Equator : informatieblad over veterinaire aspecten van ontwikkelingssamenwerking

EQUATOR

NEWSLETTER ON VETERINARY ASPECTS OF INTERNATIONAL DEVELOPMENT COOPERATION

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FROM THE EDITOR

During the past decade, global aquaculture production has increased very rapidly. Future production is expected to reach 28.7 million metric tons by the year 2000, a much faster rise than in global meat production, especially in developing countries. The aquatic animal species involved in production are mainly molluscs, crustaceans, and finfish. In some countries, aquatic reptiles and amphibian, such as crocodiles and frogs, are also included in aquaculture. In response to the increasing demand for aquaculture products, as a highly significant world food resource, sustainable yields must be achieved. Two significant constraints which will inevitably affect production capacity are, the impact of disease on production and the impact of production on the environment.

In order to minimize losses caused by diseases and by destruction of the environment from the aquaculture industry, trained veterinary scientists are needed to contribute to the successful expansion of potential production targets for global consumption.

Consumption and handling of fish may offer risks to public health. Enzootic outbreaks of disease and zoonotic infections occur very easily, especially under tropical conditions.

The veterinary profession has to play an important role in this field. Health parameters should be known and monitored to be able to make an early diagnosis. Appropriate measurements can only be taken if the aetiology, pathogenesis and symptoms of aquatic diseases are known. The required study of diseases in aquatic organisms offers interesting comparative aspects. The use of chemotherapeutics should be minimal because of the risks for contamination of the product with residues and selection for resistance. Moreover, the possibilities for treatment are often minimal. Other approaches for disease control, such as zoo-technical prevention or immunisation should be emphasised. The smart use of genetics and biotechnology may increase production. All these matters were addressed during the 8th symposium on **'Tropical Animal Health and Production; Aquaculture and Disease Control'** at the Faculty of Veterinary Medicine of Utrecht University on 28 November, 1997.

To give a wider group of interested readers access to this information we publish 2 presentations of this Symposium in this issue of EQUATOR.

(Copies of the 'Programme and Abstract' book can be obtained on written request from the editorial office).

INVESTIGATION OF AQUATIC ANIMAL DISEASES AFFECTING THE PRODUCTION OF AQUA-CULTURE IN THAILAND

Introduction

Thailand has become one of the top ten aquaculture producers of the world, contributing approximately 3% of the total global production. Such productivity is due to the favourable climate conditions, soil and water temperature, availability of broodstock, low cost labour, efficient seafood processing plants and trade, good infrastructure and transport, and long tradition-based experience in aquaculture. Since 1991, Thailand has become the world's top producer of cultured shrimp due to the influence of its 2,600 km shoreline and the increased demand of the world's market.

There are many species of aquaculture in Thailand including both food and ornamental aquatic animals. Freshwater fish, marine fish and shellfish are the major types of production. Recently, other species such as crocodile, frog, and soft-shell turtle culture have gained great interest from many aquaculturists because of the high return on investment. Among the various problems occurring during the culture period, diseases are the most serious and damaging cause of losses. Many factors are involved in disease outbreaks, especially, the environment, pathogen and animal's health status. Investigation of the disease situation in significant species is necessary to determine the status of the industry and to find appropriate approaches to treat and prevent greater loss in the future.

Infectious diseases

In shrimp production, infectious disease problems are common in most intensive farms. The most detrimental and dreaded shrimp disease problems in Thailand since the early 1990's are the Yellow-Head Disease (YHD), White Spot Virus (WSV) also called Systemic Ectodermal and Mesodermal Baculovirus (SEMBV) and Monodon Baculovirus (MBV). The pond side losses caused by these viral diseases may account for a substantial part of the 25% drop in shrimp production which occurred in the first half of 1995 when compared to the previous year. Tremendous efforts have been put into the development of diagnostic techniques and prevention methods. Since these viruses can be spread by infected water and non-cultivated crustacean carriers, current preventive recommendations emphasise water management and exclusion of carrier species.

Dr. Chansue answers questions from the audience (Photo: De Gooijer)

Major bacterial diseases in cultured shrimp are vibriosis. *Vibrio parahaemolyticus*, *V. anguillarum*, *V. alginolyticus*, *V. vulnificus* and other *vibrio sp.* have been common causes of high mortality and investment capital losses in an effort to solve the problem. In most cases, vibriosis outbreaks become more severe when coexistent with viral diseases or environmental and nutritional distress. Many kinds of antibacterial drugs and chemicals have been used routinely in high dosages. This response has caused problems of antibiotic resistance and drug residue in the product. Stronger controls over drug prescriptions and treatment regimens by veterinarians are needed to facilitate effective disease management.

External parasites commonly found to weaken the shrimps are *Zoothamnium sp.*, *Epistylis sp.* and nematodes. These parasites are mostly opportunistic parasites and can be found in many healthy shrimp. Formalin, teaseed and other antiparasitic chemicals are widely used to eliminate parasites and promote moulting. Both external and internal parasites are detrimental to shrimp with compromised immunity. Fungal infection patterns are similar to parasite infestations. *Saprolegnia sp.* and *Leginidium sp.* are lethal to weak shrimp of all ages. Therefore, in epizootic circumstances, prevention of shrimps to parasitic and fungal infections as secondary infections is essential.

Marine fish culture production in Thailand consists largely of sea bass (*Lates calcarifer*), grouper (*Epinephelus malabaricus*), and green muscle (*Mytilus smaragdinus*). Diseases that are devastating to them usually occurred in hatcheries and juvenile stages. There have been reports of a picorna-like virus and *myxosporidia sp.* in cultured species. Vibriosis are

commonly found to cause high mortality in all species. Vibrio vaccines have been widely used in many areas for both fish and shellfish but the efficacy is still to be determined.

Aquaculture of freshwater aquatic animals in Thailand is mostly done on a small scale for domestic consumption. Tilapia (*Oreochromis niloticus*) and catfish (*Clarius sp.*) are the top volume productions. Infection by *Aeromonas hydrophilla* causes the most serious disease outbreaks in freshwater aquaculture. Epizootic Ulcerative Syndrome (EUS) has been reported in Thailand since 1981. EUS in a wide range of fish species in the ponds as well as in the wild was characterized by ulcers and burn-like lesions. The disease was investigated under an FAO initiative, finding a causative connection between the disease and contamination with agricultural chemicals. Various viruses have been isolated from the sick fish. As of today, no definite conclusions have been drawn on the etiology of EUS. Antibiotics and water management have been applied in an attempt to minimize losses, but with little success.

Opportunistic pathogens such as parasites, protozoa and fungi are found in most intensive culture. Anti-parasitic compounds regularly used are malachite green, formalin, trichlorphon and salt. The problems of drug-resistant organisms and contamination of the environment mostly occur in the condition of cage rearing and from ignorant farmers who dispose of waste water from their ponds directly into public waterways.

Non-infectious diseases

Nutritional diseases are significant in aquaculture due to limited knowledge of aquatic animal requirements. Thailand is one of the largest aquatic animal feed producers which maintains high standards. But some small feed manufacturers have reduced level of vitamins and minerals in the feed as a result of destruction caused by improper processing conditions. The most common symptoms of malnutrition seen in fish and shrimp are vitamin C and pigment deficiencies, such as black death and blue shrimp syndrome.

Environmental contamination by chemicals, especially, pesticides, may cause severe damage to aquatic animals' health. Both the direct effect of high mortality and the indirect effect of immunosuppression have been found, particularly in agricultural areas. Absorption of pesticide residues has not been via the integument only, but also through oral consumption of contaminated feed made from contaminated raw materials. In order to lower the incidence of the problem, careful monitoring of water, sediment and feed pesticide levels must be carried out regularly.

Recently, aquaculture in Thailand has expanded into the culture of frogs and soft shell turtle for exportation to France, China and Japan. Red leg disease caused by *Aeromonas hydrophilla,* is the most damaging epizootic in frog farms. As for soft shell turtle, swollen-body disease of which the aetiology has been undetermined, may cause up to 80-100% mortality. Many crocodile farms are emerging for leather and meat industries. Many diseases of crocodiles in captivity occur, but mortality in adult animals has been low thus far.

Conclusion

Aquaculture in Thailand is developing rapidly and substantial economic losses are experienced simultaneously due to the impact of disease. In order to achieve a sustainable industry, accurate diagnosis, therapeutic and prevention measures must be established. Effective health management with professional advisory services to aquaculturists to minimise stress, preventive therapy, and enhanced defence mechanisms will minimise disease related losses in Thai aquaculture.

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(This paper was presented on 28 November 1997, during the 8th Symposium on Tropical Animal Health and Production, Aquaculture and Disease Control. The text is slightly edited. An extensive list of references and the original text can be obtained from the editorial office)

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NUTRITIONAL FACTORS AFFECTING FISH HEALTH

Introduction

During the last decade more and more attention has been paid to the relationship between nutrition and health. Fish combat pathological agents through their immune system and the modulation of the immune functions by certain nutrients may affect the capacity of the fish to fight diseases. On one hand, essential nutrients have led to immunological depression when deficient. For instance, deficiencies of essential fatty acids, essential amino acids, minerals and vitamins have been shown to adversely influence fish immune responses. On the other hand, high doses of specific nutrients have proved to be beneficial for the fish. Certain vitamins (vitamin C and vitamin E) and fatty acids resulted in an improvement of defence mechanisms when fed at levels above the maintenance requirement. Special carbohydrates, such as glucans, can have a positive impact on fish health, due to

Dr. Obach during his presentation (Photo: De Gooijer)

their immunostimulating properties. The recent paper reviews some of the nutrients and nutritional factors that have been shown to increase disease resistance and to enhance immune responses in cultured fish.

Vitamin C

Effects of intermediate and high doses of vitamin C (from 300 to 4000 mg/kg feed) on immune parameters have been thoroughly studied. Results from the literature are however somewhat controversial. There are many studies showing either positive effects of high levels of vitamin C, whereas others found no positive effect at all. For a particular immune function, results vary from one author to another, or from one experiment to another. In many studies, high levels of dietary vitamin C have often been associated with improved immunity and have been shown to increase resistance of fish to bacterial, viral and parasitic infections. High doses of ascorbic acid have been shown to enhance phagocytosis, lymphocyte proliferation, and the activity of non-specific humoral immune parameters such as complement activity and lysozyme level. Regarding antibody production, vitamin C at doses above nutritional requirement resulted in higher levels of circulating antibodies after vaccination, when compared to fish fed a normal dose. It is also interesting to note that fish leukocytes maintain high intracellular ascorbic acid levels against a considerable concentration gradient. Indeed vitamin C levels in liver and anterior kidney, which are major organs for ascorbic acid storage, and in plasma decrease more rapidly than in peripheral blood and head kidney leukocytes, suggesting that ascorbic acid plays a critical role for the effective function of white blood cells. In contrast, others could not find any benefit of high doses of vitamin C on immune functions and disease resistance in fish. In some instances, the negative results obtained could be explained by the utilisation of unstable forms of vitamin C. In its pure form vitamin C is the most unstable among all vitamins. Processes as pelletizing and especially extrusion will destroy most of the vitamin C even before it is fed to the fish. The new forms of vitamin C, stable under extrusion and with the same bio-availability as pure vitamin C, have been available since 1990. As different species of fish were employed in the different studies, it is possible that the diverging results could also be explained on the basis of inter-species variation in uptake and metabolism of ascorbic acid, with corresponding variation on the immune system. Differences among studies may also be attributed to the age (or weight) of the fish, the composition of the diets, the doses of vitamin C tested and the duration of the feeding. Concerning the effect of high doses of vitamin C on disease resistance, 13 studies have been published. Nine of these have shown a clear cut effect of a megadose of dietary vitamin C on disease resistance. It can then be concluded that even if the effect of vitamin C is still not fully understood, high doses of vitamin C can protect fish against infectious diseases.

Vitamin E

Vitamin E (alpha-tocopherol) mainly functions as an antioxidant protecting unsaturated fatty acids from oxidation. In recent years, vitamin E has been demonstrated to be important for the immune response in various species of animals in which it appears to influence both humoral and cellular factors. Numerous studies in homeotherms indicate that vitamin E can act as an immunopotentiator when fed at levels above the daily requirement. In mammals the effective dose for an optimal immune response is 4-6 times higher than the normal requirement. Experiments with fish have shown that high levels of dietary vitamin E can increase protection against infectious diseases. The impact of vitamin E on fish immunity has also been studied. High doses of vitamin E have been shown to enhance complement haemolytic activity, mitogen induced proliferation macrophage phagocytic activity and antibody response. The effect of high levels of vitamin E on immunological functions seem to be related to its antioxidant properties and membrane stabilising effect.

Iron

Iron is a growth factor for many bacteria, including fish pathogens. Excess of iron can not be bound by iron-binding proteins (transferrin, lactoferrin and ferritin) and in free form is available to bacteria, which can grow better. Iron availability may thus play a role in the pathogenicity of certain bacterial infections in fish, such as

Bacterial Kidney Disease. In an experiment groups of salmons were fed 120, 220, 295 or 435 mg/kg iron. The occurrence of winter-ulcers and salmon lice infestation was reduced when the fish were fed on the diet containing the lowest concentration of iron, compared to the other diets. Mortality after experimental infection with *Vibrio anguillarum* increased linearly with the iron content.

Lipids and n-3 fatty acids

Variations in the type, quality and quantity of dietary fat can modulate immune response and disease resistance in farmed fish. Because of their high content in polyunsaturated fatty acids (PUFA), diets for cultured fish are especially prone to peroxidative damage during diet preparation and storage. Oxidised dietary lipids have been shown to modify certain haematological and immunological parameters and to impair disease resistance. Changes in the fatty acid (FA) composition of the dietary lipid have also been shown to affect non-specific defence mechanism, specific immunity and disease resistance. Results obtained in the different studies are controversial and to draw any conclusion becomes hazardous due to differences in dietary fat content, level of n-3 FA, ambient rearing temperatures and fish species. In salmonids, a negative impact of high levels of n-3 FA on antibody production has been reported in some studies, whereas other authors found no effect or a positive effect. Among the non-specific defence mechanisms, phagocytosis and bactericidal activities of head kidney macrophages were not influenced by the ratio of (n-3) to (n-6) PUFAs in the lipid component of the diet. Regarding disease resistance, high levels of n-3 FA have generally been associated with increased protection against infectious agents in salmonids. Such an effect has been, in some of these studies, related to low water temperatures. For instance, Atlantic salmon fed a diet containing capelin oil (35 g n-3 PUFA per kg dry feed) or soybean oil (19 g n-3 PUFA/kg) were less resistant to infection by *Vibrio anguillarum* than those fed diets with sardine oil (60 g n-3 PUFA/kg) when the water temperature was 7°C. Whereas, when a challenge-test with the same pathogen was performed at 13°C, the group fed a diet with capelin oil resulted in lower mortality than the groups fed the other lipid sources. In another study, salmon were fed levels of n-3 HUFA (high unsaturated fatty acids), eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA),varying from 12.7 to 24.2% of the total fatty acids. General resistance to infection assessed after challenge with *Vibrio salmonicicda* was not affected by the dietary level of n-3 HUFA. The water temperature ranged from 10 to 12°C. However, when fish were vaccinated against *Yersinia ruckeri* and subsequently infected with the same pathogen, antibody levels and likelihood of survival were lower in fish fed diets containing high levels of n-3 HUFA.

Carbohydrates: glucans

Glucans are sugars, polysaccharides composed only of glucose. In glucans with immunostimulating capacities, the glucose molecules are linked ß-1,3 and ß-1,6. These special types of glucans are normally found in yeast, such as baker yeast, fungus or edible mushrooms. Interest in glucans has increased during the last years and many studies have been published in scientific journals. Glucans have been tested in several fish species such as Chinook salmon, Atlantic salmon, rainbow trout, seabream or yellow tail, and they have been shown to enhance protection against a variety of bacterial pathogens such as *A. salmonicida*, *Vibrio salmonicida*, or *Pasteurella piscicida*, when administered. The principal target and effector cells for their effect seem to be the macrophages. Glucans can activate, thus increasing their capacity to kill pathogens. A receptor specific for glucans on Atlantic salmon macrophages has been described. Besides their effect on phagocytic function, glucans have been shown to reinforce other non-specific immune factors such as lysozyme and complement, which play an essential role in defending fish from bacterial infections. In a collaboration between Nutreco ARC and Hoffmann-La Roche, we have recently shown that glucans can also enhance lymphocyte proliferation induced by mitogens and antibody production (results not published).

Conclusion

The potential for dietary improvement of fish health certainly exists. Although many questions are still to be answered and some effects remain controversial, evidence on the immunostimulating action of certain nutrients is now accumulating in the literature. Nutritional manipulation of disease resistance and immune responsiveness has remained an underutilised tool in fish health. The present trend in fish feeds already goes in the direction of optimising health through diet composition.

A. Obach*

(This paper was presented on 28 November 1997, during the 8th Symposium on Tropical Animal Health and Production, Aquaculture and Disease Control. The text is slightly edited. An extensive list of references and the original text can be obtained from the editorial office)

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TRAINEESHIP IN THE TROPICS

The Tanga Dairy Development Programme

The course on Tropical Animal Health and Husbandry, which is yearly organised by the Office for International Co-operation of Utrecht University's Faculty of Veterinary Medicine is often the basis for veterinary students to look for a traineeship in the tropics.
From June till October 1997 final year veterinary students Yvette Nout and Noortje Reeuwijk did a traineeship at the Tanga Dairy Development Programme in Tanga, in the north of Tanzania near the Indian Ocean. The Programme is a joint Tanzanian-Dutch development project. The objective of this traineeship was to develop a strategy to control trypanosomosis on a medium scale dairy farm in the Pongwe area.

Introduction

As I (Yvette) have lived in African countries until my tenth year, I always had the desire to return to this continent and find out how it would be to live and work there. I decided to combine this personal motive with my veterinary education.
Through the Office for International Co-operation Noortje and I came in contact with the Tanga Dairy Development Programme (TDDP), a project in Tanzania in which two Dutch veterinarians are involved. After several letters, e-mails and fax messages it was arranged and we were welcome in Tanga for four months to do a survey on trypanosomosis. This survey would be a combination of fieldwork, labwork and doing interviews.
During the 1997 course on Tropical Animal Health and Husbandry, Noortje and I prepared ourselves for this traineeship. We presented a case study on trypanosomosis and learned diagnostic techniques.

Tanga

Tanga is a city in the north of Tanzania along the Indian Ocean coast. Tanga was founded at the end of the 19th century by the Germans, for whom the source of income was the export of sisal to Europe and other parts of the world. Because of the increased use of plastics in the fifties, the demand for sisal on the worldmarket decreased. Since then the unemployment rate in Tanga is high.

Tanga Dairy Development Programme

Ten years ago the Dutch Directorate General for International Cooperation together with the Tanzanian government started the "Tanga Dairy Development Programme" (TDDP). Since several years Dutch veterinarians Luuk Schoonman and Birgit van Munster are involved in the TDDP.
The project assists people to become small scale dairy farmers (1-5 cows per farmer) by providing heifers. The farmer pays back this "loan" within five years by returning an offspring heifer in calf. The heifers usually are crosses of indiginous breed X Holstein-Friesian. Extension workers, who have followed a basic veterinary training, are employed by the project to advice farmers and treat the animals.

Connected to the project is a milk cooperation. Recently also a small factory (financed by a group of Friesian farmers from the Netherlands) started to produce dairy products; these are marketed in Dar es Salaam.

Trypanosomosis and tick-borne diseases

In the Tanga region trypanosomosis and tick-borne diseases are major problems in cattle keeping. Trypanosomosis can be prevented by the regular use of Samorin® (Isometamidium chloride). If the animals become sick they can be treated with Berenil® (Diminazine acceturate).
Also, farmers are adviced to dip or spray their animals in order to prevent tick-borne diseases and reduce the effects of biting and tsetse flies. There are a few communally kept dips in the region, of which one is run succesfully by the owners of herds grazing in the area.

Small scale farmers mainly keep their cattle under zero-grazing conditions. This grazing system minimizes the risk of infection with trypanosomosis and tick-borne diseases. Traditional farmers in the region keep indiginous cattle under grazing conditions. Some indiginous breeds are less susceptible to try-

Taking blood samples from cattle and an occasional donkey (Photo: Nout/Reeuwijk)

panosomosis and tick-borne diseases.

Outline of our survey

The aim of our survey was to propose a trypanosomosis prevention strategy for the area of Pongwe. Pongwe is a town 20 km from Tanga. In this region dairy farming has increased considerably and zero grazing became more difficult.

The TDDP has bought a former sisal estate and is planning to start medium scale farming in that area. The project will offer an infrastructure, and approximately 60 pieces of land will be sold to farmers to start a medium scale farm with approximately 10 to 30 cows per farmer.

Our survey was divided in three parts of about six weeks each. In the first part (June and July) we sampled 70% of the zero-grazing animals and 30% of the grazing animals. During our fieldwork we were accompanied by two extensionists and a driver with whom we visited the farmers. Blood-samples were taken and checked for trypanosomes. This was done in a laboratory in Tanga town, which was part of a training institute on vector control.

In the first sampling round 11% of the sampled animals were found positive for trypanosomes.

In the second part of the survey, we collected data by interviewing farmers on current trypanosomosis treatment and prevention strategies. We also

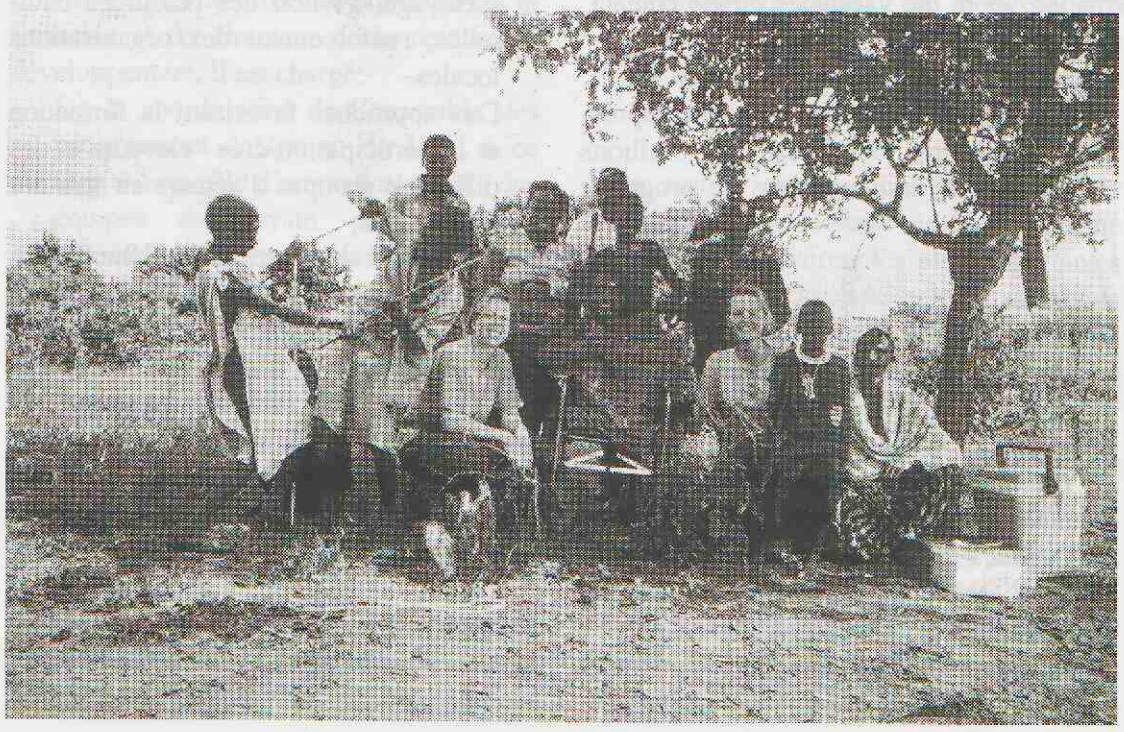
Checking blood samples on trypanosomes in the lab of Vector Contol (Photo: Nout/Reeuwijk)

collected information on costs of treatment and prevention. Besides these interviews we did some "case-studies": interviews with various farmers who had a lot of experience and interesting or different views on this problem.

The third and last part was a second sampling round of the cattle population in Pongwe area in September. This time the incidence of trypanosomosis was higher compared to the first sampling round.

Result

We found that people regard tick-borne diseases and trypanosomosis as their two main problems in cattle keeping. We also found that no acaracide is available which is sufficiently active against ticks and tsetse flies. Therefore our study resulted in a proposal to combine the use of a deltamethrin (sufficiently active against tsetse flies) and an organophosphate (sufficiently active against ticks) and to treat the cattle alternately with these compounds depending on the seasonal challenge of ticks / tsetse flies.



Also traditional farmers, in this case Maasai, received the students very kindly and thanked them by offering milk and meat (Photo: Nout/Reeuwijk)

At the end of our survey we presented our strategy in the monthly seminar for extensionists and discussed our proposed trypanosomosis prevention strategy with them. The proposed combination of acaracides is quite a new idea and has not been practiced widely yet. Therefore, not a lot is known of its effectiveness and of possible side-effects.

Social life

In Tanga we lived in a house run by a Lutheran mission post. We had cooking facilities, a living room and two bedrooms. The project offered two bikes, on which we went to the office.

For most of our shopping we went to the market in the centre of town. The variety of fruits and vegetables was enormous and also there was an abundance of sea fruit.

Swimming was (almost) only possible at "swimming clubs". We found a "private" small piece of beach which we could enjoy, when the tide was low....

In the weekends we either stayed in Tanga and made some excursions in the neighbourhood, or stayed in a beach house owned by a project worker.

On a few occasions we had "nyama choma" after work with some extensionists, which was great fun. Lots of meat, grilled bananas and big bottles of beer. Sit, relax and talk a little bit....

Tanzania also has beautiful touristic scenery. On top of Mt. Kilimanjaro: Uhuru Peak (6000m.). (Photo: Nout/Reeuwijk)

Tourism

Not only did we experience life and work in Tanzania; we also organized the "Kilimanjaro expedition". After a "training weekend" in the Usambara mountains (northwest of Tanga) we traveled to Moshi and started to climb Mt. Kilimanjaro. After five days of climbing with two relatives, a guide, an assistant guide and seven porters we reached the everlasting snow of the Uhuru peak (6000m.) which is the highest point in Africa. This was an unforgettable experience!

A great experience!

These five months we spent in Africa have definitely been a great experience. A lot of questions we had are answered. Now we know a little bit more what you may or may not expect when coming to a tropical country.

To spend such a time living and working in an African country, is a special experience; you really have to find out for yourself how you cope with certain situations.

We have enjoyed ourselves very much and again we would like to thank everyone who helped to make this possible for us!

Yvette Nout and Noortje Reeuwijk

VACANCIES
INTERNATIONAL COOPERATION

This section contains vacancy announcements which the editorial board considers to be of possible interest to Dutch veterinarians. Besides vacancies that will be taken from Vacaturebladd Internationale Samenwerking, Tijdschrift voor Diergeneeskunde, Veterinary Record, Intro vacatures (RPD Advies/ Ministry of Internal Affairs) etc., there will be room for personnel advertisements. For further information about the vacancies please contact the institution or company directly.

Vétérinaires Sans Frontières

DIRECTEUR DES PROGRAMMES
(Lyon, France)

Objectifs

Créé en 1983 Vétérinaires Sans Frontières opère essentiellement dans les pays du Sud et a pour objectifs:

- D'améliorer la sécurité alimentaire et promouvoir les revenus économiques des groupes pratiquant l'élevage ou pour lesquels la production animale pourrait être un apport intéressant.
- De favoriser l'émergence d'organisation de base et d'opérateurs privés pouvant apporter une réponse aux besoins des populations.

VSF a connu un développement rapide. Son budget en 1997 avoisine 40 millions de francs pour une trentaine de programmes.

Activités

- Conduite de projets en Afrique, en Amérique latine et en Asie, avec des fonds provenant de bailleurs institutionels et de fonds propres.
- Conduite d'un projet d'éducation au développement au Nord.

