rotating chute) and the other had a standard crush, all complete with theatre lighting. There were also moveable small pens for any neonates that may be hospitalised. Having never seen either float tanks or tipping crushes before and being amazed by both, I was keen to see them being used during my stay.

The Pathology department was impressive; in just 1 post mortem hall, there were 5 simultaneous post mortems taking place, several pathologists and senior vet students undergoing a whole rotation in clinical pathology.

The Food Animal Reproduction & Herd Health (FARHH) department was separate from the food animal medicine and surgery department and consisted of 2 senior clinicians, 2 residents and visiting residents from related disciplines eg. food animal medicine, or Tulare, the dairy research facility, also part of Davis, further south in California. There was also a recorder who went out on most visits. The department included varying nationalities – Spanish, Egyptian, Argentinian, Columbian and of course, American. There were varying

language differences to get used to including 'open', referring to an animal that isn't pregnant, 'string', referring to a group of animals, 'fresh check', referring to a check on a recently calved cow, and 'hot shot', the device that gives an electric shock to control and move an animal. Then, of course, there were the different units, such as drug doses in mg/lb and haematology and biochemistry results in strange units.

There were 3 students including me doing the FARHH externship. One was from Denmark and the other studying in Oklahoma, both going into final year of vet studies similar to me. This proved a good talking point with the farmers and one even asked us to sign their visitor's book. We learnt that there wouldn't be any on-call work, but chose to be voluntary on-call with the food animal medicine and surgery department so that we could be involved with some emergency cases coming into the hospital in the evenings and at weekends. On the 1st morning, we met at the Food Animal Reproduction & Herd Health department at 7am sharp.

There were brief introductions and off we went on our first farm visit in the minibus with 3 clinicians and the recorder! They were interested to hear about what background each of us had come from and what we wanted to do after graduation. On most farms, we rectal palpated for pregnancy in the cubicle housing with the cows with their heads in the feed barrier. Often there would be a line of cows as far as one could see! We also vaccinated cows intramuscularly in the neck against several diseases that varied from farm to farm, including leptospirosis, BVD, PI3, and IBR. A big difference there was that we did not use ultrasound for pregnancy diagnosis (PD's), but relied on manual palpation. Any cows that were not pregnant were marked in colour coded fluorescent chalk on their tail head ie. pink = watch for oestrus, yellow = prostaglandin injection.

Farms varied quite considerably in the number of cows, management practices and production figures. The farms were within a 2 hour radius of Davis which meant some very early morning starts! One was a family run 300 cow Holstein dairy herd in cubicle (freestall) housing. The largest we serviced was a 900 cow Holstein dairy herd with cubicles and drylot areas. Another was a family-run 170 cow herd of dairy Shorthorns, which was managed using sustainable extensive farming methods. They also showed some of their animals. One farm had in the cow walkways within the sheds a strip of rubber matting and it was incredible to see that, given the choice, every cow would walk on this as opposed to the concrete on either side. Most of the farms had Mexican farm workers and it was often a challenge to get a full history in English. All of the farms we went to were managed by twice daily milking and none used BST. Other dairy farms in California do use BST. The university herd was within Davis town, alongside one of the main roads! They were also cubicle housed. Some farms had herringbone parlours, the bigger ones had double parlours! One farm carried out fetal sexing by rectal ultrasound at approximately day 50-60. The genital tubercle was visualised either near the umbilicus (male calf) or nearer the tail (female calf).

Most farms fed a total mixed ration and had their own commodity bays of straights as well as huge silage clamps. Recycled water was used to flush through the cubicle barns that then went into deep pits/lagoons on farm. Farmers did a lot of sick cow treatment themselves and often had a sick pen. They also treated lame cows in special hydraulically powered tipper crushes on farm.

Monthly herd records were submitted to the national dairy herd improvement association (DHIA) and reports are returned on 1 sheet of A4, which is divided into several sections such as cows in milk and their parameters, somatic cell count, peak milk, dry cows, sire information, genetics and reproduction. This is useful because it allows direct comparisons to be made between different months on the same farm and equally, to compare different farms. Heat detection rate varied from a poor 35% to 60%. Average yields varied between 7627-112941. The state herd average is 102191. Average milk price figures at that time were equivalent to 12p/l. Butterfat averages varied from 3.46-3.62% (state average 3.65%). Average somatic cell counts were 106-420 (state average 256 thousand cells). Average services to conception were 2.02-2.74 (state average 2.12). California's dairies average 3.2 lactations per cow. Further south in California has herds with thousands of cows, so the ones we went to were small in comparison! The target cull rate for a herd that

wishes to maintain with current herd numbers or expand slightly is 30%. We saw problems with digital dermatitis (hairy warts), heat stress, mastitis and fly problems, particularly in the outdoor hutched calves.

We also learnt about California's agriculture, our journeys to and from farms driving us through walnut groves, fields full of tomatoes and sunflowers, rice paddies, orange and pear groves and fields of wheat and alfalfa.