Par ailleurs, VSF fait partie de regroupements d'ONG, dont le Groupe Initiatives (GI), qui lui permettent notamment de participer aux concertations avec les pouvoirs publics.

Le travail de terrain

Le travail de terrain est basé sur:

- Quatre domaines de compétences: santé animale, gestion des systèmes d'élevage, gestion des resources naturelles, renforcement des organisations locales.
- Des approches favorisant la formation et la participation dres "eleveurs et des différents groupes d'acteurs au sein des populations,
- La volonté de contribuer à l'émergence de structures locales qui deviennent progressivement les interlocuteurs principeaux des ONG du Nord.

Les équipes de terrain et notamment les expatriés se caractérisent par un engagement important dans leur travail et par une relative autonomie dans le déroulement de leurs activités.

Respect d'une éthique

Le développement et les activités de VSF visent à respecter une éthique vis-à-vis des

FOR YOUR INFORMATION 1

IPC Livestock, Innovation and Practical Training Centre, Barneveld, The Netherlands.

1998 Course programme

IPC Livestock Barneveld organizes the following short professional training programmes in English in 1998. The courses are in-service, commercial sector and practice oriented and include theory, practicals, demonstrations and excursions.

- Modern animal feed manufacturing	2 June - 12 June	Fee: Dfl. 5,000*
- Feed formulation	15 June - 19 June	Fee: Dfl. 2,000
- Modern layer farm management	2 June - 12 June	Fee: Dfl. 4,500
- Modern breeder farm management	2 June - 12 June	Fee: Dfl. 4,500
- Modern broiler farm management	15 June - 26 June	Fee: Dfl. 4,500
- Modern hatchery management	15 June - 26 June	Fee: Dfl. 4,500
- Sexing of day-old-chicks	August - December	details on request
- Modern pig farm management	2 June - 12 June	Fee: Dfl. 4,500
- Artificial Insemination in pigs	15 June - 26 June	Fee: Dfl. 5,000

* Excluding international travel expenses; including full board and lodging

Information: IPC Livestock Barneveld College, Head of Dept. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.342.414881, telefax: +31.342.492813, e-mail: io@ipcdier.hacom.nl).

populations et des pays avec lesquels VSF travaille, ce qui entraîne le respect d'un certain nombre de principes el le souci de réagir aux politiques gouvernementales le cas échéant; la participation de VSF au Groupe Initiatives est à ce titre importante.

Missions

C'est le contexte dans lequel VSF recherche son directeur des programmes. Sous la responsabilité de la direction générale, il est membre du comité de direction aux côtés du directeur administratif et financier et du directeur de la recherche-développement. Il est chargé:

- De la coordination de l'ensemble des programmes de terrain de VSF; à ce titre il a un rôle d'animation auprès des équipes de terrain pour le bon déroulement des programmes ainsi qu'un rôle d'impulsion et de dynamisme au sein de VSF;
- Du développement des programmes de VSF; il recherche des financements pour la poursuite des programmes en cours si elle se justifie et pour le lancement de nouveaux programmesselon les axes stratégiques de développement de l'association;
- De la qualité des projets dans le cadre de la cellule d"appui aux programmes animée par le directeur de la recherche-développement et qui regroupe des membres des deux départements;
- De la gestion financière des programmes, qui représentent 80% du budget de l'association. En lien avec le département administratif et financier, il est responsable de l'élaboration des budgets des programmes et du suivi budgétaire, il met l'accent sur la déconcentration financière en cours de mise en oeuvre dans une partie des pays;
- De la gestion des ressources huaines du département dont il est le directeur à yon (5 personnes dont 2 chargés des programmes) et du personnel expatrié sur le terrain (environ 45 personnes).

Pour assurer ces fonctions, il s'appuie sur les membres du comité de direction avec lesquels les décisions les plus importantes sont prises, il participe selon les besoins aux réunions du bureau et du conseil d'administration de l'association.

Profil

Formation vétérinaire de préférence, ou agronome avec une expérience en zootechnie ou très proche de ces domaines. Expérience de 8 à 10 ans dans le développement avec des fonctions de responsabilité, dont 4 à 5 années en poste dans un pays du Sud. Réellevolonté d'engagement dans un fonctionnement associatif. Capacités de manager une équipe géographiquement dispersée. Aptitude à la négociation avec les institutionnels, excellent relationnel. Rigueur dans la gestion. Anglais et espagnol fortement souhaités. Poste basé à Lyon, environ 80 jours par an de missions à l'étranger.

Postulations

Vétérinaires Sans Frontières, Espace Rhône Alpes Coopération,14, avenue Berthelot, F-69361 Lyon Cedex 07, France (e-mail: vsf@globenet.org).

The International Livestock Research Institute (ILRI)

LIVESTOCK GENETICIST - PROJECT CO-ORDINATOR DEVELOPMENT OF DISEASE RESISTANT LIVESTOCK (f/m) (Nairobi, Kenya; REF PCDL/1/98)

General

The International Livestock Research Institute (ILRI), founded in 1994, incorporates the resources of the former International Laboratory for Research on Animal Diseases (ILRAD, Kenya) and the International Livestock Centre for Africa (ILCA, Ethiopia). ILRI, a non-profit-making research institute, is sponsored by the Consultative Group on International Agricultural Research (CGIAR). The global mandate of ILRI is to undertake research to enhance the role of livestock in sustainable agricultural production systems in Africa, Asia and the Latin American-Caribbean region. ILRI employs approximately 80 internationally recruited scientists, 20 post-doctoral associates and 800 programme support staff based in the institute's two campuses in Nairobi and Addis Ababa, and at field sites in Niger, Nigeria, Burkina Faso, India, Colombia and Peru.

The position

ILRI has a strong programme of research in the area of animal health improvement in the developing world, through the development of new technologies, such as vaccines and diagnostics, and of ways to effectively apply these to enhance livestock productivity. ILRI currently has a position for a Project Co-ordinator in Development of Disease Resistant Livestock. This is a senior position in the Institute. The successful candidate will join a multi-disciplinary team in the Biosciences Programme, reporting to the Programme Director. The incumbent is responsible for co-ordination of the whole project area which currently includes two operational projects conducting research on the genetics of resistance to trypanosomiasis in cattle and laboraty animals, and the genetics of resistance to hel-

minths in small ruminants and laboraty animals. The Co-ordinator is directly responsible for leadership and all management aspects of the projects. He or she is required to manage project funds and to play a major role in identifying and obtaining new sources of funding. Development and co-ordination of collaborative projects with other laboratories will be an important component of the work.

Qualifications and experience

A PhD degree or equivalent, with appropriate specialisation in animal molecular and/or quantitative genetics, and an extensive publication record are required. Candidates are expected to have more than 5 years relevant research and management experience. Good communication and interpersonal skills, an ability to perform in a multi-disciplinary and multi-cultural environment and fluency in spoken and written English are essential requirements. The successful candidate should have experience in disease resistant livestock research and a good understanding of the patterns of genetics of disease resistance.

Conditions

The location of the post is ILRI (Nairobi). The contract for this position will be for an initial 3 year term with the possibility of extension. Salary, dependent on experience, will be paid in US dollars. ILRI provides excellent benefits including em- ployer-paid medical, life and disability insurance and retirement benefits. Relocation, housing, annual leave travel and education allowances are also provided. On-site furnished accommodation at ILRI is subject to availability or, a housing allowance for off-site accommodation is provided.

Applications

Applicants should send a cover letter, curriculum vitae and the names and addresses (including telephone, fax and e-mail) of three referees who are knowledgeable about the candidates professional qualifications and work experience to:
Human Resources Manager, ILRI, P.O.Box 30709, Nairobi, Kenya (Tel.: +254.2. - 630743, telefax: 254-2-631499, e-mail: ILRI-KENYA@cgnet.com).
The name and reference number of the position for which the application is made should be clearly marked on the envelopes of mailed, or on the fax or e-mail applications. Screening of applications will begin on 27 February, 1998, and will continue until the post is filled.
ILRI is an equal opportunity employer.

(Copied from: Vacatureblad International Samenwerking no. 2, 29 January, 1998)

FOR YOUR INFORMATION 2

University of Pretoria, Faculty of Veterinary Science, Onderstepoort, South Africa.

1998 Course programme

The Departments of Veterinary Tropical Diseases and Pathology of the Faculty of Veterinary Science, Onderstepoort organize the following courses in English in 1998.

Laboratory Diagnostic Series courses

These courses focus on the techniques required to make a diagnosis. Technical as well as other scientists are accommodated (Course fee US$ 2,000)

Virology Part I	04 May	- 15 May
Ectoparasitology and Protozoology	22 June	- 17 July
Diagnostic Veterinary Pathology	June	- July
Immunology and Serology	05 October	- 30 October
Histopathology laboratory practice	October	- November

Course on African Epizootic Diseases

This course aims to train veterinarians in the epidemiology, diagnosis and control of important epidemic diseases of Africa. Course fee: participants from Africa: US$ 2,500, participants from outside Africa: US$ 3,000. Period: 28 September - 2 October, 1998.

Draught Animal Power Course

This course covers all aspects of health and management of draught animals. Course fee US$ 2,000. Period: 31 August - 25 September, 1998.

Information: Mrs. Shirley Schroder, Department of Veterinary Tropical Diseases, Faculty of Veterinary Science, Private Bag X04, Onderstepoort 0110, South Africa (Tel.: +27.12.5298103, telefax: +27.12.5298312, e-mail: shirley@op1.up.ac.za)

FOR YOUR INFORMATION 3

HandiSTATUS

Help with World Animal Disease Status

Introduction

HandiSTATUS (**Help** with World **Ani**mal **Di**sease **Status**) is a database programme which contains information about animal diseases which are important to international trade or human health. The main sources of information are the FAO/OIE/WHO Animal Health Yearbook, published by the Food and Agriculture organization of the United Nations (FAO), and the International Animal Health Code and World Animal Health, produced by the International Office of Epizootics (OIE).

Programme Development
The development of this database was initiated in response to requests for information by animal health personnel in the Caribbean trough CARAPHIN, a project of the Inter-American Institute for Cooperation on Agriculture and (IICA) the Canadian International Development Agency (CIDA), with support from Agriculture Canada and the University of Guelph. Work has continued under a hemispheric project of IICA's Program V: agricultural health, which aims to promote the safe trade of agricultural products, and subsequently through financial support from the United Sates Department of Agriculture (USDA/ APHIS) and the OIE.

The programme was initially intended to be a source of integrated information particularly suited for persons working in isolation in small countries; however, it has come into much wider use. The first prototype was presented at the 6th International Symposium on Veterinary Epidemiology and Economics, Ottawa, Canada, August 1991, where broader interest in the programme became apparent. In view of the OIE's mission to disseminate animal health information and the contribution of ***HandiSTATUS*** toward achieving this aim, an agreement was reached at the beginning of 1996 for the OIE to take over the responsibility for the future maintenance and development of the application.

Technical Content
HandiSTATUS provides information on diseases of sufficient importance to international trade or human health to be included in the official lists A and B (OIE/FAO) or C (FAO). It features maps of the global distribution of listed diseases for each species affected. More detailed information on distribution is available in the text form. In addition to assisting in risk identification for import/export decisions, it provides access to the OIE's International Animal Health Code recommendations for safe importation of products, lists of reference laboratories and contains formats for veterinary certificates.

Obtaining a copy of *HandiSTATUS*
The most recent version of ***HandiSTATUS*** and a concise version of the current User's Manual can be down loaded from the OIE Web site (Address: http://www.oie.int). Instructions on how to download the files are given at the Web site.The OIE also supplies ***HandiSTATUS*** on two 3.5" high density diskettes and a printed version of the User's Manual to Delegates of the OIE Member Countries and, on request, to official bodies in a position to promote or distribute the software. Regular updates of ***HandiSTATUS*** programmes and data are available from the OIE Web site.

Information: Office International des Epizooties, 12, rue de Prony, 75017 Paris, France (Tel. +33.144151888, telefax: +33.142670987, e-mail: oie@ oie.int)

1C9A9L8E/N1D9A9R9

Wageningen, the Netherlands
29 March - 11 April, 1998
International course on livestock and environment interactions. Course programme: Livestock-environment interactions in the context of global changes; Analyses of key indicators for livestock-environment interactions; Assessment of environmental impact for livestock production systems; Policy instruments. Course fee: Dfl. 5,500. Information and registration: International Agricultural Centre (IAC), P.O. Box 88, 6700 AB Wageningen (Tel.: +31.317.490111, telefax: +31.317 418552, e-mail: iac @iac.agro.nl).

Barneveld, The Netherlands
15 - 26 June, 1998
Course on: Artificial insemination in pigs. Subjects: Collection of semen; Evaluation and processing of semen in the laboratory; Insemination and sow production control; Organization of an AI station and Selection of breeding stock. Fees including board and lodging: Dfl. 5,000. Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.342.414881, telefax: +31.342-.492813, e-mail: io@ ipcdier.hacom.nl).

Melbourne, Australia
3 August, 1998 - 30 July, 1999
Degree of Master of Veterinary Studies (MVS) in Avian Health. Organized by: Faculty of Veterinary Science, Univ. of Melbourne. Areas of study: Poultry pathology; Infectious causes and serology of poultry diseases; Disease, diagnosis, prevention and control; Poultry production systems and procedures; Keyboard skills for data handling; Enhanced communication skills; Preparation of dissertation. Tuition fee: $A 26,500. Closing date for applications: 31 March, 1998. Information: Dr. Trevor Bagust, Course Coordinator, Faculty of Veterinary Science, Univ. of Melbourne, Parkville, Victoria 3052 (Tel.: +61.3.93-449676, telefax: +61.3.93449675, email: t.bagust@unimelbltd.unimelb.edu.au).

Kruger National Park, South Africa
9 -15 August, 1998
International Congress on Antrax, Brucellosis, CBPP, Mycobacterial diseases and Clostridial diseases. Organized by: OIE Regional Collaborating Centre for Africa with the ARC Onderstepoort Veterinary Institute. Programme will focus on the following aspects: epidemiology, control, zoonoses and detection. Call for papers and poster abstracts: full text before 1 May, 1998. Congress venue: The Conference Centre, Berg-en-Dal rest camp, Kruger National Park. Fee: before 15 May: R 1250; after 15 May: R 1500; after 15 June: 1750. Registration: Organising Committee, Technology Transfer, Onderstepoort Veterinary Institute, Private Bag X05, Onderstepoort, 0110, South Africa (Tel.: +27.12.5299433, telefax: +27.12.-5299143, e-mail: ria@ moon.ovi.ac.za).

Wageningen, the Netherlands
16 August - 20 November, 1998
26th International course on dairy farming in rural development. Course programme: Introduction; Dairy development; Farming systems; Statistics; Economics and agricultural credit; Breeding; Pasture production; Nutrition and feeding: Animal health; Reproduction and AI, Extension and case studies. Course fee:

AGENDA

Dfl. 5,500. Closing date: 1 May, 1998. Information and registration: International Agricultural Centre (IAC), P.O. Box 88, 6700 AB Wageningen (Tel.: +31-.317.490111, telefax: +31.317 418552, e-mail iac@iac.agro.nl).

Utrecht, The Netherlands
24 - 28 August, 1998
10th International Conference on Production Diseases in Farm Animals, 10th ICOPD'98. Programme: Metabolic disorders and related diseases; deficiency diseases; Nutrition and fertility; Endocrinology and regulation for metabolism; Nutrition and immunology; Animal welfare, behaviour and housing; Animal production and the environment; Epidemiology and production diseases. Call for papers, and deadline for receipt of Abstracts: 1 April, 1998. Registration fee: Dfl. 500,- Information and registration: Dr. Th. Wensing, Office Organizing Committee, P.O. Box 14031, NL 3508 SB Utrecht (Telefax: +31.30.2511787, e-mail: t.wensing@izv.dgk.ruu.nl; http:// www.knmvd.nl).

Barneveld, The Netherlands
24 August, 1998 - 25 February, 1999
28th International course on poultry husbandry and 28th International course on pig husbandry. Organized by: IPC Livestock International, Barneveld College. These courses will run at the same time. Following these courses participation is possible in the 21st International animal feed training programme (AFTP), which runs from 1 March to 27 May, 1999. Direct entry in this last course is also possible. Fees including board and lodging: Poultry course: Dfl. 24,500; Pig course: Dfl. 24,500, Feed course; Dfl. 12,000 or 14,500 (direct entry). Closing date: 1 May, 1998. Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.342.414881, telefax: +31.342.492813, e-mail: io@ipcdier.hacom.nl).

Utrecht, the Netherlands
1 September, 1998 - 31 August, 2000
International MSc programme of the Graduate School Animal Health, Faculty of Veterinary Medicine, Utrecht University, and ID-DLO Institute for Animal Science and Health, Lelystad. MSc Course 'Veterinary Epidemiology and Herd Health' (fee: Dfl. 20,000); MSc Course 'Animal Pathology' (fee: Dfl. 35,000); MSc Course 'Modern Approaches in Veterinary Microbiology and Immunology'(fee: Dfl. 68,500). Registration before 1 August, 1998. Information: Office for International Co-operation, Faculty of Veterinary Medicine. P.O. Box 80.163, 3508 TD Utrecht (Telefax: +31.30.2531815, e-mail: bic@bic.dgk.ruu.nl).

Harare, Zimbabwe
10 - 12 September, 1998
Veterinary Pathology Symposium. Organized by: Southern and Eastern Africa Division of the C.L. Davis DVM Foundation. Information: Prof. M.J. Obwolo, Faculty of Veterinary Science, University of Zimbabwe, P.O. Box M.P. 167, Mount Pleasant, Harare (Tel. - +263.4.303211, telefax:+ 263.4.333683, e-mail: vetscience@esanet.zw).

Harare, Zimbabwe
14 - 18 September, 1998
IX International Conference of the Association of Institutions of Tropical Veterinary Medicine (AITVM): 'Animal health and Production for Sustainable Development'. Organized by: Faculty of Veterinary Science, University of Zimbabwe, P.O. Box MP 167, Harare. Location: International Conference Centre, Harare. Registration: Prof. M.J. Obwolo, Faculty of Veterinary Science, University of Zimbabwe, P.O. Box M.P. 167, Mount Pleasant, Harare (Tel. +263.4.303211, telefax: + 263.4.333683, e-mail: vetscience@esanet.zw).

London, United Kingdom
October, 1998 - October, 1999
MSc Course on Wild Animal Health for graduates in veterinary and relevant sciences. Including: practical and theoretical instruction in the husbandry and nutrition of wild animals, taxonomy, population biology, conservation genetics, welfare and ethical aspects, epidemiology, immunology, infectious and non-infectious diseases, disease investigation, restraint, preventive medicine and surgery and an individual research project. Organized by: The Institute of Zoology (Zoological Society of London) and The Royal Veterinary College (University of London). Information and registration: Registrar, The Royal Veterinary College, Royal College Street, London NW1 OTU (Tel. + 44.171- 4685000, telefax: +44.171-3882342).

Omaha, Nebraska, USA
16 - 22 October, 1998
Joint meeting of the World Association of Wildlife Veterinarians (WAWV), the American Association of Zoo Veterinarians (AAZV) and the Canadian Association of Zoo and Wildlife Veterinarians (CAZWV). Holiday Convention Centre, Omaha. Information: Dr. Wilbur Amand, President WAWV, 6 North Pennel Road (Lima), Media PA 19063, USA.

Melbourne, Australia
February, 1999 - January, 2000
Degree of Master of Veterinary Studies (MVS) in Health and Production of Small Ruminants. Organized by: Faculty of Veterinary Science, University of Melbourne. Areas of study: Parasitology; Gross and histopathology; Reproduction; Advanced sheep management; Introductory surgery and field visits. Tuition fee: $A 26,500. Closing date for applications: 30 September, 1998. Information: Dr. Trevor Bagust, Course Coordinator, Faculty of Veterinary Science, University of Melbourne, Parkville, Victoria 3052 (Tel.: +61.393449676, telefax: +61.3.-93449675, e-mail: t.bagust@unimelbltd.unimelb.edu.au).

Lyon, France
20 - 25 September, 1999
Joint meeting of the European Section of the Wildlife Disease Association (EWDA) and the European Association Zoo and Wildlife Veterinarians (EAZWV) at the World Veterinary Congress in Lyon. Information: Dr. Marc Artois, CNEVA Nancy, Domaine de Pixerecourt, BP 9, 54220 Malzeville, France.

EQUATOR

NEWSLETTER ON VETERINARY ASPECTS OF INTERNATIONAL DEVELOPMENT COOPERATION

ISSN 0923-3334

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March - April, 1998

2

VOLUME 10,1998

FIFTEEN VETERINARIANS OBTAIN MASTER OF SCIENCE DEGREE IN UTRECHT

Friday 20 February was the most important day of 1998 for 15 of the participants in the MSc course on "Herd Health and Epidemiology". On this day they were rewarded with the MSc degree after 18 months of study and scientific endurance.

Traditionally the course ended with the presentations of the results of the scientific work of the participants before an audience of peers. Publication of the results in a double refereed international journal is mandatory to obtain the Master of Science degree at Utrecht University's Faculty of Veterinary Medicine.

The participants, who came from Belgium, Ethiopia, Finland, India, Kenya, the Netherlands, Thailand, Tanzania, Zambia and Zimbabwe, did their research at different departments of the Faculty of Veterinary Medicine and the Institute for Animal Science and Health in Lelystad.

The research topics fell within the following areas: Laboratory techniques (cattle and small ruminants), Animal level analysis (cattle), Fertility and hormones (cattle and horses), Infectious diseases (cattle and pigs) and Diverse subjects (cattle and sheep)

After these presentations Prof. A.W.C.A. Cornelissen, the vice dean, took the floor and officially presented the "young masters" their diploma.

Dr. Ynte Hein Schukken, course coordinator and staff member of the Utrecht Department of Herd Health and Reproduction highlighted the past 18 months in his farewell speech. He encouraged his ex-students to continue "the good work". But he also warned them, especially the participants from tropical countries, for a reverse culture shock upon arrival back home.

After this wise words Dr. Schukken suddenly removed his tie and shirt to reveal a T-shirt with a group photo of the participants. Beside this photo the T-shirt contained the text: Masterclass 96/98 - Great Class .....

Jean de Gooijer

RESEARCH TOPICS HERD HEALTH AND EPIDEMIOLOGY MASTER OF SCIENCE COURSE 1996-1998

Laboratory techniques (cattle and small ruminants)

- Use of a 14.2 kDa recombinant *Cooperia oncophora* protein in an ELISA for herd health monitoring of nematode infections in first season grazing calves in the Netherlands (John Githiori, Kenya)
- Statistical validation of the "MAP1-B ELISA" for diagnosis of *Cowdria ruminantium* infection in small ruminants (Martin Mboloi, Kenya)
- Detection of spirochetes by Polymerase Chain Reaction and its relation to the course of Digital Dermatitis after local antibiotic treatment in dairy cattle (Tembo Mumba, Zambia)

Animal level analysis (cattle):

- Effect of induced fatty liver on hepatic gluconeogenesis in periparturient dairy cows (Theera Rukkwamsuk, Thailand)
- Early responses of SCC and electrical conductivity in relation to severity of *E. coli* mastitis in dairy cows (Maru Aregawi, Ethiopia)
- Relation between bacterial count and SCC in *S. aureus* infected cows (Ruth Zadoks, the Netherlands)

Fertility and hormones (cattle and horses):

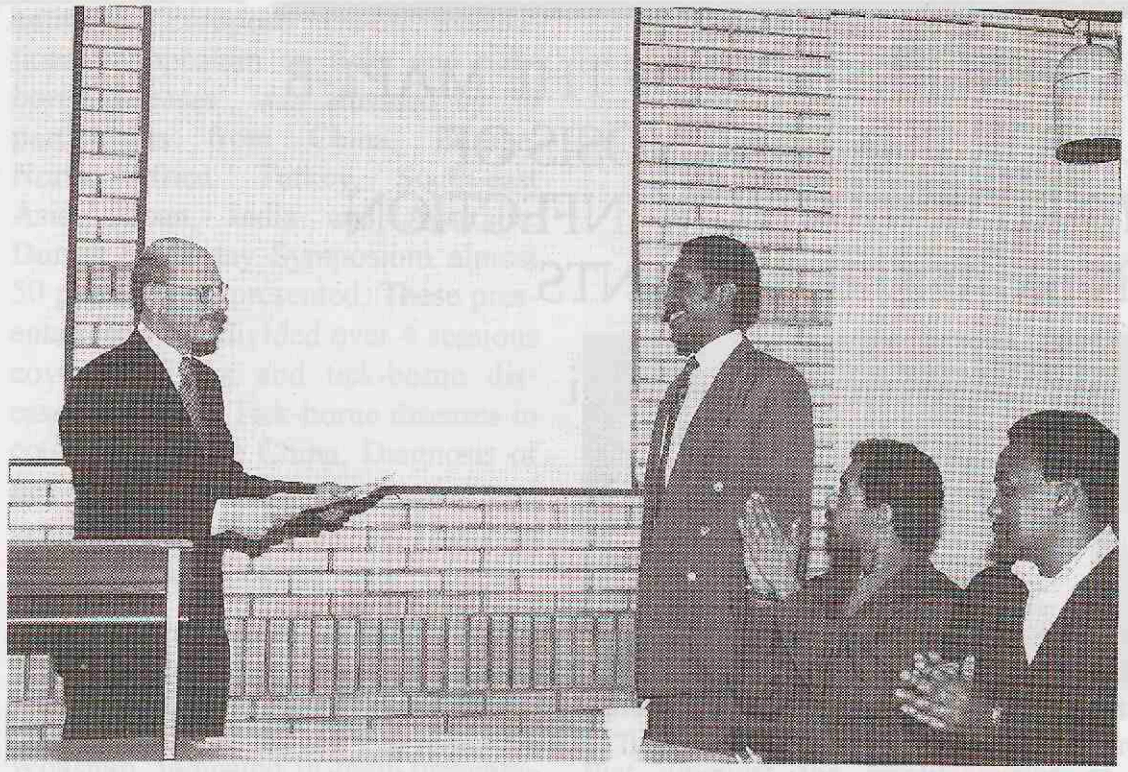
- Diestral peak progesterone, estradiol, heat intensity and milk production during estrus: the natural relationships (Masimba Ndengu, Zimbabwe)
- Relation between estradiol, cortisol and heat intensity in dairy cattle (Zodiac Lyimo, Tanzania
- The exposure of progesterone receptor on the plasma membrane of stallion spermatozoa is a valuable parameter for prediction of fertility (Rahul Rathi, India)

Infectious diseases (cattle and pigs)

- Risk factors for *Neospora caninum* associated abortion storms in Dutch dairy herds (Chris Bartels, the Netherlands)
- An experimental infection with a classical swine fever virus on weaner pigs. Can the serological data be used to estimate the day of virus introduction in natural outbreaks? (Hans Laevens, Belgium)
- Risk indicators for the seroprevalence of five respiratory disease agents in slaughter pigs from fattening pig herds (Dominiek Maes, Belgium)

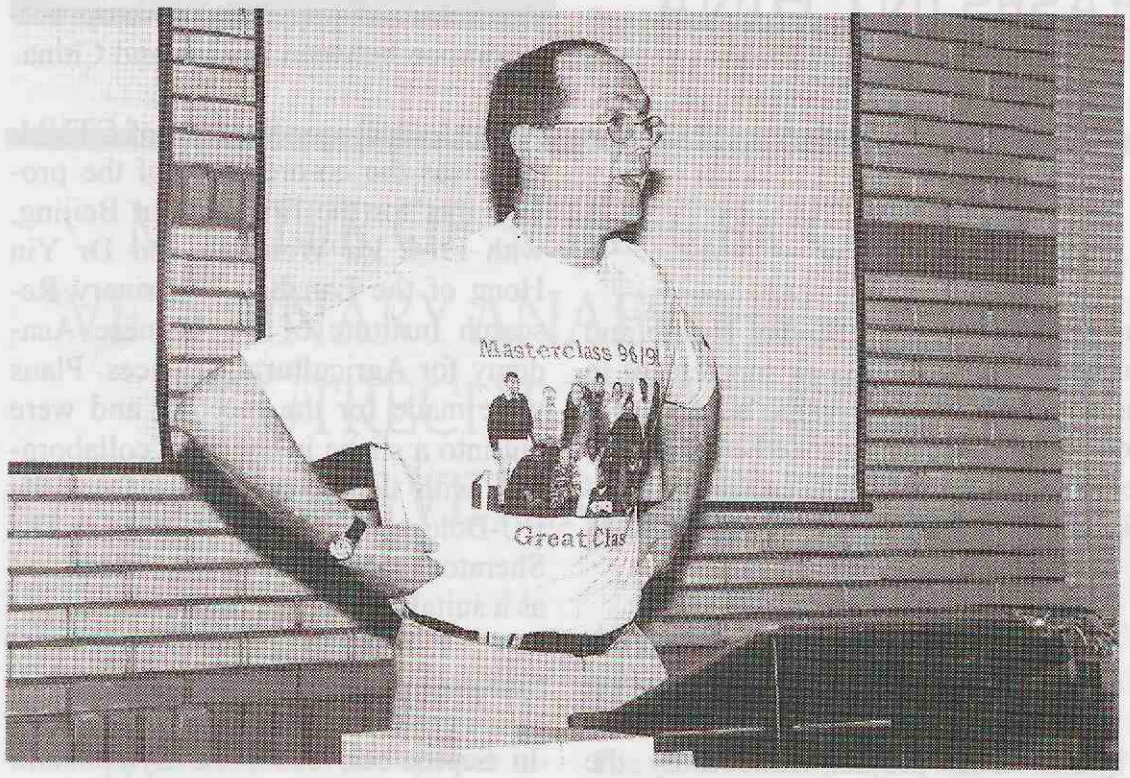
Diverse subjects (cattle and sheep):

- Heritability for para-tbc in Dutch dairy cattle (Girma Adugna, Ethiopia)
- The association of housing conditions with lameness in Finnish dairy cows (Paula Antilla, Finland)
- The influence of Cobalt-supplementation during late gestation on ewes and suckling lambs (Lammert Moll, the Netherlands)



Prof. Cornelissen congratulates one of the "young" Masters of Science (Photo: De Gooijer)

Masterclass 96/98, Great Class .... (Photo: De Gooijer)



Dr. Schukken warned his students for a reverse culture shock (Photo: De Gooijer)

STATISTICAL VALIDATION OF THE MAP1-B ELISA FOR THE DIAGNOSIS OF *COWDRIA RUMINANTIUM* INFECTION IN SMALL RUMINANTS

Martin Mutisya Mboloi

ABSTRACT

The MAP1-B ELISA for the diagnosis of *Cowdria ruminantium* infections was statistically validated to determine cut-off values for sheep and goat sera. The repeatability of the test was also evaluated. Cowdria-infected populations consisted of 48 sheep and 44 goats while the non-infected populations consisted of 64 sheep and 107 goats. Cut-off values were determined by Two graph-Receiver Operating Characteristic (TG-ROC) curves. The cut-off value for sheep sera was set at 31 % and for goat sera 26.6% of the reference positive control sample. The test's performance was further evaluated using the Area Under the Curve (AUC) of the ROC curves and Valid Range Proportion (VRP) = (MR-IR)/MR, whereby MR is the measurement range of the MAP1-B ELISA results obtained in the infected and non-infected reference populations of each of the two animal species. IR is the intermediate range which occurs due to results that are neither defined as positive nor negative by the test. The values of AUC and VRP for sheep sera were not different from those obtained from goats. The test repeatability was evaluated by coefficient of variation (CV) and intra-class correlation coefficient (R_{icc}). Results obtained with sheep sera were more consistent than for goats using both CV and R_{icc}. However, the relative variability in the results did not alter the diagnostic performance of the test in classifying the sera to infected and non-infected states. From the results of this study, we conclude that the MAP1-B ELISA is a useful test for the diagnosis of *Cowdria ruminantium* infection in small ruminants.

EUROPEAN UNION INTERNATIONAL SYMPOSIUM ON TICKS AND TICK-BORNE DISEASES IN CHINA

In November, 1997 a special issue of the journal 'Tropical Animal Health and Production' was published by the Edinburgh University Press as supplement to Volume 29. With the publication of this supplement, there came an end to a series of major efforts by many motivated scientists to bring together, during a weeks' conference in Xi'an, China, members of the world's leading tick research groups and the Chinese scientific community involved in research on ticks and tick-borne diseases.

Towards September, 1996

One of the tasks of the project 'Mechanisms of pathogenesis and immunity in tropical theileriosis: their relevance to vaccine development', was to organise two co-ordinating meetings, one in Turkey and one in China. This project, funded by the European Union (EU) under the STD3 programme of DG 12, was executed by the Centre for Tropical Veterinary Medicine (CTVM) of the University of Edinburgh (UK). The purpose of these co-ordinating meetings was to bring together workers in the field and hopefully develop collaboration between Europe and China.

In 1993, Dr Roger Spooner of CTVM, who was the co-ordinator of the project, met for the first time in Beijing, with Prof. Lu Wenshun and Dr Yin Hong of the Lanzhou Veterinary Research Institute of the Chinese Academy for Agricultural Sciences. Plans were made for the meeting and were put into a shape in 1995, in collaboration with the co-organisers from the EU-Delegation in Beijing. The Sheraton hotel in Xi'an was identified as a suitable location for the meeting.

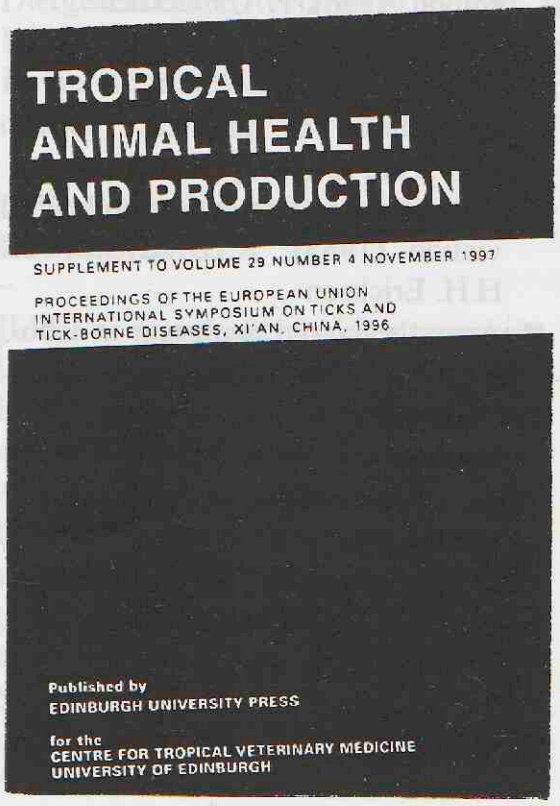
Symposium 2-6 September, 1996

In September, 1996, the Symposium

entitled: 'European Union international symposium on ticks and tick-borne diseases', was attended by 50 participants from China, Europe, North Africa, Turkey, South-east Asia, Japan, India and Australia. During the 5-day Symposium almost 50 papers were presented. These presentations were divided over 4 sessions covering: Ticks and tick-borne diseases in China; Tick-borne diseases in countries outside China; Diagnosis of tick-borne diseases; Antigenic and genetic characterisation of *Theileria* and *Babesia;* Control and Vaccination.

Cattle theileriosis in China

Prof. Luo Jianxun and Prof. Lu Wenshun, indicated in their presentation entitled: 'Theileriosis in China' that amongst the piroplasmoses of livestock in China, the commonest is theileriosis caused by *Theileria annulata, T. sergenti* and *T. mutans.* Although theileriosis is most commonly seen in northern China, it also occurs in the South. *T. annulata* is the most virulent and pathogenic. *T. sergenti* is apathogenic but causes high infection rates up to 97% (Luo Jianxun and Lu Wenshun, 1997, Trop. Anim. Hlth Prod, Suppl. 29: S4-7).



Proceedings in 1997

The Proceedings of the Symposium, published in 'Tropical Animal Health and Production' in 1997 as supplement to Volume 29, form a 140 page, unique source of information. This publication, edited by Dr Patricia Preston (University of Edinburgh) and Dr Yin Hong (Lanzhou Veterinary Research Institute) covers a wide range of topics related to ticks and tick-borne diseases and provides detailed information on occurrence, distribution, economic importance and control of these diseases in Asia; this information was by and large unavailable in the international literature until now. The publication of the proceedings was funded by the EU under the INCO-DC programme as part of a Concerted Action Project on Integrated Control of Ticks and Tick-borne Diseases (ICTTD) and by the ECTS2-0260-UK project. A limited number of copies is available on written request from Dr F. Jongejan, Faculty of Veterinary Medicine, Utrecht University, P.O. box 80.165, NL 3508 TD Utrecht (Telefax: +31.30.2540784; e-mail: f.jongejan@vetmic.dgk.ruu.nl).

Dr R.W. Paling

MASTER OF SCIENCE COURSE "VETERINARY ANAESTHESIOLOGY" AT UTRECHT UNIVERSITY'S FACULTY OF VETERINARY MEDICINE

Master of Science programme

This programme offers a graduate course in veterinary anaesthesiology, with emphasis on both the species independent fundamental aspects of clinical anaesthesia and on anaesthesia related research.

The course will focus on basic and applied pathophysiology and pharmacology, with special emphasis on the different vital organ functions affected by anaesthesia.

Clinical training will encompass the different aspects of anaesthesia of large animals (equine, ruminants, porcine), companion animals (canine, feline, exotic pets), laboratory animals (rodents, rabbits) and optionally exotic (zoo and/or wild) animals.

Beside aspects as pharmacology of anaesthetic agents, species dependent clinical applicability of different anaesthetic protocols and potential an-

acsthetic mishaps, there will be an in-depth training in the basic principles of anaesthesia monitoring, patient support during anaesthesia and post-operative care.
This clinical training will take approximately 6 months.

The remaining 12-18 months will be spent on training in and performing applied research in veterinary anaesthesia. Basic training courses related to several aspects of general scientific training (see course description) will be attended during this period. A previously approved research project will be executed by the MSc candidate. This research project in the field of veterinary anaesthesiology will be part of an ongoing research programme of Utrecht University's Faculty of Veterinary Medicine.

Course description

Large animals: During this rotation the candidate will be exposed to the different local and regional anaesthesia techniques in ruminants and equines. Furthermore attention will be paid to different aspects of general anaesthesia in horses, swine and small ruminants. During these anaesthesias the focus will be on the adequacy of general anaesthesia and the evaluation of the functioning of the patient's vital organs. Different methods of patient monitoring (both non-invasive and invasive) will be demonstrated and the candidate is expected to learn and interpret the data obtained by the different means of monitoring. In the case of equine anaesthesia the candidate is expected to gain adequate insight in the pathophysiological aspects of the ventilation perfusion mismatching, as it occurs during recumbency in horses under general anaesthesia, and (possible) relevant elements of patient support.

Companion animals: During the companion animal rotation the candidate will be expected to gain knowledge of and subsequently perform different forms of injection and inhalation anaesthesia in dogs, cats, and (small) exotic animals. To a limited extent local anaesthesia techniques, relevant to companion animal anaesthesia, will be taught. Next to vital organ functioning (cardiac and respiratory) monitoring attention will be focused on several aspects of supportive therapy during anaesthesia such as artificial ventilation, infusion therapy, blood pressure support therapy etcetera. There will be ample time scheduled for interpretation and subsequent therapeutic consequence of relevant biochemical and/or blood gas and acid base analysis data.

Further to the above, emphasis is put on the aspect of chronic pain control and the possible therapeutic measures.

Laboratory animals: In this rotation emphasis will be put on the anaesthesia of common laboratory animal species such as rodents and rabbits. Also there will be an in-depth evaluation of the possibilities of anaesthesizing an animal during an experimental procedure. The potential interaction between the anaesthesia and the experiment will be discussed, also in the light of the consequences for the animal itself.
Furthermore attention will also focus on the recognition and alleviation of pain and the potential therapeutic options available to achieve analgesia.

Research plan

The research plan will be determined in close co-operation with the candidate and supervisors. An effort will be made to design the programme in such a fashion that it fits the candidate's interest as well as the primary professional tasks the candidates will perform within his/her own institute after completing the course.

The research plan will have to be related to an anaesthesiological topic of investigation, and will have to fit in one of the research programmes of Utrecht University's Graduate School of Animal Health.

Course management

The programme will be executed under the supervision and responsibility of Prof. Dr. L.J. Hellebrekers (course co-ordinator), Department of Companion Animal Science, Anaesthesia Section, P.O. Box 80.163, NL-3508 TD Utrecht, email: l.j.hellebrekers@pobox.ruu.nl, and Dr. P. van Dijk course co-co-ordinator).

Obligatory reading

- Veterinary Anaesthesiology (9th edition, 1991), L.W. Hall & K.W. Clarke
- Principles and practice of veterinary anaesthesia (1987), C.E. Short
- Equine anaesthesia: Monitoring and emergency therapy (1991), W.W. Muir & J.A.D. Hubbel
- Principles of laboratory animal science (1993), L.F.M. van Zutphen *et al.*
- Laboratory animal anaesthesia (2nd edition, 1996), P.A. Flecknell

Additional reading

- Anaesthesia of the cat (1996), L.W. Hall & P. Taylor
- Animal pain: Perception and alleviation (1983), R.L. Kitchell & H.H. Erickson
- Anaesthesia and analgesia in laboratory animals (1997), D.F. Kohn, S.K. Wixson, W.J. White & G.J. Benson

Information:

Dr. R.W. Paling
Office for International Co-operation
Faculty of Veterinary Medicine
P.O. Box 80.163
NL-3508 TD Utrecht
The Netherlands
Tel: +31.30.2532116
Fax: +31.30.2531815
Email: bic@bic.dgk.ruu.nl

Duration

18 months

Starting date

1 September 1998

Course fee

The course fee is Dfl. 35,000.

Admission

Candidates are admitted to the MSc programme by permission of the scientific director of the Graduate School Animal Health (GSAH), the chairper-

son of the GSAH Education Committee, and the course co-ordinators. The closing date for admission will be 1 August 1998.

Requirements
In general, a Dutch doctoral diploma in veterinary medicine (4 years), or a DVM degree are required for admission.

VACANCIES
INTERNATIONAL COOPERATION

This section contains vacancy announcements which the editorial board considers to be of possible interest to Dutch veterinarians. Besides vacancies that will be taken from Vacatureblad Internationale Samenwerking, Tijdschrift voor Diergeneeskunde, Veterinary Record, Intro vacatures (RPDAdvies/Ministry of Internal Affairs) etc., there will be room for personnel advertisements. For further information about the vacancies please contact the institution or company directly.

International Livestock Research Institute (ILRI)

ILRI, a non-profit making research institute carries out research to enhance the role of livestock in sustainable agricultural production systems in Africa, Asia and Latin America and the Caribbean regions. ILRI employs approximately 80 Internationally Recruited Scientists, 20 Postdoctoral Associates and 800 Programme Support Staff based in the Institute's two campuses in Nairobi, Kenya, and Addis Ababa, Ethiopia and at field sites in Niger, Nigeria, Burkina Faso, India, Colombia and Peru.

TEAM LEADER: SOUTH EAST ASIA (F/M)

Reference Nr.
TLSEA/03/98

Duties
ILRI currently has a position for a Team Leader to co-ordinate research activities which will lead to the improvement of gastro-intestinal nematode parasite control in small ruminants in the Southeast Asia region. Research activities will include identification of genetically resistant breeds or genotypes, investigating nutrition/parasite interactions, monitoring the development and persistence of anthelmintic resistance and development of integrated control programmes for use at the local and regional levels. The appointee will be responsible for the leadership and all management aspects of the project. The successful candidate will lead a multi-disciplinary team of scientists based in the Philipines. The Team Leader's primary responsibility will be to prepare detailed work plans and ensure their execution, to liaise with NARS, donors, international and advanced research institutes in the region and other ILRI staff to ensure that the needed technical, human and financial inputs are in place to effectively implement the agreed plan.

Qualifications
Ph.D. or equivalent in a relevant area of research (within Animal or Veterinary Science). At least five years post qualification work experience and a strong record of scientific accomplishments, leadership and management. A strong background in the control of nematode parasites of ruminant livestock and a good understanding of the components of successful control strategies. Good communication and interpersonal skills and fluency in spoken and written English are essential.

Remuneration
Salary and benefits are internationally competitive.

Type of appointment
This is a three year position with the possibility of extension.

Applicants
Please send a cover letter, curriculum vitae including telephone, fax and email of three referees to the Human Resources Manager, ILRI, P.O. Box 30709, Nairobi, Kenya; Telephone: 254-2-630743; Fax 254-2-631499, e-mail: ILRI-KENYA@cgnet.com. Screening of applications will begin on 30 April, 1998 and will continue until the post is filled.
(Http://www.cgiar.org:80/ilri/)

Closing date
30 April, 1998.

AITVM STANDING COMMITTEE MEETS IN UTRECHT

The Standing Committee of the Association of Institutes of Tropical Veterinary Medicine (AITVM) met in February in Utrecht to finalise the preparations of its 9th Conference entitled: **'Animal Health and Production for Development'**, to be held in Harare from 14-18 September, 1998. The President of the AITVM and Chairman of the national organising committee, Prof. Obwolo, Dean of Veterinary Science of the University of Zimbabwe, reported about the progress made by the national Organising Committee and the various subcommittees.

Conference facilities and organisation
Prof. Obwolo announced that the Conference will take place in Sheraton Hotel in Harare. The excellent conference facilities at the Sheraton will provide a comfortable environment for the 250 expected participants who are coming mainly from Africa but also from Europe, Asia and Latin America. Special attention is given to the organisation of the simultaneous translation English/French. A local travel agent (Manica Travel Services) has been contracted to provide various services such as: registration of participants, flight arrangements, hotel bookings, visa applications, exchange desk, local travel desk etc. A pharmaceutical company (Sanofi) will also assist with the local arrangements.

Making ends meet
A major task of the President and in fact of the all the members of the Standing Committee, is to balance the budget of the Conference. The registration fee was fixed at the reasonable level of US $250 for delegates and at US $ 75 for students. Although the University of Zimbabwe and the Central Veterinary Services make their staff members available for the organisation of the Conference, the major financial contri-butions have to come from outside these institutes. Commitments were received from international and regional organi-sations such as the European Union (DG VIII), FAO, CTA, IAEA, OIE, and national agencies of Belgium, Denmark, France, Portugal and UK. These contri-butions are towards the organisational costs of the Conference, as well as for fellowships for participants from deve-loping countries.

Conference Programme and speakers
During its meeting the Standing Committee discussed the draft programme and proposed names for key note speakers and chairpersons of the Workshops. This resulted in a draft programme. Please note that the names of key note speakers, chair persons and Workshop chairpersons are tentative and have not all been confirmed.

Participants
During the meeting the President announced that the Organising Committee has already received a significant number

Draft Programme of the 9th International Conference of the AITVM 'Animal Health and Production for Development', Harare, Zimbabwe (14-18 September, 1998)

Sunday, 13 September: Registration

Monday, 14 September: Plenary session
Morning: Chair: Prof. M.J. Obwolo
Official opening speeches and 2 key note speakers:
Dr. W. Masiga (OAU/IBAR, Nairobi) and M. Dale (EU, Brussels)
Afternoon: Chair: Prof. F.W.G. Hill
3 key note speakers: Representative of SADC, Dr. S. Hargreeves (DVS, Zimbabwe) and Dr. A. Irvin (ILRI, Nairobi).

Tuesday, 15 September: Workshops in parallel sessions
Topic 1: Needs for regional integrated animal disease control
Introductory paper: Dr B. Conner (RTTCP, Harare)
Topic 4: Veterinary public health and food safety
Introductory paper: Dr F.X. Meslin (WHO, Geneva)
Topic 5: Re-orientation of the veterinary curriculum
Introductory paper: Prof. M.J. Obwolo (UZ, Harare)

Wednesday, 16 September: Workshops in parallel sessions
Topic 2: Domestic and wildlife resource management
Introductory paper: Prof. H.H.T. Prins (AUW, Wageningen)
Topic 3: Increasing efficiency of the public and private health delivery systems. Introductory paper: Dr J. Domenech (CIRAD, Montpellier)

Thursday, 17 September: Excursions
Options for participants to choose from:
Cheetah and lion park
Ostrich farm and abattoir
Heifer international project
Faculty of Veterinary Science and Central Veterinary Laboratories

Friday, 18 September: Plenary session
Morning: Chair: Prof. S. Geerts (ITMA, Antwerp)
Presentation of major findings from the workshops and formulation of recommendations and Closing address.

of applications for participation. The Committee was confident that following the distribution of the Second Announcement, quite a few more applications will be forthcoming.
Recently (March) the Second Announcement was mailed to those who responded to the first announcement. The Second Announcement includes the registration forms and the forms and instructions for submission of abstracts and the full papers. The deadline for receipt of the abstracts is 30 June, 1998. Copies of the Second Announcement and information about availability of fellowships can be obtained from Prof. M.J. Obwolo in Harare (**Information**: Prof. M.J. Obwolo, Faculty of Veterinary Science, University of Zimbabwe, P.O. Box MP 167, Mount Pleasant, Harare, Zimbabwe, tel.: +263.4.303211/333683, telefax: +263.4.333683, e-mail: facvet@samara.co.zw)

FROM THE AITVM

Dr. R.W. Paling, Acting Secretary
AITVM

RECENT PUBLICATIONS 24

The section RECENT PUBLICATIONS scientific publications of the Faculty of Veterinary Medicine and other research institutes in The Netherlands, relevant to livestock production and health in the tropics, as well as titles of papers by Dutch veterinary scientist working on animal health and production topics in relation to developing countries. Please inform the editor of your publications so we can bring them to the attention of the readers of EQUATOR. For reprints contact the authors directly, their addresses can be obtained from the editorial office. Copies of the abstracts of '8th Symposium on 'Tropical Animal Health and Production. Aquaculture and Disease Control'. Utrecht, 28 November, 1997. Eds. J.H.A. de Gooijer and R.W. Paling', are available from the editorial office.

ANIMAL HEALTH

Astudillo, V., Cané, B.G., Geymonat, D., Sathler, A.B., Garay Román, S., Sutmoller, P. and Gimeno, E.J. (1997). Risk assessment and risk regionalisation, based on the surveillance system for foot and mouth disease in South America. Revue scientifique et technique de l'Office international des Épizooties 16: 800-808.

Astudillo, V., Sutmoller, P., Saraiva, V. and López, A. (1997). Risk of introducing foot and mouth disease through the importation of beef from South America. Revue scientifique et technique de l'Office international des Épizooties 16: 33-44.

Bercovich, Z., Eger, A., Dekker, T. and Haagsma, J. (1996). A comparison of the potency of several *Brucella* allergens used to detect brusellosis in cattle. Veterinary Research Communications 20: 141-151.

Pérez, E., Kummeling, A., Janssen, M.M.H., Jimenez, C., Alvarado, R., Caballero, M., Donado, P. and Dwinger, R.H. (1998). Infectious agents associated with diarrhoea of calves in the canton of Tilarán, Costa Rica. Preventive Veterinary Medicine 27: 195-205.

Sutmoller, P. and Vose, D.J. (1997). Contamination of animal products: the minimum pathogen dose required to initiate infection. Revue scientifique et technique de l'Office international des Épizooties 16: 30-32.

Sutmoller, P. and Wrathall, A.E. (1997). The risk of disease transmission by embryo transfer in cattle. Revue scientifique et technique de l'Office international des Épizooties 16: 226-239.

ANIMAL PRODUCTION

Harun, M.A.S., Veeneklaas, R.J., Kampen, M. van, Huisman, G.H. and Visser, G.H. (1997). Food restriction and development of thermoregulation in Muscovy ducklings (*Cairina moschata*). British Poultry Science 38: 381-389.

FISH HEALTH

Haenen, O.L.M. (1997). Health parameters of fish. In: Tropical Animal Health and Production. Aquaculture and disease control. Utrecht, 28 November, 1997. Eds. J.H.A. de Gooijer and R.W. Paling. pp. 33-37.

Haenen, O.L.M. (1997). Control of disease in aquatic organisms by zoological prevention. In: Tropical Animal Health and Production. Aquaculture and disease control. Utrecht, 28 November,1997. Eds. J.H.A. de Gooijer and R.W. Paling. pp.41-44.

Muiswinkel, W.B. van, Rombout, J.H.W.M. and Joosten P.H.M. (1997). Control of disease in fish by immunisation. In: Tropical Animal Health and Production. Aquaculture and disease control. Utrecht, 28 November, 1997. Eds. J.H.A. de Gooijer and R.W. Paling. pp. 44-47.

Werkman, P.J. (1997). Control of disease in aquatic organisms by bio-chemical therapeutics. In: Tropical Animal Health and Production. Aquaculture and disease control. Utrecht, 28 November,1997. Eds. J.H.A. de Gooijer and R.W. Paling. pp.38-40.

HELMINTH INFECTIONS

Moyo, D.Z., Eysker, M., Hendrikx, W.M.L., Bwangamoi, O. and Obwolo, M.J. (1997). *Ostertagia ostertagi* infection in cattle on an irrigated farm on the highveld of Zimbabwe. Zimbabwe Veterinary Journal 28: 1-5.

TICK-BORNE DISEASES, THEIR AGENTS AND VECTORS

Jongejan, F., Wiede, M. van der and Oliveira, C. d' (1997). Detection of *Theileria annulata* in carrier cattle and vector ticks by the polymerase chain reaction. Tropical Animal Health and Production, Suppl. 29: S61.

Leemans, I., Hooshmand-Rad, P. and Uggla A. (1997). The indirect fluorescent antibody test based on schizont antigen for study of the sheep parasite *Theileria lestoquardi*. Veterinary Parasitology 69: 9-18.

Oliveira, C. d', Feenstra, A., Vos, H., Osterhaus, A.D.M.E., Shields, B.R., Cornelissen, A.W.C.A. and Jongejan, F. (1997). Induction of protective immunity to *Theileria annulata* using two major merozoite surface antigens presented by different delivery systems. Vaccine 15: 1796-1804.

Shiels, B., Katzer, F. and Oliveira, C. d' (1997). Antigenic diversity in the major merozoite antigens of *Theileria* parasites. Tropical Animal Health and Production, Suppl. 29: S62-63.

Tait, A., Boulter, N., Oliveira, C. d', Jongejan, F., Brown, C.G.D., Williamson, S., Shiels, B.R., McDonald, F. and Hall, F.R. (1997). Candidate recombinant vaccine antigens of *Theileria annulata:* Current status and future prospects. Tropical Animal Health and Production, Suppl. 29: S127.

TRYPANOSOMOSIS

Dam, J.T.P. van, Schrama, J.W., Vreden, A., Verstegen, M.W.A., Wensing, T., Heide, D. van der and Zwart, D. (1997). The effect of previous growth retardation on energy and nitrogen metabolism of goats infected with *Trypanosoma vivax*. British Journal of Nutrition 77: 427-441.