The university beef herd was in the Sierra Mountains – very different countryside to the flat lowland of Davis! They had been worried about the possibility of BVD virus being in the herd, as they'd suffered several abortions in the previous season. To rule it out, we would be testing every animal. There were many tasks to be completed including taking an ear notch for immunohistochemistry to detect BVD virus, weighing each animal, ear tagging and tattooing, brucellosis vaccination, de-worming, and any sick animals that needed veterinary attention. Each animal was run through a hydraulically powered crush that gripped their neck and their thorax to hold them reasonably still. Some animals were affected by infectious bovine keratoconjunctivitis and were treated with subconjunctival antibiotic and anti-inflammatory drugs and then a patch was applied over the affected eye.

We went to a meat goat herd (Boer breed) to trans-abdominally scan the does for pregnancy diagnosis >26 days of gestation. This was interesting work and challenging to say how many fetuses you thought were present and at what stage of pregnancy they were.

UCD serviced a large mixed breed (Saanen, La Mancha, Toggenburg, Anglo-Nubian & Alpine) dairy goat herd, totalling 500 goats! This was most interesting. They had a 14/14 herringbone parlour, specially adapted for goats. They split the goats into several groups and were housed in straw yards. The kids were kept in separate groups. They were trans-abdominally scanned for pregnancy, similar to the meat goats. We saw cases of cloudburst, lameness, caseous lymphadenitis, mastitis and sick goats. We took sterile milk samples and cultured them back at the vet school.

The UCD dairy facility were worried about their kid growth rates and we were set an assignment to assess their nutrition, compare it to their ideal diet, in terms of energy and proportions of nutrients and give relevant advice. We also castrated several of their young goats under general anaesthesia.

We were also involved in health checks on goats and sheep that were due to go to one of California's big state fairs. It is a requirement that all animals have a veterinary check before going to a show.

A great proportion of the work was spent outside, sometimes in the shade, sometimes in the sun. It was an exceptionally hot summer, temperatures over 40°C most of the time. It was incredibly difficult to work in such heat, particularly doing physical work. It was overwhelming and exhausting. There were cooling systems for cows including sprinklers & fans, especially in the standing areas before going into the parlour. The heat caused significant problems with low milk yields and infertility. We learnt quickly to freeze water over the previous night and take that out to drink, else everything else would be warm! One of the residents kindly bought us each a neck cooler – that also was frozen overnight and felt very refreshing against the hot sun! We all had several lunches out at 'Bill's Place' and 'Maria's' after or inbetween farm visits and even had a swim in a large lake to cool down after finishing at the beef unit!

We had several small projects to do including investigating sperm defects in farm animals and the reasons for the different defects, working out live weight gain in the Davis beef herd and investigation of cow comfort on one farm. There were also some seminars on euthanasia, fluid

therapy for calves, foot trimming and lameness, herd health analysis and report reading and vaccinations.

One afternoon each week was devoted to farm animal infertility and individual animals were brought to the VMTH for breeding soundness examinations. Whilst there, I was involved with 2 ram fertility examinations, one of which had a very low sperm count, but we were unable to find a cause.

Among the clinical cases seen were:

- a 2 day old recumbent Holstein calf which died whilst being examined due to a diffuse peritonitis.
- a 4 week old cross-bred Simmental calf with dyspnoea, inspiratory & expiratory noise & abducted forelimbs. This calf actually had odd asymmetrical sternal anatomy and was euthanased.
- several downer cows on-farm.
- 10/10ths lame swollen LH in a 4 year old peri-parturient Holstein cow, diagnosed after radiography with osteomyelitis of the distal sesamoid of lateral claw & distal interphalangeal joint (DIP). She underwent surgical investigation and arthrodesis and a cast was placed. She was hospitalised for a total of 10 days and made a good recovery.
- 3 caesarean sections, one done in the rotating crush.
- several dystocias, including use of the float tank!
- a goat attacked by a dog – severe neck wounds
- a goat that injured itself on a fence – placed drain and sutured wound
- a goat general anaesthesia and castrations
- a collapsed Vietnamese Pot Bellied Pig
- a blocked goat, that underwent surgery to insert a cystotomy tube.
- a calf with pneumonia

The Aqua Cow Rise float tank was used to treat downer cows, especially those who had periparturient recumbency. Both stainless steel ends of the tank were removed and the cow was placed on a rubber mat and positioned in the bottom of the tank. The stainless steel ends were replaced and the tank was filled with water from a hosepipe. The cow that I saw, that had had a dystocia and likely neural damage, had an amazing expression of relief when she realised that she could actually stand with the aid of the buoyancy of the water. It was incredible to see. A special hay rack was attached so she had access to food and each cow is left in the tank for a maximum of 12 hours, then her progress is monitored to assess whether she needs another float session. The cow that I saw made a good recovery after 2 floats and was discharged soon afterwards.

In summary, my time spent at Davis was a wonderful opportunity; an invaluable experience that I very much enjoyed and have gained a lot from. I also made some good friends that I remain in contact with. The people, the places and the facilities were amazing and very interesting to compare to the UK. I hope to be able to use the knowledge I have gained here in my future career.