FOR YOUR INFORMATION 1

KVL

NEWS FROM KVL (Royal Veterinary and Agricultural University at Copenhagen)

Tasks of the Danish Centre for Tropical Agriculture and Environment handed over to the Development Countries Council

The Danish Centre for Tropical Agriculture and Environment has co-ordinated KVL's developmental projects involving research, instruction and administration, and thus played a vital part in establishing and developing KVL's international profile, particularly through the EU-funded exchange programme with the Faculty of Veterinary Science in Zimbabwe, the SLUSE consortium for development and the environment under DANCED and DANES (the Danish Agricultural Educational Service). Following an assessment of

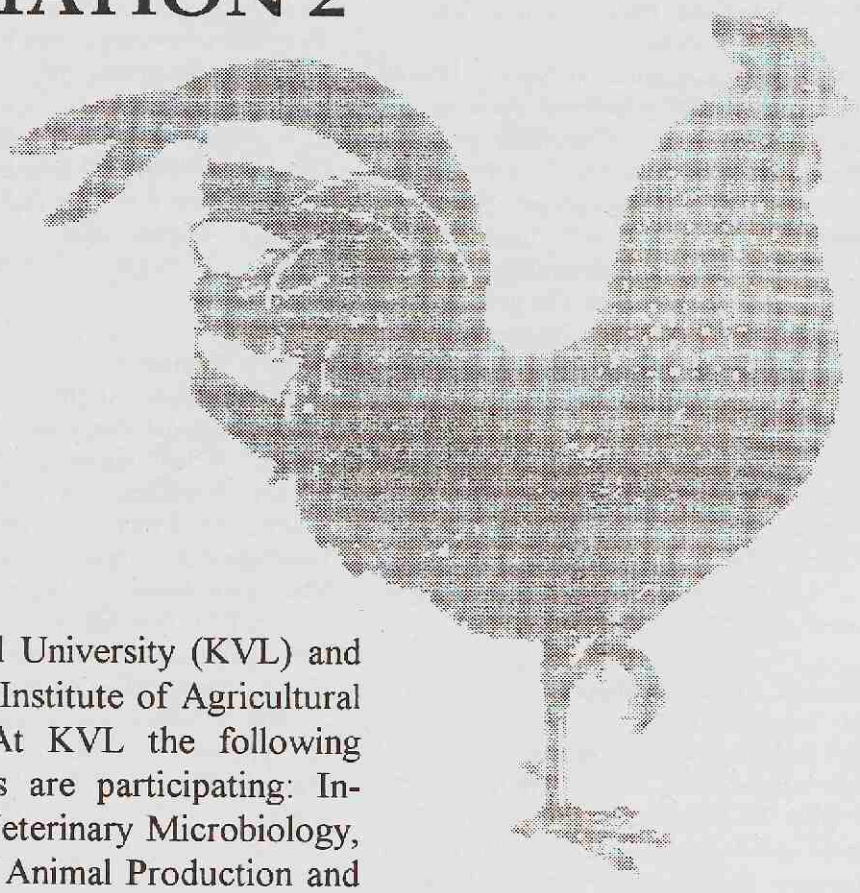
the centre's operations and study of KVL's need for a developing countries profile, KVL decided to close the centre as of 30 September, 1997.

KVL has thus strengthened its international profile by making it an organisational component of the academic and administrative system. The duties of the centre have been reallocated to the relevant departments and to the Central Administration, and to strengthen KVL's international profile a Developing Council has been formed and a co-ordinator has been employed. The Development Countries Council has been given administrative and representative authority by the vice-chancellor. The council is responsible for identifying, co-ordinating and communicating KVL'S profile to the third world. In this way KVL has extended its capacity to meet the global challenge of how to increase animal and crop productivity in developing countries through research, instruction and management, all with a view to combat hunger.

(**For information**: Dr. Kaj Bruhn, KVL, Bulowsvej 15, DK-1870 Frederiksberg C, Denmark, Tel.: +45.35.283429, telefax: +45.35.-283428, e-mail: kab@kvl.dk)

(Source: KVL, Annual Report 1997).

FOR YOUR INFORMATION 2



NEWS FROM KVL (Royal Veterinary and Agricultural University at Copenhagen)

Network for Poultry Production and Health in Developing Countries

Early 1998 the foundation of a Network under the name of 'Network for Poultry Production and Health in Developing Countries' was announced. The Network made its official start on 1 January, 1997 and is in effect for an initial period of 5 years. The Network has 3 main activities: (1) Establishment and maintenance of an international research base on subjects related to rural scavenging poultry production; (2) Education of technical staff, MSc and PhD students from Denmark and from developing countries in disciplines related to traditional and semi-scavenging poultry production, and (3) Establish and maintain a human resource base to provide project support.

The Network is under the responsibility of a board of directors appointed by the institutions involved, inter alia, the Royal Veterinary and Agricultural University (KVL) and the Danish Institute of Agricultural Sciences. At KVL the following departments are participating: Institute of Veterinary Microbiology, Institute of Animal Production and Health and the Danish Centre for Experimental Parasitology. The Network will initiate and co-ordinate research in the field of poultry production and health in developing countries, with the objective of providing knowledge of how sustainable production and development may be implemented optimally with due consideration of the specific situation of the individual countries.

The Network is supporting Danida's Sector Policy by facilitating smallholder farmers and women in particular. Furthermore, the Network is supporting Danida's intention to assess the applicability in other countries of the smallholder poultry model developed in Bangladesh.

(**For information**: Prof. P. Nansen, Danish Centre for Experimental Parasitology, KVL, Bulowsvej 13, DK-1870 Frederiksberg C, Denmark Tel.: +45.35.282775, telefax: +45.35.282774, e-mail: poultry@kvl.dk).

CALENDAR

Barneveld, The Netherlands
15 - 26 June, 1998
Course on: Artificial insemination in pigs. Subjects: Collection of semen; Evaluation and processing of semen in the laboratory; Insemination and sow production control; Organization of an AI station and Selection of breeding stock. Fees including board and lodging: Dfl. 5,000. Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.342.414881, fax: +31.342492813, e-mail: io@ipcdier.hacom.nl).

Kruger National Park, South Africa
9 -15 August, 1998
International Congress on Antrax, Brucellosis, CBPP, Mycobacterial diseases and Clostridial diseases. Organized by: OIE Regional Collaborating Centre for Africa with the ARC Onderstepoort Veterinary Institute. Programme will focus on the following aspects: epidemiology, control, zoonoses and detection. Congress venue: The Conference Centre, Berg-en-Dal rest camp, Kruger National Park. Fee: before 15 May: R 1250; after 15 May: R 1500; after 15 June: 1750. Registration: Organising Committee, Technology Transfer, Onderstepoort Veterinary Institute, Private Bag X05, Onderstepoort, 0110, South Africa (Tel.: +27.12.5299433, telefax: +27.12. 5299143, e-mail: ria@moon.ovi.ac.za).

Utrecht, The Netherlands
24-28 August, 1998
10th International Conference on Production Diseases in Farm Animals, 10th ICOPD'98. Programme: Metabolic disorders and related diseases; Deficiency diseases; Nutrition and fertility; Endocrinology and regulation for metabolism; Nutrition and immunology; Animal welfare, behaviour and housing; Animal production and the environment; Epidemiology and production diseases. Registration fee: Dfl. 500,- Information and registration: Dr. Th. Wensing, Office Organizing Committee, P.O. Box 14031, NL 3508 SB Utrecht
(Telefax: +31.30. 2511787, e-mail: t.wensing@izv.dgk.ruu.nl; http://www.knmvd.nl)

Utrecht, The Netherlands
1 September, 1998 - 31 August, 2000
International MSc programme of the Graduate School of Animal Health, Faculty of Veterinary Medicine Utrecht University and ID-DLO Institute for Animal Science and Health, Lelystad. MSc Course 'Veterinary Epidemiology and Herd Health' (duration : 18 months, fee: Dfl. 20,000); MSc Course 'Animal Pathology' (duration 24 months, fee: Dfl. 35,000); MSc Course 'Modern Approaches in Veterinary Microbiology and Immunology' (duration 18 months fee: Dfl. 68,500). MSc Course 'Veterinary Anaesthesiology' (duration 18 months, fee Dfl. 35,000). Registration before 1 August, 1998. Information: Office for International Cooperation, Faculty of Veterinary Medicine. P.O. Box 80.163, 3508 TD Utrecht (Telefax: +31.30.2531815, e-mail: bic@ bic.dgk.ruu.nl).

Harare, Zimbabwe
10 - 12 September, 1998
Veterinary Pathology Symposium. Organized by: Southern and Eastern Africa Division of the C.L. Davis DVM Foundation. Information: Prof. M.J. Obwolo, Faculty of Veterinary Science, University of Zimbabwe, P.O. Box M.P. 167, Mount Pleasant, Harare (Tel.: +263.4.303211, telefax: +263.4. 333683, e-mail: vetscience@ esanet.zw).

Harare, Zimbabwe
14 - 18 September, 1998
IX International Conference of the Association of Institutions of Tropical Veterinary Medicine (AITVM): 'Animal health and Production for Sustainable Development'. Organized by: Faculty of Veterinary Science, University of Zimbabwe, P.O. Box MP 167, Harare. Location: International Conference Centre, Harare. Registration: Prof. M.J. Obwolo, Faculty of Veterinary Science, University of Zimbabwe, P.O. Box M.P. 167, Mount Pleasant, Harare (Tel.: +263. 4.303211, telefax: +263.4.333 683, e-mail: vetscience@esanet.zw).

London, United Kingdom
October, 1998 - October, 1999
MSc Course on Wild Animal Health for graduates in veterinary and relevant sciences. Including: practical and theoretical instruction in the husbandry and nutrition of wild animals, taxonomy, population biology, conservation genetics, welfare and ethical aspects, epidemiology, immunology, infectious and non-infectious diseases, disease investigation, restraint, preventive medicine and surgery and an individual research project. Organized by: The Institute of Zoology (Zoological Society of London) and The Royal Veterinary College (University of London). Information and registration: Registrar, The Royal Veterinary College, Royal College Street, London NW1 OTU (Tel. + 44.171.4685000, telefax: +44-.171.3882342).

Antwerp, Belgium
1 October, 1998 - 30 June, 1999
International Diploma Course for Tropical Animal Health and Production. Organized by: Prince Leopold Institute of Tropical Medicine. Participants select 4 out of 10 modules: Research methodology; Tick and tick-borne diseases; Trypanosomosis and its vectors; Helminth diseases; Socio-economic aspects; Animal nutrition and agropastoral management; Applied statistics; Epidemiology and preventive veterinary medicine; Diagnostic techniques; Livestock problems in the tropics. Modules are lectures in French. Course Fee BEF 42,000. Following the Diploma Course participants can continue with 12 months research for the MSc in Tropical Animal Production or Health programme. MSc Course fee: BEF 84,000. Closing date for registration: 31 August, 1998. Registration and information, including information on fellowships of the Belgium Administration for Development Cooperation: Prince Leopold Institute of Tropical Medicine, Nationalestraat 155, B-2000 Antwerp (Tel.: +32.3.2476666, telefax:+32.2.2161431,e-mail: dir@itg.be, http://www.itg.be).

Omaha, Nebraska, USA
16 - 22 October, 1998
Joint meeting of the World Association of Wildlife Veterinarians (WAWV), the American Association of Zoo Veterinarians (AAZV) and the Canadian Association of Zoo and Wildlife Veterinarians (CAZWV). Holiday Convention Centre, Omaha. Information: Dr. Wilbur Amand, President WAWV, 6 North Pennel Road (Lima), Media PA 19063, USA.

Melbourne, Australia
February, 1999 - January, 2000
Degree of Master of Veterinary Studies (MVS) in Health and Production of Small Ruminants. Organized by: Faculty of Veterinary Science, University of Melbourne. Areas of study: Parasitology; Gross and histopathology; Reproduction; Advanced sheep management; Introductory surgery and field visits. Tuition fee: $A 26,500. Closing date for applications: 30 September, 1998. Information: Dr. Trevor Bagust, Manager International projects, Faculty of Veterinary Science, Pre-Clinical Centre, University of Melbourne, Parkville, Victoria 3052 (Tel.: +61.3.93449676, telefax: +61.3. 93449675, e-mail: t.bagust@vet.unimelb.edu.au).

EQUATOR

NEWSLETTER ON VETERINARY ASPECTS OF INTERNATIONAL DEVELOPMENT COOPERATION

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May - June, 1998

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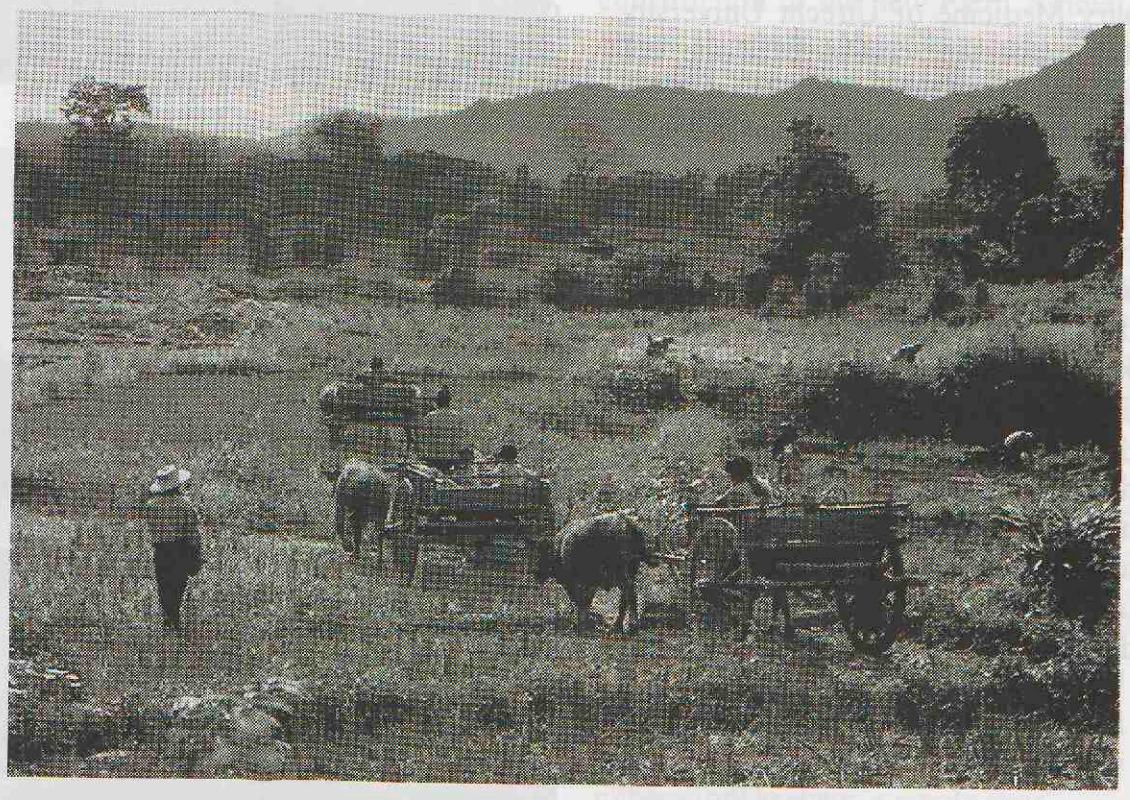
VOLUME 10,1998

'AMAZING THAILAND'

It was only when we stepped out of the aeroplane on the platform of Bangkok's Don Muang Airport at 11.00 a.m. on June the 2nd, that we realised what it really meant: 38 degrees centigrade! The heat fell on us and we were in for a rather exhausting 9 days visit to a country that both of us were going to experience for the first time. As the Head of the Office for International Co-operation of the Faculty of Veterinary Medicine of Utrecht University, I had requested our sister faculty of the Chulalongkorn University of Bangkok to prepare, for the Utrecht Dean, Prof. Dr. Hans de Vries and myself, a programme that would lead us to the five veterinary faculties of Thailand in 9 days. No doubt that Dr. Thongchai Chalermchaikit, the Associate Dean of Academic Affairs, did an excellent job organising our programme.

Our mission to Thailand had two main objectives. One was to meet the colleagues of the Thai veterinary faculties and to get an impression of the facilities and activities; the other objective was to review the outcome of our 5 year programme of collaboration and to prepare and sign a new 'Memorandum of Understanding' for the coming 5 years.



Background

The first contacts between the veterinary institutes of the Netherlands and Thailand date back to the late seventies, early eighties and were linked to research on infectious diseases and bovine reproduction. In 1991 the Thai government designed a 15 year programme to strengthen and develop the veterinary profession and sector in the country. This was to be achieved through the increase of the intake of veterinary students, improving the educational, clinical and research facilities at the three existing faculties and by a staff development programme of postgraduate training for young Thai staff members at a few, internationally well recognised, veterinary faculties in Europe and the United States. It was in April, 1992 that a delegation of the Royal Thai Ministry of University Affairs visited the Utrecht faculty as one of the possible candidate institutes for providing this postgraduate training for young staff members. Utrecht was selected as the European institute that could provide the required expertise and training.

'Memorandum of Understanding'

In July, 1993, the first 'Memorandum of Understanding (MOU) on Veterinary Education and Research Co-operation' was signed in Bangkok by the Ministry of University Affairs of Thailand and the Faculty of Veterinary Medicine of Utrecht University. The agreement consolidated the collaboration between Utrecht's Faculty of Veterinary Medicine and the Faculty of Veterinary Science of Chulalongkorn University (Bangkok), the Faculty of Veterinary Medicine of Kasetsart University (Bangkok) and the Faculty of Veterinary Medicine of Khon Kaen University (Khon Kaen). The main objective was to strengthen the scientific co-operation between these faculties and the Utrecht veterinary faculty by exchange of faculty members for teaching, research training and post-graduate and post-doctoral studies.

'1993-1998

During the 5 years (1993-1998), covered by the first 'Memorandum', eight staff members of Utrecht visited Thailand and eight staff members of the Thai faculties came to Utrecht. Some of these visits were for 'getting to know each other better' and for planning of the activities. Four subjects were given attention in the scientific field: the preparation of anatomical specimen using plastination techniques; development of diagnostic tests with emphasis on PCR technology; bovine reproduction and aquaculture and fish diseases. Besides, two staff members of the Kasetsart University followed a clinical training programmes in Utrecht, in orthopaedics and herd health and reproduction respectively.

Post graduate training in Utrecht

In 1994 the first two post-graduate students from the Faculty of Veterinary Medicine of Khon Kaen arrived in Utrecht and participated successfully in the MSc course on 'Veterinary Epidemiology and Herd Health' (see EQUATOR Vol. 7, no. 4/5, 1995). Both continued with a PhD programme, in companion animal surgery and herd health respectively, and it is expected that they will complete their PhD training early 2000. In 1995 Dr. Theera Rukkwamsuk of Kasetsart University started his study programme on 'Hepatic lipidosis in dairy cattle' at the Department of Large Animal Medicine and Nutrition. He was a guest writer of EQUATOR in 1997 and his article on 'The veterinary profession in Thailand' was published in Vol. 9, no. 2. Theera completed the MSc course on 'Veterinary Epidemiology and Herd Health' in 1998 and it is expected that next year he will be the first candidate from Thailand to defend his PhD thesis at Utrecht University. Subsequently, in 1996, 1997 and 1998 a total of six PhD students started their PhD studies at various departments of Utrecht's Faculty of Veterinary Medicine. Two of these students come from Chulalongkorn, two from Kasetsart and two from Khon Kaen.

'Amazing Thailand'

Before leaving for Thailand we were of course aware of the financial problems that were hitting Thailand and other South-east Asian countries at the moment. Looking at the daily activities superficially one would not guess that Thailand's economy is declining. Bangkok, a city of over 9 million inhabitants, known for its notorious traffic, seemed very active. Not only the traffic (cars, busses, motorbikes and tuktuks) is enormous, but also impressive building is ongoing for the construction of fly-over highways and rail connections for future public transport. Looking at the daily newspaper gives probably a more realistic impression of what is going on. Cost of living is rising sharply, companies are being taken over at any moment and the IMF is enforcing a significant reduction in government spending and personnel.

An impressive cultural heritage is evident in all parts of the country. Grand Palace, Bangkok (Photo: Paling)

Crocodile farm at Samutprakan, 40,000 crocodiles are raised here (Photo: Paling)

Tourism is an important source of income and with the national currency, the Bath, at a relatively low level, Thailand is aiming for an important share of the tourists visiting South-east Asia. The slogan of the Thai tourist office 'Amazing Thailand 1998-1999', is well chosen. An impressive cultural and natural heritage is evident in all parts of the country. Fortunately we had the opportunity, although only briefly, to visit the Grand Palace and the adjoining temple complex, the magnificent Wat Phra Keo (Temple of the Emerald Buddha). On the last day of our stay in Thailand our hosts managed to squeeze in a visit to the crocodile farm at Samutprakan, 25 km south of Bangkok. Here about 40,000 crocodiles are being raised for commercial purposes.

With the present government paying more attention to the environment and to the preservation of natural resources, the Thai people seem to have confidence that there is also a positive side to an economic growth which is slowing down. A special event is taking place in December, 1998, when the Asian Games are being organised in Bangkok.

Universities in Thailand

From the moment we arrived in Bangkok we were extremely well received by our hosts at the various veterinary faculties. Apart from the meetings, held at each faculty to discuss the outcome of the first 'Memorandum' and to make plans for the next 5 years, we were given the opportunity to see parts of the university campuses and to visit the facilities of the faculties. It was interesting and encouraging to see that constructions were still ongoing and that at the three veterinary faculties the infrastructural works, planned under the Programme for strengthening the veterinary sector, were almost completed. As we were told, these constructions, which had already been approved before the 'crisis' could be completed without delays. However, it is expected that there will be a slowdown in the next couple of years in the provision of funds for equipment and for the employment and training of staff.

Faculty of Veterinary Science, Chulalongkorn University

Veterinary education in Thailand started in 1935 with a veterinary curriculum at the Chulalongkorn University in Bangkok. With a long-standing reputation in education, clinical service and research, this faculty is well recognised. The number of first year students has been increased to 150 and a new curriculum was introduced 3 years ago.

The major recent achievement is the construction of the new Farm Animal Hospital and Veterinary Student Training Center at Nakorn Pathom at 50 km from the main campus. During our visit we were shown around by the Director of the Animal Hospital, Prof. Annop Kunavongkrit. There is now doubt that this hospital will be able to provide excellent veterinary clinical and diagnostic services to the region. Ambulatory services are already operational for the dairy, poultry and swine production sector in the area. Student dormitories and staff housing are also under construction. When the first group of students, following the new curriculum, enters the 6th year of the curriculum, they will be based at the Veterinary Student Training Center and receive practical clinical training for a whole year.

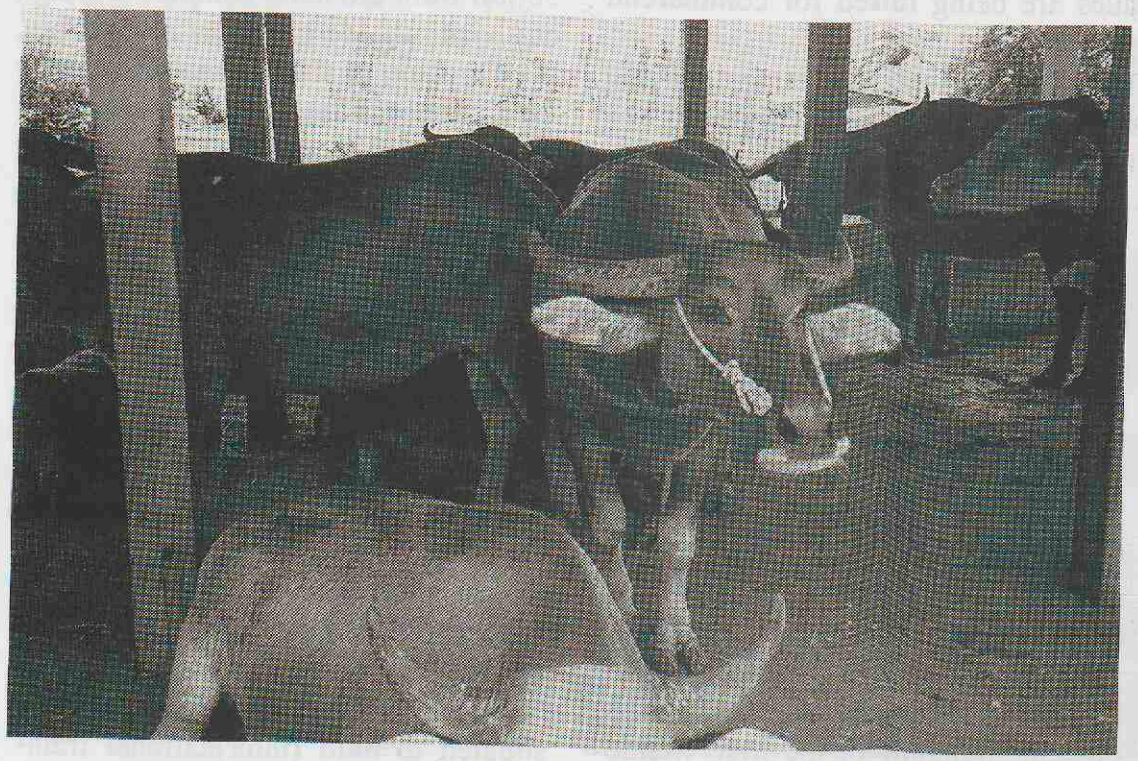
Moreover, the Center is also well situated to hold (inter)national train-

Chulalongkorn University: the new Farm Animal Hospital at Nakorn Pathom (Photo: Paling)

ing programmes and seminars. For example, the well known 'International Course on Swamp Buffalo Reproduction', has been organized annually at this Center under the responsibility of Prof. Chainarong Lohachit.
The facilities and patient load of the companion animal clinic at the main campus in Bangkok and the Farm Animal Hospital with the facilities for clinical and on farm research at Nakorn Pathom, are exciting challenges for future collaborative research between the veterinary faculties of Chulalongkorn and Utrecht and could be very interesting for exchange staff and students.
The Chulalongkorn Faculty of Veterinary Science has a Master's Degree Programme with MSc Courses in seven disciplines. The plans of the faculty, as they were explained to us by the Dean, Prof. Rabin Ruttanaphani, to start a Veterinary Doctoral Degree Programme, with Animal Reproduction as the first topic, could fit very well in the co-operation with Utrecht.

Faculty of Veterinary Medicine, Kasetsart University

The most important Faculty of Agriculture of Thailand is located at Kasetsart University. In 1966 the Faculty of Veterinary Medicine of Kasetsart University was re-established at the Bangkhen campus in the northern section of Bangkok. This faculty has also a second campus in the Nakorn Pathom Province at 80 km west of Bangkok, which was realised in 1979 and which provides teaching, research, hospital and farm service facilities. The intake of first year students has been raised from 100 to 150 students. A major extension of the facilities at the Bangkhen campus is presently under construction. In this building the Small Animal Hospital will be based, as well as the Food Safety Center.
The establishment of the Food Safety Center is taking place under the supervision of Prof. Sirichai Wongnarkpet of the Department of Veterinary Public Health in collaboration with the Department of Microbiology and Immunology. The Center has as its main objective the development of a quality assurance system for meat processing for local consumption and the international market. The Kasetsart faculty is already active in providing training for meat inspectors and has several on-going research projects in the field of veterinary public health.
The Kasetsart Faculty of Veterinary Medicine has an established Master's Degree Programme with MSc Courses in three disciplines (Physiology, Anatomy and Pathology). An MSc Course on Veterinary Public Health has recently been approved by the Ministry of University Affairs. Moreover, the faculty has plans to serve the neighbouring countries with the facilities and expertise available at the Center. During our discussions interesting suggestions for future collaboration with Utrecht in the field of veterinary public health were put forward by Prof. Sirichai.



The 'International Course on Swamp Buffalo Reproduction' is organised annually at Nakorn Pathom (Photo: Paling)

Mahidol University

The Mahidol University in Bangkok has a well established and internationally well known complex of faculties and institutes in the bio-medical sector, with a strong research programme in medicine and public health. To-

A warm welcome at Kasetsart University for the visitors from Utrecht (Photo: collection Paling)

gether with the Faculty of Science, the Medical Faculty will become involved in the teaching of the first 3 years of a veterinary curriculum at the Mahidol University, which is envisaged to start in 1999 with 32 students. During our visit to the Office of the Mahidol University we were informed by the Vice President, Prof. Wijitr Fungladda, that plans have been made to start the construction of the Faculty of Veterinary Sciences in November, 1998. This new faculty is aiming at serving the needs of the rural agricultural population in southern Thailand. A few veterinary staff members have already been appointed and it is for their interest that already at this moment the Faculty of Veterinary Sciences of the Mahidol University requested to be included, as a participating institute, in the next 'Memorandum of Understanding'.

Faculty of Veterinary Medicine, Chiang Mai University

Chiang Mai is the second largest city of Thailand with 1.5 million inhabitants. Chiang Mai University was established in 1964 to extend higher education into the northern part of Thailand. It was the first university outside the capital. The present role of the Chiang Mai University has even become more important as we were told by the President of the university, Prof. Choti Theetranont: 'Chiang Mai University has been given a regional task to develop cultural, social and academic exchanges with the neighbouring areas of Laos, China and Myanmar (Birma)'.

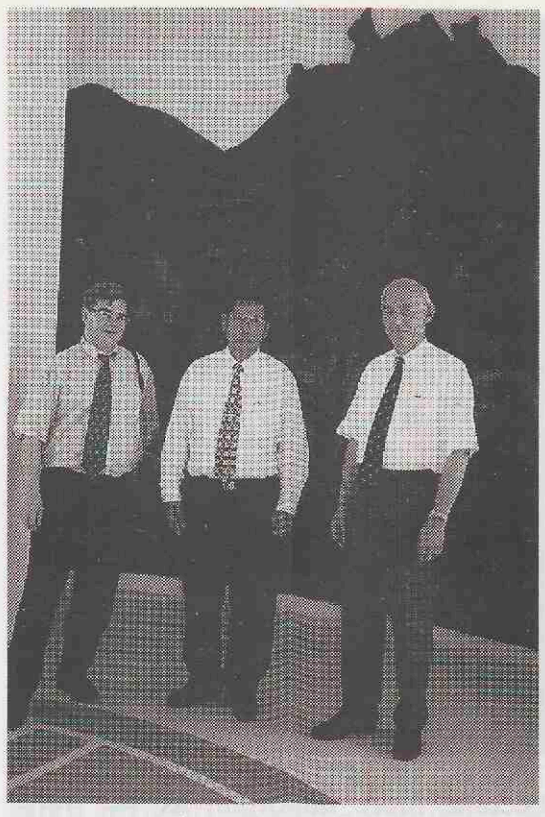
In 1994 Chiang Mai University has taken the initiative to found the Faculty of Veterinary Medicine. The main objectives of this faculty are: training veterinary professionals, of which at least 50% come from the northern region; furthering knowledge in veterinary medicine directed to the animal species present in the region (including: buffalo, elephant, horses and mules) and providing consultative and referral services to the veterinary practitioners and livestock producers, especially in the northern region. In 1996 the first 40 students were admitted and the maximum intake is set at 50 students each year. The DVM study has a duration of 6 years, similar to the other veterinary faculties in Thailand. During our visit to the faculty we were introduced by the Dean, Prof. Ted Tesaprateep, to the academic staff members and shown around the main faculty buildings, which are located just outside the city at 5 km from the main university campus. The buildings are very nice and spacious and those departments involved in the education of the first three years of the curriculum are operational. Construction of the clinics is in the final phase of completion.

It was obvious that the Faculty of Veterinary Medicine, Chiang Mai University would be included in the 'Memorandum of Understanding' for the period 1998-2003. The faculty has shown interest to exchange teaching staff and to send young staff members for training abroad. However, they can hardly be away from Chiang Mai, as there will be a heavy teaching load on the limited number of staff members, because plans for the recruitment of faculty staff in the coming years, may have to be slowed down.

At last some sight seeing

Having the opportunity to spend the weekend in Chiang Mai was an 'amazing' experience. For the first

The Faculty of Veterinary Medicine, Chiang Mai University was founded in 1994 (Photo: courtesy Prof. Ted Tesaprateep)



From left to right, Dr. Robert Paling, Prof. Ted Tesaprateep and Prof. Hans de Vries (Photo: collection Paling)

time during our trip we had time for a real look around and we were very well guided by the faculty staff to a number of most interesting places. First of course there is Chiang Mai's old city centre, surrounded by old walls and channels. In fact very much like the old city of Utrecht. The visit to the Wat Prathat Doi Suthep, a temple of the 16th century, was a great experience. This temple is located on a 1000 m. high hill top overlooking a forest reserve and the city of Chiang Mai. Close to the temple is the winter residence of the royal Thai family, a magnificent example of a modern building in original Thai architecture. Being in Chiang Mai gives the opportunity to visit the Maesa Elephant Camp at 20 km from the city. Under relative natural conditions about 80 domesticated elephants are being kept and looked after by as many mahouts. After an interesting demonstration of tricks by the elephants we could not resist to make an elephant ride around the grounds. Our hosts waited patiently for our return. Local industries, like those that produce silk, silverware, jewellery and orchids, were also interesting sites to visit.

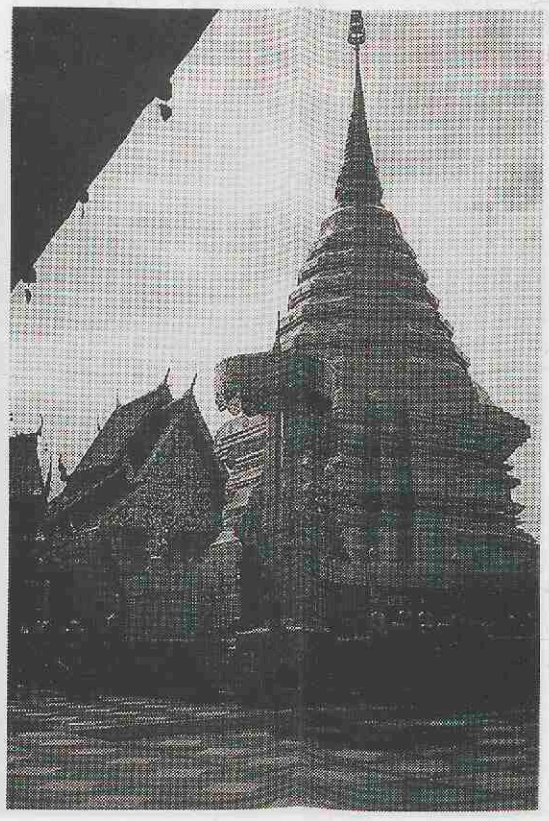
Faculty of Veterinary Medicine, Khon Kaen University

After the visit to Chiang Mai we headed for the last faculty on our programme: the Faculty of Veterinary Medicine of Khon Kaen University in north-eastern Thailand. Using the well organized Thai airline, we arrived smoothly in the city of Khon Kaen. This faculty has taken part in the veterinary support programme of the Ministry of University Affairs from the beginning (1991). Realising that four staff members of the Khon Kaen veterinary faculty are presently in Utrecht for PhD studies, we were received as friends who had not been seen for long time. It was clear that everybody was well informed about Utrecht. The faculty has as its main objective to serve the needs of the local farmers. The government has been promoting dairy farming in this area to provide an income for the poor. The faculty plays an important role by supporting the sector through ambulatory services and research programmes. The faculty in Khon Kaen has also an average intake of 50 students in the first years, and like in Chiang Mai, 50% of these are selected from applicants from the region and 50% enter through the national entrance examination. Being established in 1986 the faculty has obviously benefited from the growing economy of the country in the early nineties. The faculty is well staffed and the buildings and facilities are well developed and fully utilised for teaching and research.

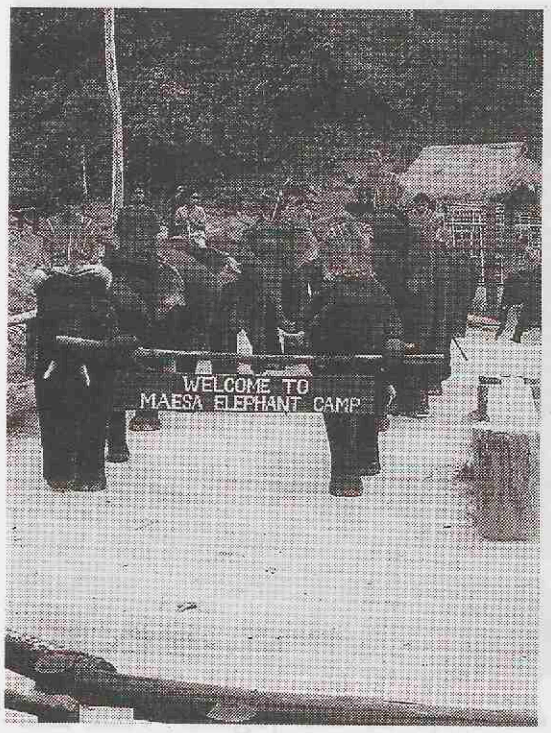
Two of the main research topics are mastitis and reproduction in dairy cattle. It seems obvious that Khon Kaen and Utrecht will find each other in these fields, for research and post graduate studies in the coming years. Also it is the intention to further develop the companion animal clinical services in medicine and surgery by including specialised clinical training programmes in the joint workplan for the coming years.

The new 'Memorandum of Understanding' 1998-2003

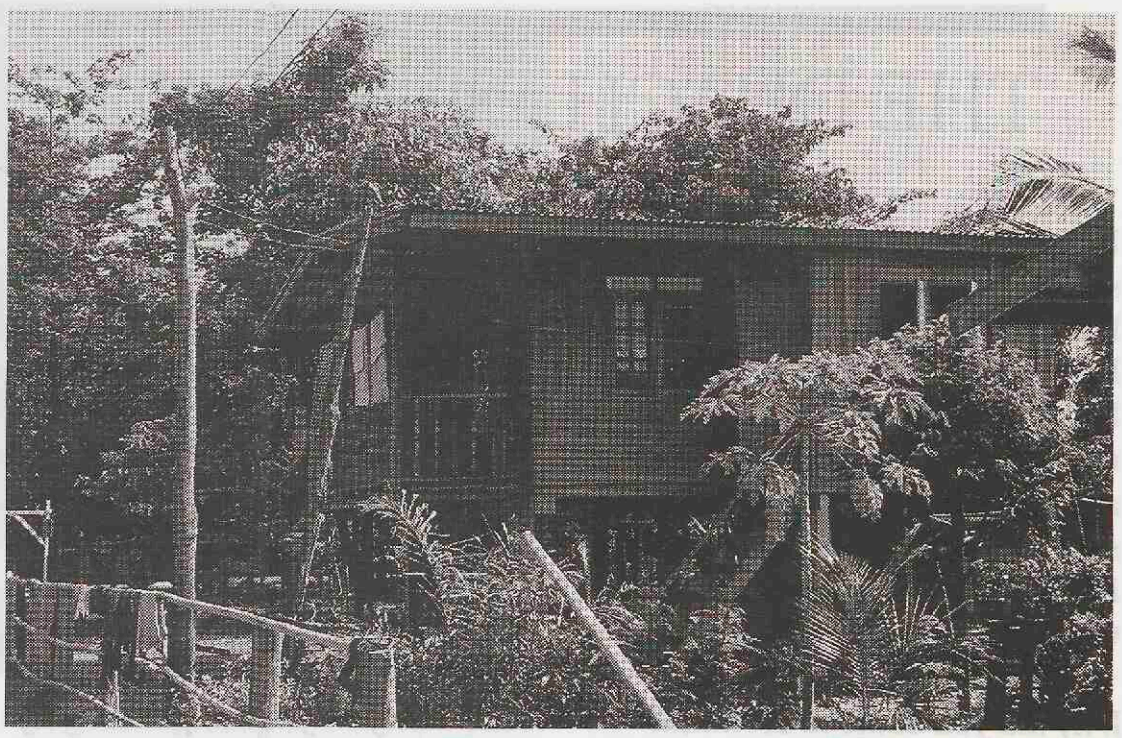
On the last day of our visit we were received at the Ministry of University Affairs in Bangkok. The new 'Memorandum of Understanding on Veterinary Education and Research Cooperation' was ready for signature. The most important difference with the first Memorandum is certainly the involvement of the veterinary faculties of the Chiang Mai and Mahidol Universities. Also the financial basis for the activities will be more balanced between the Ministry, the participating universities and external funding. In his speech the Dean of Utrecht complemented the Thai veterinary faculties on their achievements and for their dedication to fulfil the objectives set by the Thai government to strengthen the veterinary education and profession. He stated that: 'It was now up to the Ministry to maintain its commitment, also in a time when choices have to made in government expenditures'. Dr. Tong-In Wongsothorn, Deputy Permanent Secretary of the Ministry of University Affairs, expressed the satisfaction of the Ministry about the ongoing collaboration between the Thai veterinary faculties and the Utrecht faculty under the 'Memorandum'. Referring to the remarks made by Prof. De Vries, Dr. Tong-In stated that the present policy of the Ministry is to strengthen the postgraduate programmes at the universities in Thai-



Wat Prathat Doi Suthep, a temple of the 16th century built on a 1000 m. hill top overlooking the city of Chiang Mai (Photo: Paling)



Maesa Elephant Camp(Photo: Paling)



Traditional Thai farmers house in the neighbourhood of Khon Kaen (Photo: Paling)

land and to support those institutes that take up the challenge to develop international doctoral programmes. Collaboration with Utrecht taking place in this context, could be supported by the Ministry, if this was in the form of receiving visiting professors in Thailand and training of PhD students in Utrecht for shorter periods than what is presently the case.

On the other hand, Dr. Tong-In indicated that the Ministry was also very active in formulating internationally supported programmes for institutional development of higher education in Thailand.

It was concluded that there was no doubt that the good intention expressed by all parties will result in successful continuation of the collaboration in the next 5 years.

Dr. Robert W. Paling

Prof. Dr. Hans de Vries (left), Dean of the Faculty of Veterinary Medicine of Utrecht University and Dr. Tong-In Wongsothorn, (right) Deputy Permanent Secretary of the Thai Ministry of University Affairs have signed the 'Memorandum' (Photo: collection Paling)

FOR YOUR INFORMATION 1

The 9th International Symposium on 'Tropical Animal Health and Production' will be held on 27 November, 1998 at the Faculty of Veterinary Medicine of Utrecht University, Utrecht, The Netherlands. This year's theme is: ***Ruminant nutrition in disease resistance and reproduction***.

The main topics will be highlighted in key note addresses on: *Nutrition and disease resistance, Nutrition and reproduction*, and *Nutrition and Productivity consequences*.

The symposium will be organized by the Committee for the Advancement of Tropical veterinary Science (CATS) and the Office for International Cooperation of the Faculty of Veterinary Medicine of Utrecht University.

The full programme will be announced in the next issue of EQUATOR.

THE DUTCH DON'T EAT!

In February, 1998, Mauricio Astúa Jiménez arrived at Schiphol airport to spend 6 months at Utrecht University's Faculty of Veterinary Medicine. He was the fourth in a row of final year veterinary students from Costa Rica who succeeded in obtaining a Tinbergen scholarship through the Dutch embassy in San José. This exchange started in 1994 and was a direct result of the cooperation between the veterinary faculties in Utrecht and Heredia (Costa Rica) which started in 1985 and ended in 1996. Despite the official end of this program, the flow of students continued. EQUATOR talked with Mauricio about his experiences with this "Dutch Connection".

Why did you come to Holland?

"My main interest is in equine medicine and surgery. In Costa Rica there is very little opportunity to gain experience in this field, because of the lack of clinical cases. The United States, where there is plenty to do in horses, is of course closer to us, but there is a long-standing connection with Utrecht. Besides, I have been talking to a lot of people who have been to Holland and they all were very enthusiastic about the way people are working at this faculty. Utrecht is seen as the best faculty in Europe."

Was it very difficult to obtain the scholarship?

"It was a real bureaucratic disaster. You have to go to a lot of places to get all the paperwork done. It is really nerve-breaking also. I was left in uncertainty about my visa till the very eve of my departure. Another thing is that they require a good knowledge of the English language. All right, I understand that requirement, but it is really difficult to get some practice in English in Costa Rica, where very few people speak the language well. But, all is well that ends well, I did arrive, didn't I?"

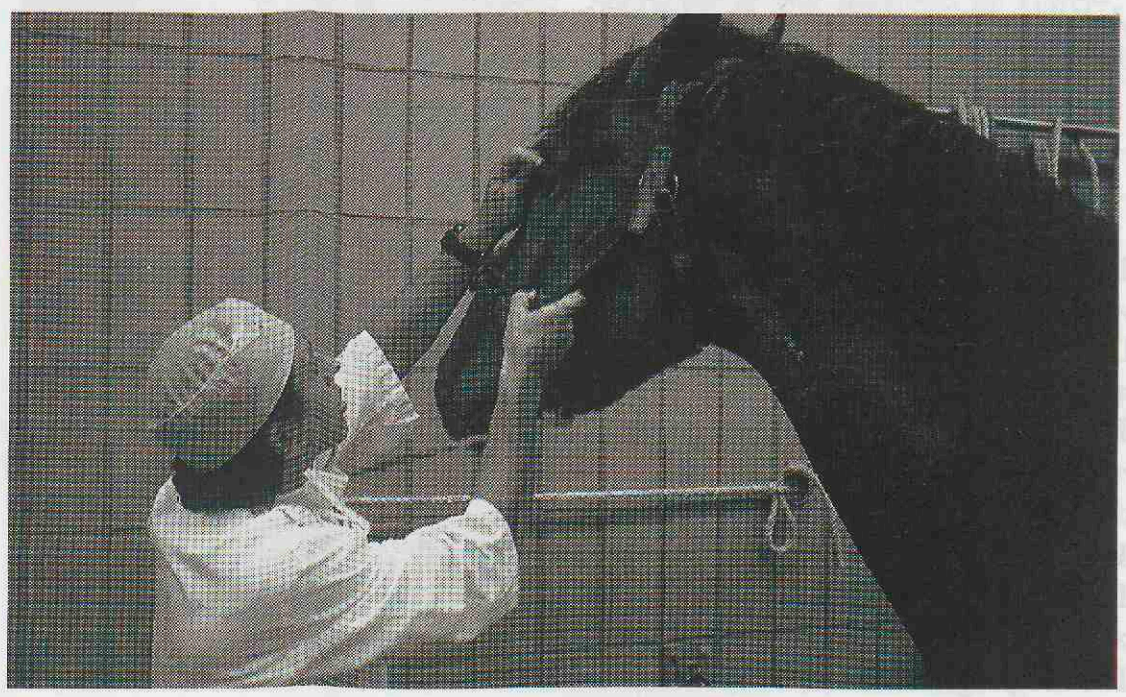
What was you first impression of Holland?

(With a grin on his face:) "Cold, above all very cold!"

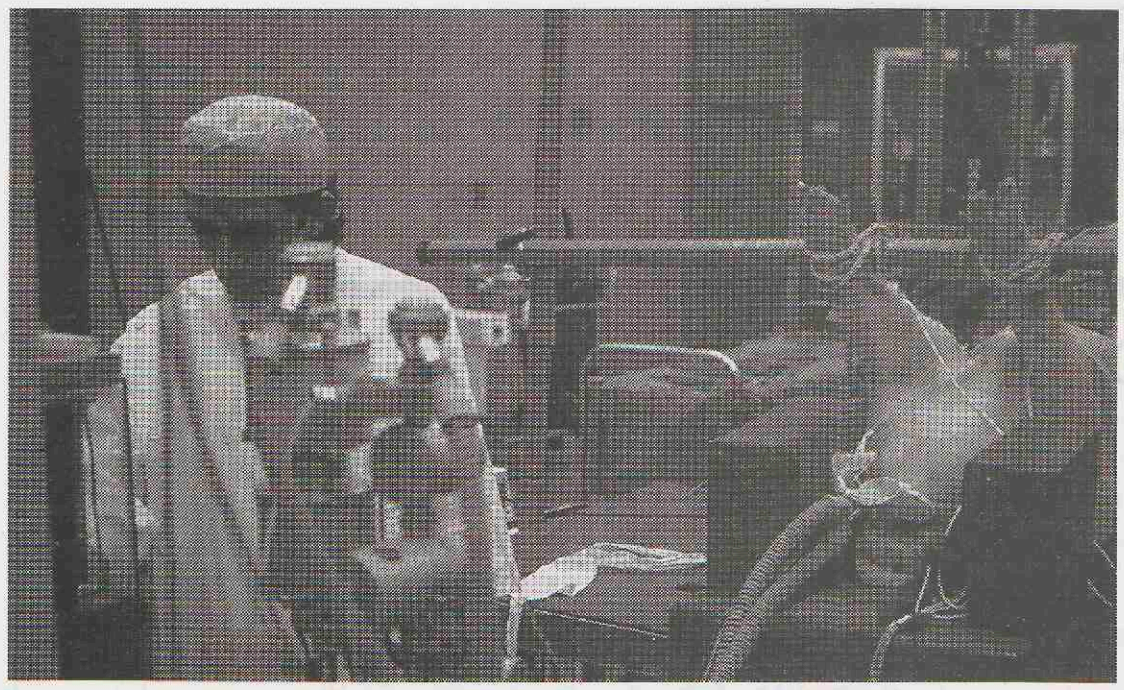
What do you think of the Utrecht veterinary faculty?

"What surprises me most is the very high caseload you have here. This is obviously an advantage. I am able to see more different cases here in one week than over there in half a year. There is, by the way, also a disadvantage. In Costa Rica you know everything of the few patients you see. Here it is sometimes impossible to really follow your cases due to the large number. More so, when they go from one department to the other like in the case of horses with colic that enter in Internal Medicine and then may go to Surgery. A next thing that is different here is that the patients are more intensively used for teaching purposes. They are not merely seen as patients that have to be treated, but also as teaching material for the students. A third observation is that much of what is done in Costa Rica by the students, is done here by technical staff. I mean things like shaving the animals before surgery, walking horses with colic at regular intervals and so on. They even place catheters in the jugular vein and pass nasogastric tubes. This may be necessary because of the large number of cases, but in my opinion it makes the students also somewhat lazy and apathetic from time to time. In Costa Rica as a student you have to play the roles of groom, veterinary surgeon, student, all at a time. Here they make it the students too easy which may lead to some lack of initiative. A thing Costarican students are definitely better in than Dutch students is gynaecology in the bovine. In Costa Rica students train a lot at the slaughterhouse; in Utrecht the number of cows explored by a student is very limited."

What about your colleagues, the students?



Checking a horse before surgery. (Photo: Gootjes)



One of Mauricios' favourite disciplines is anaesthesia. (Photo: Gootjes)

"They are much more independent than their Costarican counterparts. Perhaps because they are accustomed to live on their own from the start of the study. This is quite rare in Costa Rica. I was told that the Dutch are cold-hearted, but it is my experience that this is not true. Many of the Dutch students have invited me at their homes and I have a good relationship with them. Your own attitude is important as well. You should not enter in competition with them with respect to cases etc. or keep to the sideline if nasty jobs have to be done, but just work together with them."

How do you get on with the teaching staff?

"Most of them were very helpful. They always tried to explain things and sometimes told everything in English when I was around. There were some for whom I apparently did not exist and who never translate a single word. In most cases the students helped me then."

The last group you are working with, the owners?

"In general, horse owners are terrible people. But they are like that everywhere, here, in Costa Rica and, without any doubt, also in China. They believe they know everything about horses and most of them think they're doctors too."

Have you seen something of the country, apart from the veterinary faculty?

"Not too much yet, I have been to Amsterdam, Madurodam in The Hague, and I went to see the blooming bulb fields. I'm too involved with my work here. But in the last month of my stay I plan to travel to England where I will visit the Thoroughbred Breeding Association in Newmarket, and also to the veterinary faculties of Barcelona in Spain and Zürich in Switzerland."

What are your plans when you return home?

I would like to have a part-time job at the Faculty in large animal surgery and for the rest of the time work in private practice. If there is an opportunity to go to a master course or something like that abroad, I would like to do it."

To end the interview, could you characterize the Dutch in four words?

"That is very difficult. One of the most typical things is that they are very organized and well-prepared. Almost all possibilities are foreseen, and they have the answer to every possible problem ready. However, if there is a rare case that is not foreseen, you get in real trouble. We Latins normally organize nothing and are not prepared for anything whatsoever. But, we are masters of improvisation! In fact, that is our style of living....."

Passing a nasogastric tube in a mini Shetland foal. This is more like small animal medicine! (Photo: Gootjes)

The four characteristics?

(Sighing) "Okay, you'll have what you want. Let me think..... The Dutch are hard-working, they don't eat, are so organized that they cannot live without a diary, and are too independent which makes them over-individualistic..... Happy now?"

René van Weeren

FOR YOUR INFORMATION 2

UNIVERSITY OF LONDON
EXTERNAL PROGRAMME

MSc & Postgraduate Diploma in Livestock Health and Production

The Royal Veterinary College and the External Programme of the University of London jointly developed a new distance learning course in Livestock Health and Production.

The University of London has operated an internationally renowned degree programme for external students for many years. Candidates undertake a distance learning course that, at its successful completion, leads to the award of a degree, which is in all respects equivalent tot that which full-time residential students receive.

This new course will be of interest to veterinarians and other professionals who are working in the field of animal health and production. It will have global relevance and be equally appropriate for those working in the private and public sectors.

MSc applicants should have either a degree in veterinary science or in animal science or animal production. All applicants will be required to show an ability to work at an advanced level of English.

The course is due to start in February 1999.

For a prospectus or other information please contact First Enquiries (98/LHP), University of London, Senate House, room 1, Malet Street, London WC1E 7HU England (Phonel: +44.171.862 8361/8359, telefax: +44.171.6365894, e-mail: enquiries@eisa.lon.ac.uk, http://www/lon.ac.uk/external/).

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Kruger National Park, South Africa
9 -15 August, 1998
International Congress on Antrax, Brucellosis, CBPP, Mycobacterial diseases and Clostridial diseases. Organized by: OIE Regional Collaborating Centre for Africa with the ARC Onderstepoort Veterinary Institute. Programme will focus on the following aspects: epidemiology, control, zoonoses and detection. Congress venue: The Conference Centre, Berg-en-Dal rest camp, Kruger National Park. Fee: before 15 May: R 1250; after 15 May: R 1500; after 15 June: 1750. Registration: Organising Committee, Technology Transfer, Onderstepoort Veterinary Institute, Private Bag X05, Onderstepoort, 0110, South Africa (Tel.: +27.12.5299433, telefax: +27.12. 5299143, e-mail: ria@moon. ovi.ac.za).

Utrecht, The Netherlands
24-28 August, 1998
10th International Conference on Production Diseases in Farm Animals, 10th ICOPD'98. Programme: Metabolic disorders and related diseases; Deficiency diseases; Nutrition and fertility; Endocrinology and regulation for metabolism; Nutrition and immunology; Animal welfare, behaviour and housing; Animal production and the environment; Epidemiology and production diseases. Registration fee: Dfl. 500,- Information and registration: Dr. Th. Wensing, Office Organizing Committee, P.O. Box 14031, NL 3508 SB Utrecht (Fax: +31.30. 2511787, e-mail: t.wensing@izv.dgk.ruu.nl; http://www.knmvd.nl)

Utrecht, The Netherlands
1 September, 1998 - 31 August, 2000
International MSc programme of the Graduate School of Animal Health, Faculty of Veterinary Medicine Utrecht University and ID-DLO Institute for Animal Science and Health, Lelystad. MSc Course 'Veterinary Epidemiology and Herd Health' (duration : 18 months, fee: Dfl. 20,000); MSc Course 'Animal Pathology' (duration 24 months, fee: Dfl. 35,000); MSc Course 'Veterinary Anaesthesiology' (duration 18 months, fee Dfl. 35,000). Registration before 1 August, 1998. Information: Office for International Cooperation, Faculty of Veterinary Medicine. P.O. Box 80.163, 3508 TD Utrecht (Telefax: +31.30.2531815, e-mail: bic@vet.uu.nl).

Harare, Zimbabwe
10 - 12 September, 1998
Veterinary Pathology Symposium. Organized by: Southern and Eastern Africa Division of the C.L. Davis DVM Foundation. Information: Prof. M.J. Obwolo, Faculty of Veterinary Science, University of Zimbabwe, P.O. Box M.P. 167, Mount Pleasant, Harare (Tel.: +263.4.303211, telefax: +263.4. 333683, e-mail: vetscience@ esanet.zw).

Harare, Zimbabwe
14 - 18 September, 1998
IX International Conference of the Association of Institutions of Tropical Veterinary Medicine (AITVM): 'Animal health and Production for Sustainable Development'. Organized by: Faculty of Veterinary Science, University of Zimbabwe, P.O. Box MP 167, Harare. Location: International Conference Centre, Harare. Registration: Prof. M.J. Obwolo, Faculty of Veterinary Science, University of Zimbabwe, P.O. Box M.P. 167, Mount Pleasant, Harare (Tel.: +263. 4.303211, telefax: +263.4. 333683, e-mail: vetscience@ esanet.zw).

London, United Kingdom
October, 1998 - October, 1999
MSc Course on Wild Animal Health for graduates in veterinary and relevant sciences. Including: practical and theoretical instruction in the husbandry and nutrition of wild animals, taxonomy, population biology, conservation genetics, welfare and ethical aspects, epidemiology, immunology, infectious and non-infectious diseases, disease investigation, restraint, preventive medicine and surgery and an individual research project. Organized by: The Institute of Zoology (Zoological Society of London) and The Royal Veterinary College (University of London). Information and registration: Registrar, The Royal Veterinary College, Royal College Street, London NW1 OTU (Tel. +44.171. 4685000, fax: +44.171. 3882342).

Antwerp, Belgium
1 October, 1998 - 30 June, 1999
International Diploma Course for Tropical Animal Health and Production. Organized by: Prince Leopold Institute of Tropical Medicine. Participants select 4 out of 10 modules: Research methodology; Tick and tick-borne diseases; Trypanosomosis and its vectors; Helminth diseases; Socio-economic aspects; Animal nutrition and agropastoral management; Applied statistics; Epidemiology and preventive veterinary medicine; Diagnostic techniques; Livestock problems in the tropics. Modules are lectures in French. Course Fee BEF 42,000. Following the Diploma Course participants can continue with 12 months research for the MSc in Tropical Animal Production or Health programme. MSc Course fee: BEF 84,000. Closing date for registration: 31 August, 1998. Registration and information, including information on fellowships of the Bel-

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gium Administration for Development Cooperation: Prince Leopold Institute of Tropical Medicine, Nationalestraat 155, B-2000 Antwerp (Tel.: +32.3.2476666, telefax: +32.2.2161431, e-mail: dir @itg.be, http://www.itg.be).

Omaha, Nebraska, USA
16 - 22 October, 1998
Joint meeting of the World Association of Wildlife Veterinarians (WAWV), the American Association of Zoo Veterinarians (AAZV) and the Canadian Association of Zoo and Wildlife Veterinarians (CAZWV). Holiday Convention Centre, Omaha. Information: Dr. Wilbur Amand, President WAWV, 6 North Pennel Road (Lima), Media PA 19063, USA.

Utrecht, The Netherlands
27 November, 1998
9th International symposium: Tropical Animal Health and Production. Theme: 'Ruminant nutrition in disease resistance and reproduction'. Organized by the Committee for the Advancement of Tropical veterinary Science (CATS) and the Office for International Cooperation of the Faculty of Veterinary Medicine of Utrecht University. Registration before 15 November, 1998 to Office for International Cooperation, Faculty of Veterinary Medicine. P.O. Box 80.163, NL 3508 TD Utrecht (Telefax: +31.30.2531815, e-mail: bic@vet.uu.nl).

Melbourne, Australia
February, 1999 - January, 2000
Degree of Master of Veterinary Studies (MVS) in Health and Production of Small Ruminants. Organized by: Faculty of Veterinary Science, University of Melbourne. Areas of study: Parasitology; Gross and histopathology; Reproduction; Advanced sheep management; Introductory surgery and field visits. Tuition fee: $A 26,500. Closing date for applications: 30 September, 1998. Information: Dr. Trevor Bagust, Manager International projects, Faculty of Veterinary Science, Pre-Clinical Centre, University of Melbourne, Parkville, Victoria 3052 (Tel.: +61.3.93449676, telefax: +61.3. 93449675, e-mail: t.bagust@vet. unimelb.edu.au).

Wageningen, the Netherlands
11-25 April, 1999
2nd International Course on Livestock and Environment Interactions. Major elements: livestock-environment interactions in the context of global changes; analysis of biophysical and socio-economic aspects of livestock environment interactions; the dynamics of livestock production systems; policy principles and assessment of flexible policy instruments to strengthen environmentally sustainable livestock production systems; environmental impact assessment, evaluation and monitoring; synthesis of the course information into a policy framework for the participants own working situation. Organized by: International Agricultural Centre and Wageningen Agricultural University. Information: Director of the IAC, P.O. Box 88, NL 6700 AB Wageningen (Tel.: +31.317. 490111, telefax: +31. 317418552, e-mail: iac@iac.agro.nl).

The High Tatras, Slovakia
30 August – 2 September, 1999
3rd International Conference on Ticks and Tick-borne Pathogens (TTP 1999). Programme: Tick-borne pathogens (arboviruses; other pathogens); tick-host interphase; tick control; geographic distribution and GIS; tick biology; tick ecology; tick morphology, taxonomy and sysetematics. Organized by: Institute of Zoology, Slovak Academy of Sciences and NERC Inst. Virology and Environmental Microbiology, Oxford, UK. Information: Dr. Milan Labuda, Director, Institute of Zoology, Slovak Academy of Sciences, Dubravska cesta 9, 842 06 Bratislava, Slovakia (Tel.: +42.17. 3783248; telefax: + 42.17. 3789757, e-mail: uzaclabu@ savba.sk).

Lyon, France
20 - 25 September, 1999
Joint meeting of the European Section of the Wildlife Disease Assciation (EWDA) and the European Association Zoo and Wildlife Veterinarians (EAZWV) at the World Veterinary Congress in Lyon. Information: Dr. Marc Artois, CNEVA Nancy, Domaine de Pixerecourt, BP 9, 54220 Malzeville, France.

Lyon, France
23 - 29 September, 1999
1999 World Vet Congress. Organized by : the World Veterinary Association (WVA) and the World Small Animal Veterinary Association (WSAVA). Information: MONDIAL VET 1999, CNVSPA, 40 rue de Berri, F75008 Paris (Tel.: +33.1.53839160, telefax: +33.1.53839169, e-mail: mondial vet@aol.com, http:/www.mon dialvet99.org).

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PROBLEMS IN OSTRICH REARING

The ostrich (*Struthio camelus*) is farmed for leather and meat, with feathers becoming of less importance. Ostrich meat is a high protein food with very low cholesterol levels, while the leather is durable. In 1995 ostrich farms were regarded among the most profitable agricultural projects, which also offered a variety of possible products.
The current interest in the ostrich has highlighted the paucity of knowledge of the basic biology and medical aspects of the bird under farming conditions, posing tremendous problems to veterinarians and diagnosticians. Limiting factors in the expansion of the industry are the artificial incubation of eggs and the rearing of chicks to an age, usually 3 months, at which the birds can be considered independent and hard. Many problems in ostrich farming are management related, and infectious diseases are seldom a primary veterinary problem when management is optimal. Much of the aetiologies to diseases are still unknown and scientific reporting on incubation and chick rearing respectively are scarce and often anecdotal.
The objective of this review is to try and highlight the paediatric problems of the captive ostrich and make the information more easily available to ostrich farmers and veterinarians.

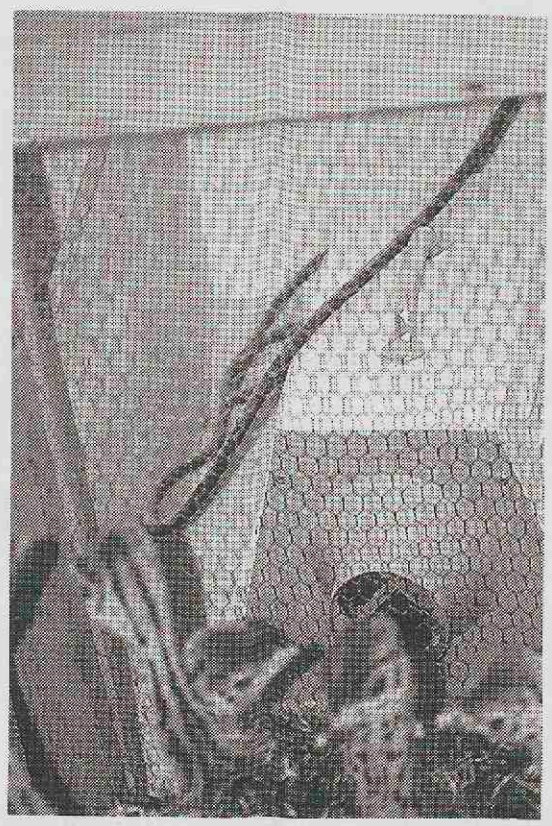
OSTRICH INDUSTRY IN THE NETHERLANDS

Ostrich breeding is still a new phenomenon in the Netherlands. Ostrich breeding started in 1992 with the importation of the breeding stock, initially from Zimbabwe in Africa, and later from other African countries like Namibia and Botswana. Unlike South Africa, these countries had policies that allowed the exportation of live birds. Most of the birds are of the "blue neck" breed which is the prevalent breed in Zimbabwe. The other countries provide other breeds, namely the "black neck" and the "red neck" such that cross breeds are available as well.
Currently there are 125 farmers in the Netherlands. The scale of operation ranges from small to large. Some of the farmers farm ostriches exclusively, while others have other activities like pig raising or dairying.
There are two main organisational practices; the one farm principle and the integrated approach or co-operation. In the first approach, a farmer will have all operations on one premise: the breeding stock, the hatchery, chick raising, and finishing facilities. In the integrated approach, the breeder birds are taken care of at one premise, all eggs are transported to a specialised hatchery, day old chicks are transported to a chick raising premise and stay there for the next 3 months, and the slaughter stock is taken care of at another premise until they are 100kg (about 11 months).
Until 1997, the Netherlands ostrich industry was mainly involved in the exportation of breeder birds, but it is now supplying some birds to the domestic slaughter houses as well. Exports in the 1996/7 period were mainly to China, and to a lesser extend to other European countries.

INCUBATION AND HATCHING PROBLEMS

Introduction

The incubation period for ostrich eggs is generally considered to be 42 days, and



Newborn ostrich chicks in a brooder. (Photo: Collection Dzoma)

incubation temperature are as follows: 43-47 days at 35° C, 41-44 days at 36°C, 44.1 days at 35.5°C, and 47 days at 35°C. Artificial incubation of ostrich eggs is one of the areas limiting the expansion of ostrich farming, mainly because of a lack of scientific reporting on the required conditions. The ostrich is a desert adapted animal, hence artificial incubation need to aim at creating conditions such as incubation humidity and temperature to simulate the natural conditions. The incubator humidity and temperature for the successful incubation of ostrich eggs are considered to be 25-40% at 35 to 36.9°C, or 25-36.5% at 35.5-37°C. In natural incubation, a nest relative humidity of 25-43% has been observed.

The average hatching sequence for the chick is to break into the air cell at day 40 of incubation, to pip the egg shell during day 41, and to complete hatching by day 42. However, the time interval is subject to normal biological variation.

Hatchability could be associated with egg quality, incubation conditions or ostrich strain differences. Heavier eggs have been associated with lower hatchability. The lower hatchability could be due to the hyperthermia that can result from the smaller surface area to volume ratio for heat exchange in these eggs, leading to embryonic death. This could be related to the finding that towards the end of incubation, the egg temperature is higher than ambient temperature by 2.0°C.

During artificial incubation, the following production levels should be aimed at: less than 10% infertility, less than 10% dead in shell, less than 10 % dead after hatch, and greater than 70% survivability of total eggs to saleable chicks. Infertile eggs average 42% in America, and chick losses range between 25 to 60% .

Incubation problems can be categorised into infertility of eggs, early embryonic death (up to 14 days of incubation), mid term embryonic death (14 to 28 days of incubation), late term embryonic death (28 to 42 days of incubation), and dead in shell (at time of hatching).

Infertility of eggs

Low fertility is one of the causes of the limited expansion of ostrich farming. Infertility rates vary widely, from 22.2% in the United Kingdom to 42% in America. Causes of infertility or low reproductive performance among ostriches include breeder factors like genetics, nutrition, age, mating behaviour and efficiency, extreme environmental temperatures, season, and disease. Overweight has been reported to be a restriction to breeding efficiency among female ostriches. In the wild, male ostriches copulate up to 3 times a day while the clutch is being laid. Such data are not available for the captive male ostrich, hence the low fertility could reflect low copulation owing to incompatible mating pairs or other behavioural problems. It could be considered that ostriches may have imprinted on humans, with the failure to recognise conspecifics as mates possibly adversely affecting copulation rates.

A diagnosis of infertility is established by candling eggs 7 to 10 days into the incubation period. Infertile eggs are usually difficult to distinguish from eggs with embryos that died early into the incubation period, generally referred to as early embryonic death (EED), because in both cases there is a lack of embryonic development. Differentiating between the two categories can be accomplished by opening up the eggs that candle infertile at 7 - 10 days of incubation and examining them for an embryonic disc, which would be seen floating in the case of EED, and is absent in infertile eggs.

Contamination of eggs with bacteria has been noted among both infertile eggs (28%) and fertile but non-viable eggs (35%). This observation makes it difficult to suggest an association between infertility and contamination since the contamination rates do not appear to differ much.

Embryonic death

Ostrich embryo mortality shows a peak in the first few days of incubation with a few losses occurring during the middle period of incubation. The bulk of the embryonic mortality occurs during the last 7-14 days of incubation.

Embryo mortality can be associated with egg size, microbial infections and inadequate breeder rations.

Early embryonic mortality has been associated with delayed egg collection, too long a storage time, too high storage temperature, infected eggs and formaldehyde fumigation with in 24 to 96 hours of incubation, while mid-term embryonic death has been associated with inadequate egg turning and rough egg handling. Late term embryonic death is related to inadequate ventilation and fluctuating incubation temperature, while dead-in-shell is related to too high or too low hatchery temperature, too high hatchery humidity, inadequate ventilation, and lack of social facilitation by other chicks or by the parents.

Bacteria that can be cultured from contaminated eggs have also been isolated from both the shell and the interior of domestic poultry eggs, and are common soil and water pathogens. The most frequently isolated bacteria was *haemolytic Escherichia coli,* while other bacteria like *Bacillus* species were farm associated. Fungi, commonly *Aspergilus* and *Mucor* species were mainly from the air sac membranes. It is observed that 49% of the eggs were contaminated with fungi.

The ostrich egg contains a surface accessory layer but it is not known if it provides the same protection against microbial contamination as has been shown in fowl eggs.

Egg water loss

The achieving of the correct egg weight loss during incubation is a commonly encountered problem in the incubation of ostrich eggs. When there is failure to lose enough water, the chick exhibits a characteristic oedematous appearance, a condition which has been considered as one of the prominent symptoms of dead-in-shell chicks.

The ostrich egg breathes entirely by diffusion through the pores in the shell. In ratites, the pores are branched to provide additional ventilation for the significantly larger egg mass. Unlike in adult birds, the ostrich embryo is unable to increase its respiratory rate to match its metabolic demands. This is because the amount of oxygen available to the embryo is dependent on the diffusion properties of the

egg shell. At a time precisely located and co-ordinated with embryo maturity, the diffusion properties of the eggshell must be exceeded to provide an adequate carbon dioxide concentration (6%) within the air space to facilitate the onset of pulmonary respiration. The diffusion properties also have to be co-ordinated with the time of pipping and hatching, and to cater for a sufficient water loss (15%) to prevent drowning of the chick. During artificial incubation, the ostrich egg loses 13-14% of its initial weight. In natural incubation, the ostrich egg has been observed to lose 11-12%, 13.5%, and 13.2-15.6% of the initial egg mass.

It has been suggested that the ostrich egg requires 10% incubation humidity for a 13.5% weight loss and 5% incubation humidity for a 15% weight loss. The humidity should increase during the actual hatching process to prevent the embryo from adhering to the shell membranes.

Weight loss has been regarded as the best guide for setting incubation humidity levels with a 13-17% loss target during the 42 day incubation period. Eggs that lose less than 10% or more than 20% of their initial weight are less likely to hatch.

Dead-in-shell

Dead-in-shell chicks are those that die just prior to or during the process of hatching. Death at this stage is associated with factors that affect the availability of air in the air cell and the chick's access to this air. These factors include malpositioning of the chick, which results in a physical inaccessibility of the chick to the air cell, and improper incubator airflow, improper egg weight loss, large egg size, oxygen shortage, carbon dioxide toxicity, and hatching machine short comings. These factors can lead to the production of oedematous chicks. Malpositioning of chicks can be associated with incubating eggs in a horizontal or air cell down position. The above factors influence the development of the air cell, and subsequently the chick's access to the air contained in it for ventilation at the start of pulmonary respiration. It is noted that malposition and oedema are the predominant symptoms of dead-in-shell chicks. In chicks that fail to hatch, 88%, and 41% prevalence rates of oedematous chicks have been observed. The problem of oedema chicks can result in a variable reduction of hatchability in the range of 43-75%.

Assisted hatching

It is common practice for farmers to assist chicks out of the shell around the time of hatching as they get over-anxious about getting chicks out of the egg at 42 days regardless of whether the chicks are ready or not. As discussed earlier, failure to hatch can be caused by malpositioned chicks, oedematous chicks, a lack of social facilitation by other chicks or by the parents, or simply because of the inferior quality of the chicks involved. Inferior chicks may occur as a result of infection, nutrition, genetics, or other causes of weakness.

In a study on artificial incubation, a natural hatch rate of 80% was observed. The survival rate of chicks that are assisted to hatch is quite low, only 25% of chicks that are assisted during hatching reached the age of 12 weeks as compared to 90% for those that were not assisted. Those that were assisted during hatching tended to remain some of the smallest chicks in life. Hence, naturally hatched chicks have been found to have a higher survival probability than assisted hatchers. This means that chicks should be left to pip and hatch on their own.

CHICK REARING

Ostrich chick rearing up to the age of 12 weeks is regarded as one of the major areas limiting the expansion of the ostrich industry. Most ostrich paediatric problems are management related and more study is required to elucidate the aetiologies of certain diseases. Publications on chick rearing are present but often anecdotal. The most commonly encountered problems in ostrich chick rearing include yolk sacculitis, yolk retention, weak oedematous chicks, gastroenteric problems, leg problems, stunting chicks and the fading chick syndrome. Below, some of the problems associated with chick rearing are described.

UP TO 1 WEEK

Weak oedematous chicks

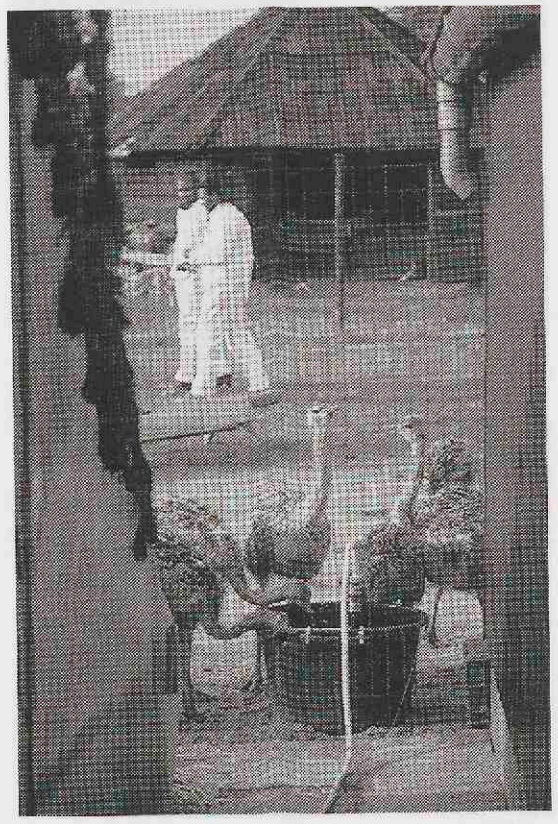
Most ostrich chicks hatch with some oedema that usually disappears within a day or two. The oedema could be a reservoir of water in chickens since they do not drink during the first 24-48 hours after hatching.

However, the occurrence of weak oedematous chicks is a problem often encountered in ostrich chicks at hatching and is associated with eggs that do not loose enough water during incubation. The oedematous condition is in part ascites caused by shell induced hypoxia, particularly when the weight loss of the egg is 15 % or below.

A mean survival time of 6.3 days has been recorded among oedematous chicks. The condition has been described to take the form of a clear, gelatinous subcutaneous fluid that is especially evident in the legs, thighs, abdomen, pipping muscle, and face of chicks.

Usually the chicks are weak, at times failing to stand for several days after hatching. Oedematous chicks are prone to leg abductions and intervention is in the form of placing the chicks in small boxes, or placing hobbles on their distal metatarsal regions.

With artificial incubation a natural hatch rate of 80% can be achieved (Photo: Collection Dzoma)



Collecting data on an ostrich farm in the Netherlands (Photo: Collection Dzoma)

Ostrich chick fading syndrome

This is a conglomeration of different problems that has been identified as a major cause of chick loss. It varies among farms, and can be traced back to improper husbandry. Diagnosis is based on clinical signs and microbiological findings. The clinical signs include depression, anorexia, occasional diarrhoea and death with in 3 to 5 days of onset of clinical signs. The microbiology findings include the isolation *of E. coli* and /or *Klebiella pneumoniae* from various organs (umbilicus, yolk sac, liver, and air sacs). Other factors include an age less than 3 weeks old and rapidly increasing mortality that ranges from 40 to 100%. The condition could be non-contagious.

1-3 WEEKS

Yolk retention/infection

Failure to absorb yolk during the first few days after hatching is a common problem in ostrich chicks. The underlying problem of the retention is basically unknown. Yolk is a high nutrient density source available to the chick during the post hatching period. It is 15-17% of initial egg mass, 30-40% of the chick mass at hatch, and is used up by days 10-14 in most chicks. It is contained in a thick opaque sac that is connected to the intestines by a thick walled tubular yolk stalk. Normal yolk is a viscid, translucent emulsion that is greenish yellow in colour.

Several factors have been considered to be associated with yolk problems in the ostrich and other chicks, but these have not been experimentally proven. These include poor management factors like high incubation temperature and humidity, high energy diets, and lack of exercise. Weak chicks at hatching, oedematous chicks, and chicks that receive inadequate oxygen levels in the last week of incubation all show a higher prevalence of unabsorbed yolk sacs and unhealed navels. It is considered that the low occurrence of yolk sac problems was due to the low ambient temperature and low energy and protein level diets they used, complimented by adequate exercise.

Much work has been done on the chicken yolk sac and yolk stalk, but this is not the case with the ostrich.

It is probably better to expose chicks to water and low energy and protein level feed immediately after hatching to avoid the thickening of yolk which might interfere with its movement through the yolk stalk.

Yolk retention can occur with or without infection and is mostly observed in ostrich chicks less than 3 weeks of age. However, retention can be observed in chicks as old as 6-8 weeks. This appears more to be an exception since yolk is expected to be used up by day 14. Since there are also retained yolks that are not infected, yolk sac infection might not be a primary cause of yolk retention. Yolk retention could therefore be an indicator of an underlying disease and not a disease entity in itself. In the young chicken, the condition of yolk sac infection (also known as "Mushy Chick" disease) is characterised by an inflamed yolk sac and is usually accompanied by a denaturation of yolk. The yolk then appears either as a yellowish-brown turbid fluid, or as a granular or solid refractive yellow mass.

In the chicken, death of embryos and young chicks can result from an infection of the yolk by a number of bacteria of types frequently present in the alimentary canal, and on the skin of the hen. In the ostrich chick, common isolates are *E. coli, Campylobacter jejuni, Pseudomonas aeruginosa, Kl. Pneumoniae, Staphylococcus, Bacillus licheniformes, Achromobacter* and others.

Leg problems

Leg problems have been documented with varying frequencies of occurrence in the ostrich and rhea. They usually develop at 2 to 6 weeks of age, and include lateral luxation of the tendons that pass over the back of the tibiotarsotarsometatarsal joint secondary to trauma, and rolled toes which are either laterally or medially pointing. Expert opinion suggests that the problem is multifactorial. Factors such as nutrition, improper incubation temperature, excessive incubator humidity, too much room to move around in the hatcher tray, riboflavin deficiency, lack of exercise and genetic factors have all been associated with the leg problems. There is however few numerical data to support these assertions despite the high incidence of the problem. It is documented that bowing of legs in the rhea was only observed in rapidly growing birds, a scenario preventable by limiting food intake. High protein diets predispose to leg problems in the ostrich, possibly because of rapid growth of the bird that exceeds the ability of the bones to mature. High temperature and lack of exercise can also be associated with the leg problem, hence the need to exercise ostrich chicks. In a study a toe problem prevalence of 8% was observed. There was however no correlation with growth rate, initial egg weight or percentage weight loss during incubation.

Impaction

Gastric impaction is a mechanical obstruction or reduced motility of the proventriculus and/or gizzard that leads to the accumulation of material in the stomachs. It occurs commonly in the ostrich chick and is associated with change of feed, movement of birds and other stress factors which lead the chick into ingesting large quantities of inappropriate material. Impaction has also been observed as one of the major findings among ostrich chicks whose deaths were associated with a type A influenza virus, strain H5N2 and type 1 *paramyxovirus.*

Ostriches are ground eating animals and habitual ground peckers. They must be taught or encouraged to eat by placing them with a bird that is older and knows how to eat.

Impaction has been documented in a 16 day old ostrich chick that had had a 12 hour history of depression, poor doing, weakness, dehydration and scant faeces, and in 7 week old ostrich chicks that exhibited anorexia, diarrhoea, ruffled feathers and general weakness. In the latter case, the impaction occurred following transportation and 37% of birds died within 1 week. The proventriculi and gizzards of the dead birds were full of solid masses of lucerne hay mixed with maize. A switch to green lucerne forage

helped solve the problem. The impaction most probably occurred as a result of the chicks' exposure to lucerne hay which they were possibly not used to, and which had a higher fibre content. Ostrich chicks can also take in metal objects, and this can lead to death.

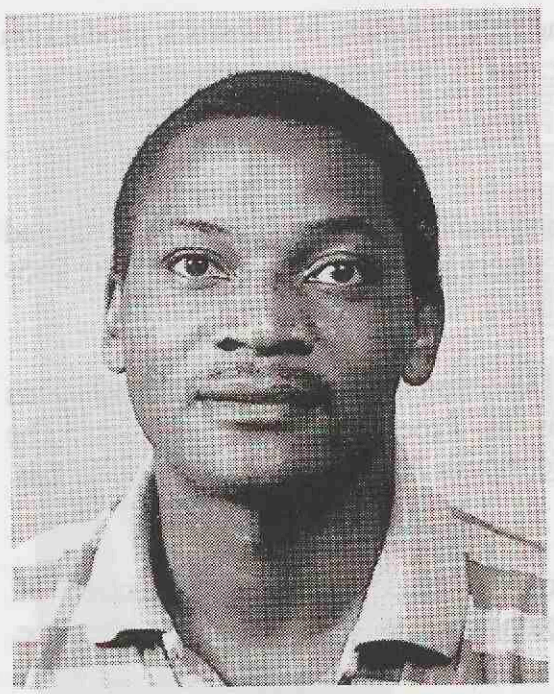
Sound management to reduce stress, encouragement of correct feeding habits, and avoiding of access to foreign material appear to be the major factors in preventing this syndrome. Proventriculotomy can be performed to save affected birds.

Stunting chicks

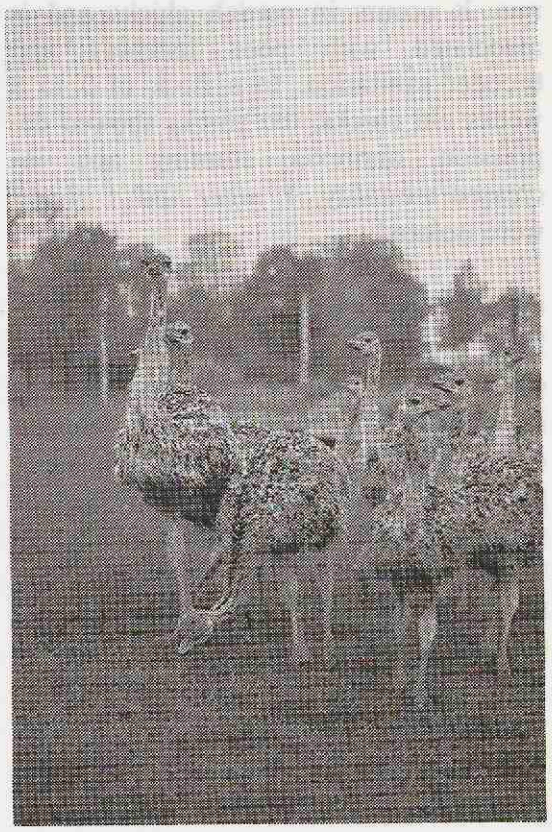
After hatching, the ostrich chicks loose weight for the next 5 days, before beginning a period of exponential growth, reaching 4 kg after 5 weeks. Weight loss is less in female chicks, and female chicks grow faster than their male counterparts. Initial egg weight influences the chick hatch weight.

There are environmental and probably genetic factors that affect the growth of ostrich chicks. The environmental factors include nutrition and possibly group composition. Some of the stunting birds are the possible poor quality chicks that are helped to hatch and that tend to perform poorly for the rest of their lives. There could therefore be an involvement of a genetic component to growth.

The separation of smaller birds from their age group mates has a role in the artificial rearing of ostrich chicks, since it is possible that the larger chicks deprive the smaller ones of feed. Daily weight recordings on chicks allow problems of growth to be noticed early, making early intervention possible. However the shifting of stunting birds from one age group to another can be disastrous in terms of disease transmission. Stunting chicks



Blessing Dzoma



Ostrich chicks at the age of 3 months (Photo Collection Dzoma)

have to be distinguished from chicks with the condition generally regarded as fading chick syndrome. This condition has been observed in chicks up to 3 weeks of age. Stunting chicks are chronic poor performers while fading chicks are more often destined to die.

Enteritis

Enteritis has been associated with both bacteria and viruses. *E. coli* has been isolated in various cases of enteritis. However, no typing was carried out to determine the pathogenic importance of the *E. coli* isolates, meaning that the importance of *E. coli* in chick enteritis is not clearly known. In some cases, *E. coli* enteritis has been regarded as a secondary complication.

A *Clostridium difficile* infection outbreak was recorded in 9 day old ostrich chicks with a 96% mortality in 3 days. The chicks had had an acute outbreak of diarrhoea, became moribund and subsequently died. A similar outbreak occurred in the batch of chicks that followed. Pathological findings involved markedly dilated colon and ceci, with diffuse haemorrhage and no formed faeces.

In other avian species, clostridial enteritis usually occur when toxin-producing *Clostridium* species proliferate.

3-12 WEEKS

Most of the problems in the 3 weeks to 3 months period are the same as those that occur in the earlier stages of chick life, as has been noted above. The problems may differ in frequency and severity.

Infectious diseases

Bacterial diseases: Granulomatous lesions due to *Pseudomonas aeruginosa* type G were documented in 3 months old ostrich chicks that exhibited respiratory signs, weakness, incoordination, inappetence and a 55% mortality. Grossly, the birds exhibited yellowish white nodules, often accompanied by a pseudodiphtheritic membrane in the oral cavity, pharyngeal region, trachea, air sac, lungs, esophageal mucosa, and abdominal peritoneum, while histopathology revealed purulent granulomatous lesions containing central bacterial colonies with an outer shell and club formation. *P. aeruginosa* is a common environmental and outbreaks can be associated with contaminated equipment and antibiotic use.

Viral diseases: Newcastle disease is caused by *paramyxovirus* type I which affects *Galliforms, Passeriforms,* and *Psitaciforms* in addition to other orders, including *Struthioniforms.* Newcastle infection has been established experimentally in 3 months old ostrich chicks following a field outbreak in ostriches of the 5-9 months age group with a 28% mortality. In both situations, the birds exhibited nervous signs. In the experimental set up, a mortality of 80% in 5-10 days was recorded. The authors consider that the infection in the field outbreak could have come from diseased broiler chickens some 10 km away which had had an outbreak 4 weeks earlier.

Fungal diseases: A cryptosporidial infection was confirmed from the small intestines and rectum of a 4 week old ostrich chick that had suffered a rectal prolapse but without diarrhoea. Cryptosporidial infections have been associated with prolapse of cloacal and bursal tissue in ostrich chicks. Small intestinal cryptosporidiosis is invariably considered pathogenic, and seldom involves concurrent infections. It frequently results in fatal diarrhoea. Cryptosporidiosis is generally a disease of young animals and is self limiting in immunocompetent animals. Malnutrition predisposes to severe infection. Control is difficult because cryptosporidium is highly resistant to common disinfectants.

Aspergillosis is a disease condition caused by fungus of the *Aspergillus* ge-

nus. It occurs in ostrich chicks and is associated with poor hatchery and brooder sanitation. In a flock of 3 to 8 weeks old chicks, the chicks showed depression, anorexia, stunting and increased mortality. *A. niger* and *A. flavus* were isolated.

CONCLUSION

Most problems of ostrich chick mortality can be traced back to improper management before, during and after incubation of the eggs. Poor management is a major player in ostrich related operations as primary infections have seldom been established. Infection with viruses appear to start early in chick's life, around day 10, extending through out the first 3 months, while fungal infections tend to occur much later, from around 1 to 3 months. The problem areas appear to be: i) the production of infertile eggs, ii) the failure to achieve acceptable hatchability rates, and iii) the achieving of high chick survival rates to the age of 3 months.

Blessing M. Dzoma, [1,2] and Gerry M. Dorrestein[1*]

[1] Department of Veterinary Pathology, Utrecht University, Yalelaan 1, 3584 CL Utrecht, The Netherlands

[2] University of Zimbabwe, Faculty of Veterinary Science, Box MP 167, Mount Pleasant Harare, Zimbabwe

* Author for correspondence, Tel + 31 30 253 43 57, Fax + 31 30 253 31 31, e-mail: g.m.dorrestein@pobox.accu.uu.nl

(The above article is an adaptation of a review paper by Blessing Dzoma. The paper was written as part of his thesis to obtain the degree of Master of Science in Animal Pathology at Utrecht University)

RECENT PUBLICATIONS 25

The section RECENT PUBLICATIONS is included in the English issues of EQUATOR. Scientific publications of the Faculty of Veterinary Medicine and other research institutes in The Netherlands, relevant to livestock production and health in the tropics as well as titles of papers by Dutch veterinary scientists working on animal health and production topics in relation to developing countries, will be included. Please inform the editor of your publications so we can bring them to the attention of the readers of EQUATOR. For reprints contact the authors directly, their addresses can be obtained from the editorial office.

ANIMAL HEALTH

Schreuder, B.E.C., Noorman, N., Halimi, M., Dommelen, M. van, Hennecken, M. and Wassink, G. (1998). Further observations on the impact of a veterinary programme in Afghanistan on seasonal livestock mortality. Tropical Animal Health and Production 30: 83-89.

ANIMAL NUTRITION

Ushewokunze-Obatolu, U., Majok, A.A., Matarira, U.T. and Brand, A. (1997). The role of iodine in livestock production under natural conditions in Zimbabwe. Zimbabwe Veterinary Journal 28: 99-107.

TICK-BORNE DISEASES, THEIR AGENTS AND VECTORS

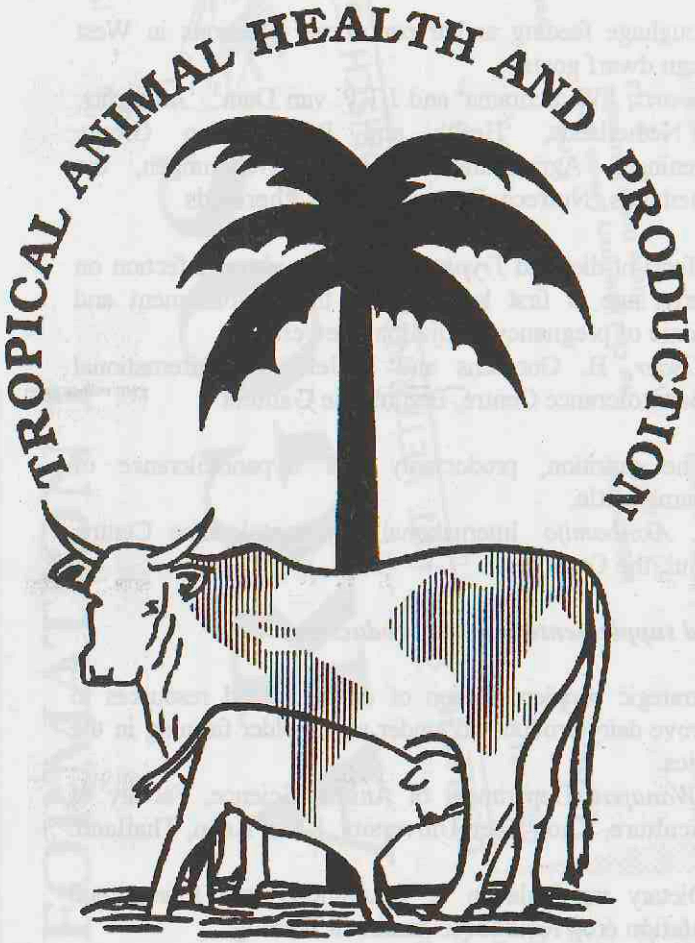
Andel, J.M. van, Dwinger, R.H. and Alvarez, J.A. (1997). A study of *Anaplasma* and *Babesia* infection rates of cattle and associated ticks in the South Coast of Guatemala. Revue d'Elevage et de Médicine vétérinaire des Pays tropicaux 50: 285-292.

Jongejan, F., Vliet, A.H.M. van, Weide, M. van der and Oliveira, C. d' (1997). Detection of two tick-borne pathogens (*Theileria annulata* and *Cowdria ruminantium*) by the polymerase chain reaction. In: Proceedings and Abstracts; The second international conference on tick-borne pathogens at the host-vector interface, South Africa, September, 1995. Eds. L. Coons and M. Rothschild, pp. 521-529.

Vogel, S.W., Plaul, E.A., Uilenberg, G. and Bezuidenhout, J.D. (1997). Onderstepoort heartwater literature collection. In: Proceedings and Abstracts; The second international conference on tick-borne pathogens at the host-vector interface, South Africa, September, 1995. Eds. L. Coons and M. Rothschild, pp. 509- 511.

27 NOVEMBER, 1998

9th SYMPOSIUM ON



Ruminant nutrition in disease resistance and reproduction

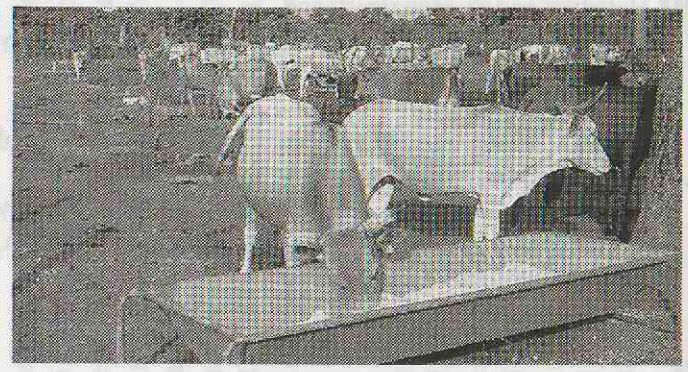
Time: 09.00 - 16.30 hours
Location: Faculty of Veterinary Medine
Yalelaan 1, De Uithof, Utrecht
The Netherlands

Tropical animal health and production and the Faculty of Veterinary Medicine in Utrecht

Utrecht University, one of the 14 universities in the Netherlands, includes 14 faculties. Its Faculty of Veterinary Medicine is the only veterinary faculty in the Netherlands and, as a result of its scientific and educational standards, it has been accredited by the American and Canadian Veterinary Medical Associations since 1973. Within the Faculty there are 11 departments. Research on tropical animal health is mainly conducted in collaborative research projects in the tropics.
In 1987 the Faculty's Office for International Cooperation (BIC) started with the coordination and extension of the international activities. In 1989 the Committee for the Advancement of Tropical veterinary Science (CATS) was established at the Faculty. The main objective of CATS is the perpetuation and promotion of research and education relevant to the tropics. The organization of the Symposia on **Tropical Animal Health and Production** is an activity of BIC and CATS. From 1990 onwards a yearly symposium has been organized. The themes were:

1990 **Contributions and perspectives from the Faculty of Veterinary Medicine, Utrecht University**
1991 **Research for development: policies, priorities and options**
1992 **Bovine theileriosis**
1993 **Recent developments in veterinary epidemiology**
1994 **Application of biotechnology**
1995 **Helminth diseases of ruminants: diagnosis, epidemiology, and control**
1996 **Urbanisation: veterinary public health consequences**
1997 **Aquaculture and disease control**

Information:
Office for International Cooperation
Faculty of Veterinary Medicine
P.O. Box 80.163, 3508 TD Utrecht,The Netherlands.
Tel.: +31.30.2532116, Telefax: +31.30.2531815
E-mail: bic@vet.uu.nl



9th Symposium on

TROPICAL ANIMAL HEALTH AND PRODUCTION

RUMINANT NUTRITION IN DISEASE RESISTANCE AND REPRODUCTION

In 1998 Utrecht University's Faculty of Veterinary Medicine organises the 9th symposium on **Tropical Animal Health and Production**. The organising committee has selected as this year's theme: 'ruminant nutrition in disease resistance and reproduction'.
Feed supplementation to support animals, especially during the dry season and to improve their condition around mating time and during the ploughing season, is practised in many areas in the tropics. However, occurrence of disease can interfere with these feeding strategies as well as the feed intake. Unbalanced feeding does not only influence productivity but also the cause of disease and the reproductive performance. During the symposium all these aspects will be given attention.

SYMPOSIUM ORGANIZING COMMITTEE

Prof. Dr. Ir. A.C. Beynen
J.H.A. de Gooijer (treasurer)
Prof. Dr. J. Noordhuizen (chairman)
Dr. R.W. Paling (secretary)
Dr. M.C. Pieterse
Dr. V.P.M.G. Rutten

PROGRAMME 27 NOVEMBER, 1998

08.30 - 09.00 h. Registration

Opening

Introductory presentations

* Nutrition and disease resistance.
A.C. Beynen, V.P.M.G. Rutten. Faculty of Veterinary Medicine, Utrecht University, Utrecht, the Netherlands.

* A mechanistic approach for understanding nutritional effects on reproductive functioning in the cow.
E. Decuypere. Laboratory for Physiology and Immunology of Companion Animals, Catholic University Leuven, Heverlee, Belgium.

* Studies on nutritional status - health - reproduction interactions in tropical areas.
H. Guerin, E. Tillard, R. Lancelot, A. Ickowicz, E. Vall,, J.J. Delate, C. Meyer and B. Faye. CIRAD-EMVT, Montpellier, France.

Nutrition and trypanotolerance

* Roughage feeding and trypanosome infections in West African dwarf goats.
D. Zwart[1], J.W. Schrama[2] and J.T.P. van Dam[3]. [1]Austerlitz, the Netherlands, [2]Health and Reproduction Group, Wageningen Agricultural University, Wageningen, the Netherlands, [3]Nutreco, Boxmeer, the Netherlands.

* Effects of diet and *Trypanosoma congolense* infection on puberty, age at first lambing and the establishment and outcome of pregnancy in Djallonke ewes.
S. Osaer, B. Goossens and I. Jeffcoate. International Trypanotolerance Centre, Banjul, the Gambia.

* The nutrition, productivity and trypanotolerance of N'Dama cattle.
O.O. Akinbamijo. International Trypanotolerance Centre, Banjul, the Gambia.

Feed supplementation and production

* Strategic supplementation of on-farm feed resources to improve dairy productivity under smallholder farming in the tropics.
M. Wanapat. Department of Animal Science, Faculty of Agriculture, Khon Kaen University, Khon Kaen, Thailand.

* Dietary manipulation of leguminous tree foliage and plantation crop residues in ruminant feeding.
T. Sutardi. Jurusan Ilmu Nutrisi dan Makanan Ternak, Fakultas Peternakan, Institut Pertanian Bogor, Bogor, Indonesia.

* Effect of supplement feeds on the growth of young cross-bred cattle .
N. Kim Duong, Hue university of Agriculture and Forestry, Hue city, Vietnam

Epilogue and closing

Reception

REGISTRATION FORM

I wish to attend the 9th Symposium "Tropical Animal Health and Production. 'ruminant nutrition in disease resistance and reproduction' on 27 November, 1998 at the Faculty of Veterinary Medicine, De Uithof, Utrecht.

Registration is free, but please check box for lunch reservation.

☐* I wish to reserve lunch (Dfl. 15,- to be paid at the registration desk)

☐* I do not wish to reserve

* check one box

Name: .....

Institute: .....

Address: .....

Postal code: ..... City: .....

Country: .....

Tel.: ..... Telefax: .....

E-mail: .....

Date: .....

Signature: .....

Please forward **before 14 November 1998** to:

Office for International Cooperation
Faculty of Veterinary Medicine
P.O. Box 80.163
3508 TD Utrecht
the Netherlands.
Telefax: +31.30.2531815
E-mail: bic@vet.uu.nl

RECENT PUBLICATIONS 25

TRYPANOSOMOSIS

Agyemang, K., Dwinger, R.H., Little, D. A., Rowlands, G.J. (1997). Village N'Dama cattle production in West Africa: six years of research in The Gambia. ILRI/ITC (International Livestock Research Institute, Nairobi, Kenya, and International Trypanotolerance Centre, Banjul, The Gambia) 131 pp.

Dam, van J.T.P., Heide, D. van der, Ingh, T.S.G.A.M. van den, Wensing, T. and Zwart, D. (1998). The effect of the quality of roughage on the course of *trypanosoma vivax* infection in West African Dwarf goats: II. Metabolic profile, packed cell volume, and pathology of disease. Livestock Production Science 53: 81-90.

Dam, van J.T.P., Hofs, P., Tolkamp, B.J. and Zwart, D. (1998). The effect of the quality of roughage on the course of *trypanosoma vivax* infection in West African Dwarf goats I. Organic matter intake, body weight change and efficiency of nitrogen metabolism. Livestock Production Science 53: 69-80.

FOR YOUR INFORMATION 1

ISSN 0923-3970

ARGOS

BULLETIN VAN HET VETERINAIR HISTORISCH GENOOTSCHAP

serie 2

voorjaar 1998

nummer 18

ARGOS is the journal of the Veterinary Historical Society, which is published twice a year. Attention in this year's spring edition is mainly focused on veterinary medicine outside Europe. This focus is a direct result of the theme *colonial veterinary history* of the latest international conference of the World Association for the History of Veterinary Medicine in Cordoba, Spain.
For your information some abstracts of interesting contributions are published hereafter.

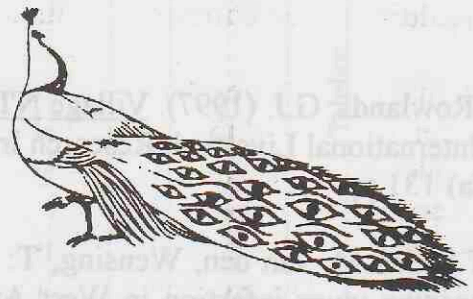
For subscriptions to ARGOS or membership of the Veterinary Historical Society, please contact the Secretariate of the Veterinary Historical Society, c/o the Library, Faculty of Veterinary Medicine, Utrecht University, P.O.Box 80.159, NL-3508 TD Utrecht, The Netherlands, Tel: +31.343.481455 or +31.172.444322, Fax: +31.30.2531407.

Membership, including a subscription to ARGOS, is dfl 45 per year. Student membership, including a subscription to ARGOS is Dfl 12.50 per year.
It is also possible to subscribe to ARGOS only. A subscription costs Dfl 25 per year.

Inhoud

Titelprent van T.D. Atlas van de anat paards (Utrecht 1 embleem overge Sociëteit Absyrtu voor latere style het vignet van

ARGOS



SUMMARIES OF MAIN ARTICLES

S.N. Milton

Western veterinary medicine in colonial Africa.- a survey 1902-1963

The paper discusses the origins and often unintended consequences of the appllication of modern veterinary medicine in Africa during the colonial period. The specific period under review is from the end of the South African War to Kenyan independence. Many of the European traders, invading armies and settlers that penetrated the African hinterland brought their own animals with them. These animals spread new diseases, which outflanked or overwhelmed existing biological and environmental protective barriers decimating African herds. These insurgent animals, in turn, died in their thousands from indigenous pathogens such as bovine sleeping sickness. With the establishment of the post-conquest colonial state it was the job of attendant European-trained state veterinarians to make sense of this new pathological environment and attempt to assert a degree of control - mainly in the interest of food security - as part of the wider process of colonial consolidation.

A primary concern of the paper is to test the extent to which African conditions and indigenous veterinary practice influenced Western veterinary science, knowledge, training and practice. A related concern is to see where, and how, animal health in Africa was transformed by the application of colonial veterinary medicine and what the socio-economic effects of these changes were. In this respect, due regard is given to the veterinary implications of the emergence of new markets and trading networks for beef cattle and dairy products triggered by colonisation and, in particular, mining-based urbanisation.

P. Leeflang

The Civil Veterinary Service in the former Dutch East Indies

The present State of Indonesia became independent in 1949 after more than three centuries of Dutch rule. An overview of the commercial and political relationship during this period is presented. Organised veterinary service gradually developed in the 19th century. The first government veterinarian arrived in the East Indies in 1820. In 1853 three Dutch veterinarians were recruited to build up a State Veterinary Service. However, at the beginning the veterinary service simmered, mainly because Dutch veterinarians were not interested in a career in the tropics. A severe outbreak of rinderpest, introduced through the importation of breeding Zebu cattle from the British East Indies, around 1880 forced the Colonial Office to employ a few veterinarians to serve for one or two years. The short contract and an attractive payment explain why these recruitments were successful.

In 1907 a State Veterinary Research Institute was established in Buitenzorg on the island of Java; and in the same year a veterinary school was founded to train native veterinarians and auxiliary staff.

From this moment veterinary activities took off in the right direction. Due to extensive researches on bacteriology and parasitology and the development of diagnostic facilities and vaccines, infectious diseases could be prevented or combatted. Furthermore, the Veterinary Service was in charge of animal husbandry, livestock breeding and meat inspection. In between the two World Wars, a team of 70 to 100 Dutch veterinarians was employed in government service. They established their own veterinary organisation and veterinary journal. The veterinary contribution to the development of animal health and production and to the increase of the number of draught animals and of food of animal origin was recognized and highly appreciated. During the Second World War, when the Dutch veterinarians were locked up in internment camps, the native veterinarians showed their great ability and skill to maintain a favourable animal health situation. After repatriation of the last Dutch veterinarians in 1956, they left behind a solid structure of veterinary research, university training and field service.

L.J.R. Visser and J.W. Hesselink

The development of plantations and livestock on Curacao

In 1499 the Spanish sailors Alonso de Ojeda and Amerigo Vespucci discovered the Caribean islands Aruba, Bonaire and Curacao. The Spaniards introduced their domestic animals from Europe, primarily for the use of their skins. As no gold was found on the islands and after most of the original inhabitants were removed as slaves, they declared the islands to be *islas inutiles* and only very few Spanish people remained.

Therefore, it costed only a small effort to Dutch sailors under the leadership of Johan van Walbeeck to conquer the islands in 1634. Ever since the islands are under Dutch control (except for the period 1800-1815, when the English took over).

The Dutch West Indian Company made

Curacao into a busy trade center with the slave trade as the main business. Sufficient food supply became a necessity. During the period 1660 to 1725 plantations were built. Cattle, sheep and goats were kept in growing numbers for meat production. With the growing opposition against slavery at the end of the 18th century Curacao lost its position as an international harbour. But since 1918 oil refinery brought wealth again.

The animal disease situation in the earlier period is poorly documented. At the end of the 19th century Dutch Cattle law was introduced. The prevailing livestock diseases are discussed, some of them being typical for the Caribean.

FOR YOUR INFORMATION 2

Liquid nitrogen container as hand baggage

International cooperation in research on livestock diseases is more and more a matter of networking and developing specialized technologies at centre's of excellence. Consequently biological materials are being shipped world-wide. Often the researcher concerned wishes to hand carry the biological materials from one place to another. Transport of the material in liquid nitrogen is often the only way for preserving live material during the period of transport.
Safety regulations for air transport are becoming more and more strict. Regulations for the transport of liquid nitrogen containers are made by the International Civil Aviation Organisation (ICAO) and the Dangerous Goods Regulations of the International Air Transport Association (IATA). The transport of liquid nitrogen as hand baggage on aeroplanes is in principle forbidden. However, there is an exception to this rule and this is for the HCI Dry-Shipper containers types CP30 and CP100. In this containers the liquid nitrogen is fully absorbed in the absorbent internal wall. If this container falls over it does not leak. The Dry-Shipper containers are permitted by the airlines, if they do not contain dangerous materials, to be carried as hand baggage. On KLM flights it is not required to request special permission for transport of these containers as hand baggage. (For information contact: HCI Cryogenics, P.O. Box 121, 5320 AC Hedel, the Netherlands, tel.: +31.73.5996161, telefax: +31.73.5996132, e-mail: **cryo@hci.nl**, website: **www.hci.nl)**.

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Harare, Zimbabwe
14 - 18 September, 1998
IX International Conference of the Association of Institutions of Tropical Veterinary Medicine (AITVM): 'Animal health and Production for Sustainable Development'. Organized by: Faculty of Veterinary Science, University of Zimbabwe, P.O. Box MP 167, Harare. Location: International Conference Centre, Harare. Registration: Prof. M.J. Obwolo, Faculty of Veterinary Science, University of Zimbabwe, P.O. Box M.P. 167, Mount Pleasant, Harare (Tel.: +263. 4.303211, telefax: +263.4.333 683, e-mail: vetscience@esanet.zw).

London, United Kingdom
October, 1998 - October, 1999
MSc Course on Wild Animal Health for graduates in veterinary and relevant sciences. Including: practical and theoretical instruction in the husbandry and nutrition of wild animals, taxonomy, population biology, conservation genetics, welfare and ethical aspects, epidemiology, immunology, infectious and non-infectious diseases, disease investigation, restraint, preventive medicine and surgery and an individual research project. Organized by: The Institute of Zoology (Zoological Society of London) and The Royal Veterinary College (University of London). Information and registration: Registrar, The Royal Veterinary College, Royal College Street, London NW1 OTU (Tel.: + 44.171.4685000, telefax: +44.171.3882342).

Omaha, Nebraska, USA
16 - 22 October, 1998
Joint meeting of the World Association of Wildlife Veterinarians (WAWV), the American Association of Zoo Veterinarians (AAZV) and the Canadian Association of Zoo and Wildlife Veterinarians (CAZWV). Holiday Convention Centre, Omaha. Information: Dr. Wilbur Amand, President WAWV, 6 North Pennel Road (Lima), Media PA 19063, USA.

Melbourne, Australia
22 - 27 November, 1998
4th Asian Pacific poultry health conference. Theme: Improving productivity in a changing world. Subjects: diseases, genetics, food safety, animal welfare, environmental issues. Organized by the Australian Veterinary Poultry Association at the University of Melbourne. Registration: Official Conference Organiser, M. Reid, P.O. Box 341, Neutral Bay, NSW 2089 Australia (Tel.: +61.2.99092005, fax: +61.2.99092555, e-mail: mreidpl@intercoast.com.au, http://www.avpa.cia.com.au).

CALENDAR

Utrecht, The Netherlands
27 November, 1998
9th International symposium: Tropical Animal Health and Production. Theme: 'Ruminant nutrition in disease resistance and reproduction'. Organized by the Committee for the Advancement of Tropical veterinary Science (CATS) and the Office for International Cooperation of the Faculty of Veterinary Medicine of Utrecht University. Registration before 15 November, 1998 to Office for International Cooperation, Faculty of Veterinary Medicine (Telefax: +31.30.2531815, e-mail: bic@vet.uu.nl). See announcement and registration form elsewhere in this EQUATOR.

Melbourne, Australia
February, 1999 - January, 2000
Degree of Master of Veterinary Studies (MVS) in Health and Production of Small Ruminants. Organized by: Faculty of Veterinary Science, University of Melbourne. Areas of study: Parasitology; Gross and histopathology; Reproduction; Advanced sheep management; Introductory surgery and field visits. Tuition fee: $A 26,500. Closing date for applications: 30 September, 1998. Information: Dr. Trevor Bagust, Manager International projects, Faculty of Veterinary Science, Pre-Clinical Centre, University of Melbourne, Parkville, Victoria 3052 (Tel.: +61.3.93449676, telefax: +61.3. 93449675, e-mail: t.bagust@vet. unimelb.edu.au).

Deventer, the Netherlands
1 – 12 March, 1999
Poultry Health Seminar. Subjects: organized disease control; diagnostic approach; pathological entities; post mortem examination; bacterial and viral diseases; mycoplasmoses; parasitology; epidemiology; food- and drinking water analysis; laboratory techniques; test interpretation; vaccination programmes; hygiene and sanitation control. Organized by Dutch Animal Health Service, Deventer. Course fee: Dfl. 4,100. Information and registration: Mrs. L. van Veen, Dept. of Poultry Health, Animal Health Service, P.O. Box 9, 7400 AA Deventer (Tel.: +31.570.660140, fax: +31.570.660175).

Wageningen, the Netherlands
11-25 April, 1999
2nd International Course on Livestock and Environment Interactions. Major elements: livestock-environment interactions in the context of global changes; analysis of biophysical and socio-economic aspects of livestock environment interactions; the dynamics of livestock production systems; policy principles and assessment of flexible policy instruments to strengthen environmentally sustainable livestock production systems; environmental impact assessment, evaluation and monitoring; synthesis of the course information into a policy framework for the participants' own working situation. Organized by: International Agricultural Centre and Wageningen Agricultural University. Information: Director of the IAC, P.O. Box 88, NL 6700 AB Wageningen (Tel.: +31.317.490111, telefax: +31. 317418552, e-mail: iac@iac.agro.nl).

Wageningen, the Netherlands
15 August - 19 November, 1999
27th International course on dairy farming in rural development. Course programme: Introduction; dairy development; farming systems; statistics; economics and agricultural credit; breeding; pasture production; nutrition and feeding; animal health; reproduction and AI, extension and case studies. Course fee: Dfl. 6,000. Closing date: 1 May, 1999. Information and registration: International Agricultural Centre (IAC), P.O. Box 88, 6700 AB Wageningen (Tel.: +31.317.4901-11, telefax: +31.317 418552, e-mail: iac@iac.agro.nl).

Lyon, France
23 - 29 September, 1999
1999 World Vet Congress. Organized by : the World Veterinary Association (WVA) and the World Small Animal Veterinary Association (WSAVA). Information: MONDIAL VET 1999, CNVSPA, 40 rue de Berri, F75008 Paris (Tel.: +33.1.53839160, telefax: +33.1.53839169, E-mail: mondialvet @aol.com, http://www.mondialvet99. org).

Barneveld, The Netherlands
23 August, 1999 - 24 February, 2000
29th International course on poultry husbandry and 29th International course on pig husbandry. Organized by: IPC Livestock International, Barneveld College. These courses will run at the same time. Following these courses participation is possible in the 22nd International animal feed training programme (AFTP), which runs from 1 March to 27 May, 2000. Direct entry in this last course is also possible. Fees including board and lodging: Poultry course: Dfl. 24,500; Pig course: Dfl. 24,500, Feed course; Dfl. 12,000 or 14,500 (direct entry). Closing date: 1 May, 1999. Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.342.4-14881, telefax: +31.342.492813, e-mail: io@ipcdier.hacom.nl).

The High Tatras, Slovakia
30 August – 2 September, 1999
3rd International Conference on Ticks and Tick-borne Pathogens (TTP 1999). Programme: Tick-borne pathogens (arboviruses; other pathogens); tick-host interphase; tick control; geographic distribution and GIS; tick biology; tick ecology; tick morphology, taxonomy and systematics. Organized by: Institute of Zoology, Slovak Academy of Sciences and NERC Inst. Virology and Environmental Microbiology, Oxford, UK. Information: Dr. Milan Labuda, Director, Institute of Zoology, Slovak Academy of Sciences, Dubravska cesta 9, 842 06 Bratislava, Slovakia (Tel.: +42.17.3783248; telefax: + 42. 17.3789757, e-mail: uzaelabu@ savba.sk).

Lyon, France
20 - 25 September, 1999
Joint meeting of the European Section of the Wildlife Disease Asociation (EWDA) and the European Association Zoo and Wildlife Veterinarians (EAZWV) at the World Veterinary Congress in Lyon. Information: Dr. Marc Artois, CNEVA Nancy, Domaine de Pixerecourt, BP 9, 54220 Malzeville, France.

EQUATOR

NEWSLETTER ON VETERINARY ASPECTS OF INTERNATIONAL DEVELOPMENT COOPERATION

ISSN 0923-3334

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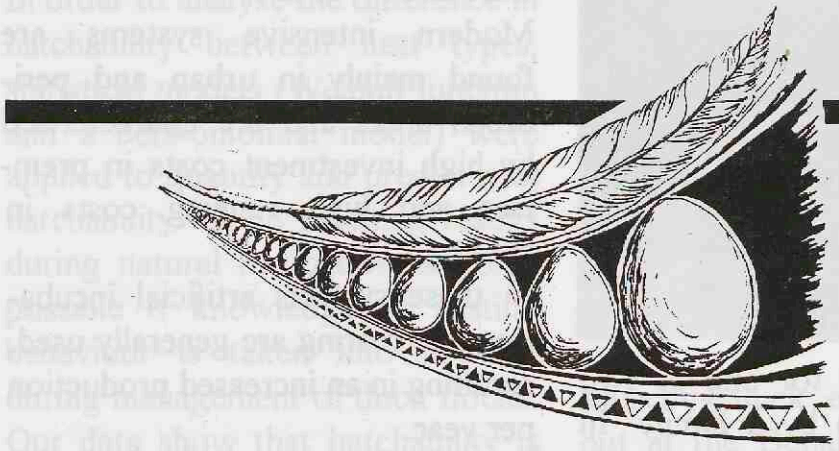
October-December, 1998

5/6

VOLUME 10,1998

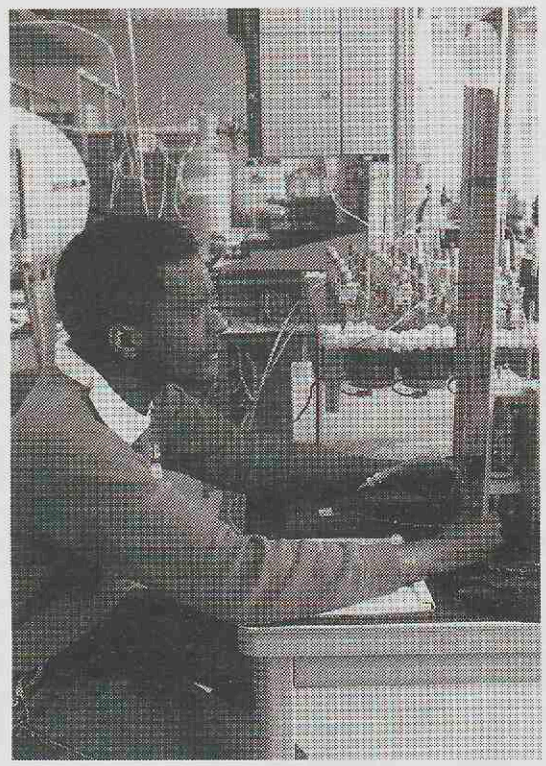


FOCUS ON THE MUSCOVY DUCK

On 10 September, 1998, Dr. Mohamed Abdul Suamade Harun defended his PhD thesis on "Hatchability of Muscovy duck *(Cairina Moschata)* eggs and energy metabolism of ducklings in a tropical climate" in the Academy Building of Utrecht University. Promotors were Prof. Dr. G.H. Huisman and Prof. Dr. M.E. Evers, and as co-promotors acted Dr. M. van Kampen and Dr. R.J. Veeneklaas. This thesis was the pinnacle on the research Dr. Harun had performed sofar in Maputo, Mozambique and in Utrecht, the Netherlands. His research was incorporated in the programme on educational and scientific co-operation in the field of herd health, veterinary internal medicine and applied physiology between the Veterinary Faculty of the Eduardo Mondlane University (EMU) in Maputo, Mozambique and the Faculty of Veterinary Medicine of Utrecht University, Utrecht, the Netherlands. The programme ran from 1987 - 1998. Since his graduation in 1984 Dr Harun is appointed as lecturer in veterinary physiology at the department of preclinical studies of EMU. Because the results described in this thesis can be of importance for veterinarians and agricultural advisers in regions where Muscovy ducks are kept, the editorial board of EQUATOR decided to publish the summary of Dr. Harun's PhD thesis. For further information please contact Dr. Harun directly at the Department of Physiology, Veterinary Faculty, Universidade Eduardo Mondlane, C.P. 257, Maputo, Mozambique, Email: kabil@zebra.uem.mz.

Introduction

In developing countries rural poultry production plays an important role as a source of animal protein in the household economy. In rural tropical areas where meat can not be conserved for long time chickens and ducks are protein sources



Dr. Harun at work in the laboratory of Veterinary Physiology in Utrecht (Photo: Post)

of a suitable size for one or two days consumption by a family. In these countries poultry generally is scavenging around the houses where they find their own feed or sometimes are supplemented with household waste.

Within poultry species, ducks are probably the most adequate birds in a scavenger system, because they possess the remarkable ability to glean and subsist on feeding materials that are not used by man or not retrievable by chickens or other domestic animals. The most common duck breed found in rural areas in Africa, and in particular in Mozambique, is the Muscovy duck. Compared to other duck species the economic importance of the Muscovy duck as a meat type of bird is growing both in traditional extensive and modern intensive husbandry systems.

Due to its good foraging and incubation behaviour, Muscovy ducks are easily kept in scavenging systems. The scavenging system in Mozambique is found in rural areas where the majority of poor people live. In this system the flocks are usually comprised of two to ten ducks. The eggs are naturally incubated for approximately 35 days and the ducklings are generally raised by the mother duck for at least three weeks.

Modern intensive systems are found mainly in urban and peri-urban areas and are characterised by high investment costs in premises and high running costs in feeding.

In these systems artificial incubation and rearing are generally used, resulting in an increased production per year.

The Mozambican government, recognising the potential value of duck production to increase the consumption of animal protein per capita of the population living in rural areas, encouraged in 1976 the rearing of ducks and launched a project to promote Muscovy duck production at the national level. During the implementation of the project the duck population increased nation-wide. Farmers, however, learned by experience that management routines are also essential for a good development of their flocks.

Three questions

In this context three practical questions related to duck management were brought to the attention of poultry specialists. The first question was related to the belief of farmers that absence of swimming water would lower productivity with natural incubation. The second question was why the hatching rate of artificial incubation was low (often less than 50%). The third question was why in a scavenger system most of the ducklings brooded by the mother duck died during the first three weeks of life?

The studies in this thesis were carried out to provide practical answers to the questions of the farmers. The results of the study are useful for increasing duck production with Muscovy ducks in a tropical climate.

The experiments described in the thesis were designed: (1) to investigate if accessibility to swimming water and nesting behaviour affect the hatchability of Muscovy duck eggs under natural incubation, (2) to get insight in the role of egg characteristics (for instance egg-mass, shape, porosity) on embryo growth, metabolic rate and hatchability of eggs during artificial incubation and (3) to understand the development of thermoregulation

Although the Muscovy duck is a water fowl, access to swimming water is not essential (Photo: collection Harun)

of Muscovy ducklings and to determine which factors are responsible for the high mortality during the first three weeks of life.

Incubation behaviour

To answer the questions about the necessity of access to swimming water, the natural incubation behaviour of Muscovy ducks was studied at the experimental duck unit of the Veterinary Faculty in Maputo, Mozambique. The presence of the mother duck in the nest box was determined by using the interruption of an infra-red beam and a thermistor to sense the temperature changes. Through this measurement of nest attendance the moment of egg laying, the start of incubation and the periods the duck left the nest during incubation could be determined.

Dump nests

Subsequently, the influence of nesting and incubation behaviour on hatchability of the eggs during natural incubation is described. Muscovy ducks show a behaviour called nest parasitism, i.e. a duck lays her eggs in nests of another egg-laying duck (dump nests). In the experimental duck unit we used this behaviour by putting eggs of abandoned nests in nests where the duck just had started the incubation (artificial dump nests). The effects of the creation of artificial dump nests on the overall hatchability has been investigated. In some nests more eggs were found at the end of the incubation than at the start. These eggs could be laid by the incubating duck after incubation had started or by another duck. However, due to the used registration method for the presence of eggs no discrimination between the two possibilities could be made. The overall hatchability of the eggs in these kind of nests (nests with non-term eggs) was 25% lower, most probably due to the short incubation time of the last laid eggs.

In the laboratory the situation of young scavenging birds was simulated by a period of controlled underfeeding (Photo: collection Harun)

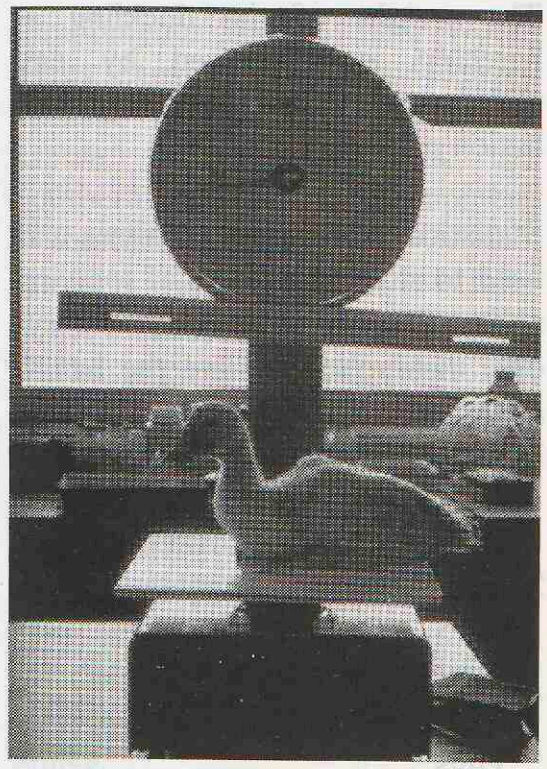
Hatchability

In order to analyse the difference in hatchability between nest types, statistical models (Weibull function and a beta-binomial model) were applied to quantify and predict nest hatchability. Good hatching results during natural incubation are only possible if knowledge of nesting behaviour is taken into account during management of duck flocks. Our data show that hatchability is only decreased by 10% for artificial dump nests, despite the fact that 40% of the eggs were derived from abandoned nests that were otherwise certainly lost.

As the hatchability rate obtained in natural incubation is higher than in artificial incubation, natural incubation is recommended, provided that the knowledge of nesting behaviour is applied in the management of duck flocks during the breeding season. The analysis by the statistical models shows that almost 60% of the variation of hatchability of Muscovy duck eggs under natural incubation can be explained by clutch size, nesting behaviour and duration of egg laying and incubation. The outcome of the study is that although the Muscovy duck is a water fowl, access to swimming water is not essential and does not affect hatchability. Breeding biology of the domesticated type of Muscovy ducks under natural incubation was found to be similar to that of the wild type.

Hatchability in artificial incubation

To study the question about the low hatchability in artificial incubation, laboratory experiments on



Muscovy duck eggs were carried out at the Department of Veterinary Basic Sciences, section of Veterinary Physiology at the Faculty of Veterinary Medicine of Utrecht University. The reported data on embryonic growth and on the pattern of heat production during hatching are essential to understand the incubation process and to maximise hatchability. The results show that the weight of the embryo, length of beak and shank are useful parameters to estimate at which age the embryo died. The hatching process starts with an internal perforation of the air chamber by the duckling (internal pipping), followed by cracking the egg shell (external pipping) and emerging the egg. Of the embryos that died during artificial incubation most of them died in the period after the duckling had cracked the egg shell to start the hatching process. Compared to natural incubation, the time necessary for a duckling to hatch lasted longer in artificial incubation and the hatching process is not synchronised as is usually observed for precocial birds. The longer hatching period can be explained by the fact that the synchronisation sound made by the emerging ducklings is drowned out by the noise of the incubator.

The weight of the duckling at hatching is influenced by egg weight and the length of the incubation period.

Statistical discriminant analysis was used to study the effect of spraying and cooling the eggs on the embryonic metabolic rate and the hatchability.
It is shown that:

1. eggs with a more round shape have difficulties in hatching;
2. an incubation temperature of 37.5 °C with spraying and cooling benefits the hatchability of the bigger and more porous eggs;
3. embryo death after external pipping is associated with insufficient energy during hatching; and
4. the egg size variation and the different way of heat source application in natural and artificial incubation seem to be the more important factors responsible for the low hatching rate during artificial incubation of Muscovy duck eggs.

Therefore in artificial incubation with spraying and cooling it is recommended to avoid egg shape variation by a prior selection.

The influence of thermoregulation

The question why in a scavenger system most of the ducklings brooded by the mother duck die during the first three weeks of life was also addressed in laboratory experiments performed in Utrecht. The situation of young scavenging birds was simulated by a period of controlled underfeeding which kept their body weights constant. The effects of underfeeding and age on the development of thermoregulation in Muscovy ducklings are described. It is shown that Muscovy ducklings are more vulnerable at low ambient temperatures than other duck species. Therefore they are more dependent on an additional heat source (e.g. a heating lamp or parental brooding), especially under adverse weather conditions in tropical areas with temperatures below 10°C. In the scavenging poultry production system where there is a shortage of food in quality and quantity, the time that a scavenging duckling spends being warmed by its parent is lost for feeding activity. This leads to a reduced level of food intake, and thus to growth retardation and difficulty in maintaining homeothermy. For the development of thermoregulation, the availability of food is more important than age. Under these conditions growth rate of scavenging ducklings can be enhanced by supplementing them with some extra food, which facilitates endurance to environmental cold stress and permits growth. Taking these conditions into account contributes to reduce the early mortality rate of young ducklings due to adverse cold effects.

Dr. Mohamed Harun/
Jean de Gooijer

AITVM CONFERENCE ATTRACTS WORLD-WIDE AUDIENCE

The 9th International Conference of the **Association of Institutes of Tropical Veterinary Medicine** (AITVM) on '**Animal Health and Production for Development**', was held in Harare, Zimbabwe from 14-18 September, 1998. A total of 223 participants gathered in the Sheraton Hotel in Harare to listen and discuss matters related to the role of livestock in development. Most participants (186) came from 19 sub-Saharan African countries, 24 came from 8 European countries and the others came from the America's, Asia and Australia.

Preparations

The International Conference of the AITVM is organised every 3 years, alternately in a tropical country and a European country. For 1998, the Faculty of Veterinary Science of the University of Zimbabwe took the challenge to organise the 9th International Conference. The Association has a Standing Committee, with members representing veterinary institutions in Africa, Asia and Europe.

At the end of the 8th Conference in 1995 in Berlin, Harare was announced as venue of the 9th Conference and Prof. Mark Obwolo was elected as the new chairman of the Standing Committee. The preparations for the Harare conference started in 1996 when the Standing Committee met in Paris; this was followed up with a meeting in Montpellier (France) in

May, 1997 when an outline of the themes was formulated and names of potential keynote speakers were put forward. From here on the activities were in the hands of Prof. Mark Obwolo and the various National Organising Committees that supported him. Later in 1997 the Standing Committee met in Antwerp to review the progress and financial position of the conference organisation. Subsequently the first and second announcement were widely distributed in the English and French language.

It goes to far to mention here all the efforts and activities of the local organisers that finally resulted in an international conference of 223 participants.

Harare as venue

Harare as venue for the Conference tuned out to be a very good choice. The organisers at the Faculty of Veterinary Science had the full support from the University authorities, the Ministry of Higher Education and Technology, the Department of Veterinary Services, the Zimbabwe Veterinary Association and the Delegation of the European Commission in Harare. Heads and representatives of all these organisations were present at the official opening of the Conference and highlighted the importance of the Conference for livestock development on a national and regional scale. The city of Harare has excellent hotel and conference facilities and numerous international flights to bring in the participants from all parts of the world.

Participants

The participants of the Conference included scientists, policy makers and representatives of major funding agencies, international agencies and regional organisations. The conference organisers had been able to obtain fellowships for many of the scientists from East, West and southern Africa. Organisations like the European Union (EU), Centre for Technical Cooperation in Rural Agriculture (CTA), Food and Agricultural Organisation (FAO) and the governments of Belgium, Britain, Denmark and France provided funds for the participation of scientists from developing countries.

Programme

The programme was divided in one day of plenary sessions at the start, followed by 2 days with 3 simultaneous sessions and workshops. During the first day plenary session, representatives of Zimbabwe, Malawi, Indonesia, the Southern African Development Community (SADC), the Organisation for African Unity (OAU/IBAR) and the European Union, presented their views and strategies on some of the major themes of the conference: sustainable regional integrated animal disease control, animal health delivery systems and community participation.

The next 2 days were fully filled with sessions on the following topics:

Topic 1: Needs for regional integrated animal disease control

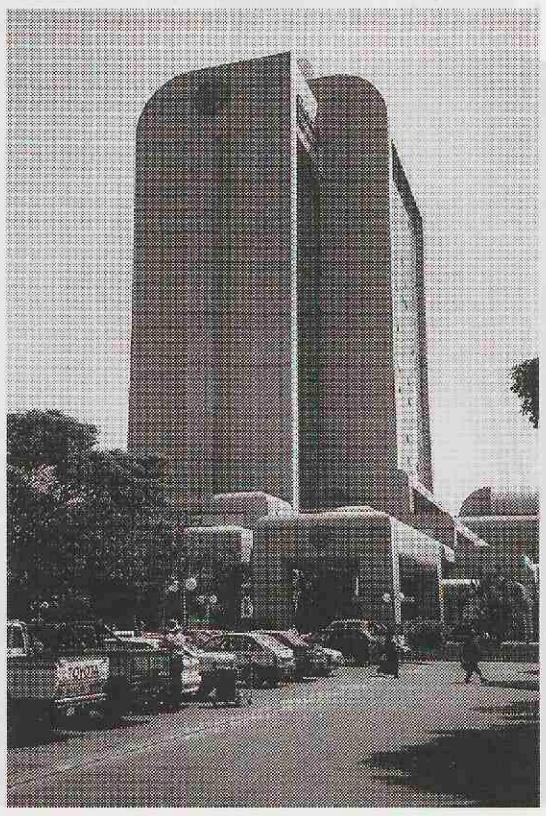
Topic 2: Increasing efficiency of the public and private health delivery systems.

Topic 3: Re-orientation of the veterinary curriculum

Topic 4: Domestic and wildlife resource management

Topic 5: Veterinary public health and food safety.

Each session started with a presentation by an invited keynote speaker, who also chaired the meeting through a series of presentations with relevance to the subject. A total of about 65 scientists made a presentation during 3 parallel sessions.



Venue of the 9th AITVM Conference: Sheraton Hotel Harare (Photo: Paling)

Needs for regional integrated animal disease control

The keynote in this session was presented by Dr. R. Conner (Regional Tsetse and Trypanosomiasis Control Programme (RTTCP) for Malawi, Mozambique, Zambia and Zimbabwe). Dr. Conner stated: 'Attempts to control a disease in one country will be thwarted if it spreads into disease-free areas from an adjacent country. A regional (international) approach to control is then necessary. Also the existence of common problems (such as a shortage of skills) or interests in joint research, may also

The main conference hall (Photo: Paling)

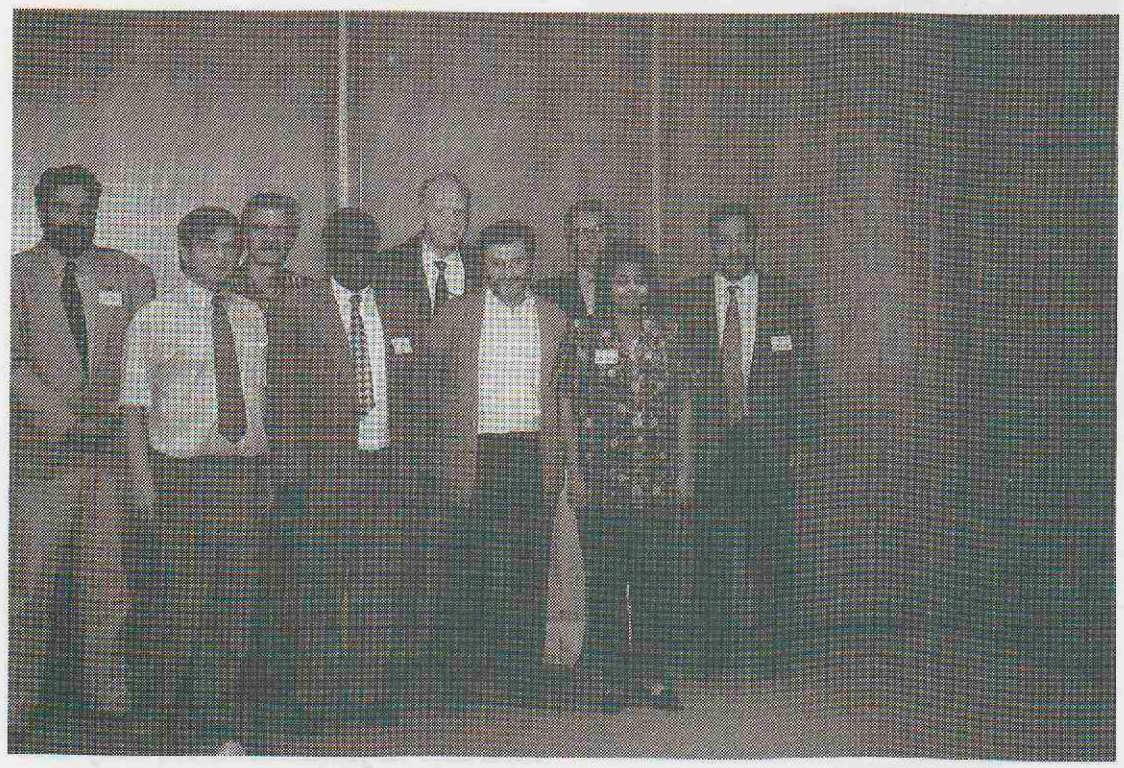
justify a regional approach. Diseases that qualify for a regional approach in Africa are: rinderpest, foot and mouth disease (FMD), contagious bovine pleuropneumonia (CBBP), ticks and tickborne disease (TTBD), trypanosomosis and Newcastle Disease (NCD).

Increasing efficiency of the public and private health delivery systems.

Dr. Domenech (CIRAD-EMVT, Montpellier, France) opened this session by indicating that during many years the animal health services, specifically in Africa, have been provided by various ministries through public spending. The political idea that 'everything' can be done by the public administration lost ground very fast under the structural adjustment programmes. The veterinary services have been under reform during the last 15 years. However, the privatisation process of the veterinary profession is progressing rather slowly. This session turned out to be of interest to a lot of the participants, demonstrating the concern of the veterinary profession on how best to deliver its goods to the clients. The session ran for 2 days and an extensive set of recommendations was formulated.

Re-orientation of the veterinary curriculum

The Dean of the hosting institute Prof. Obwolo (Faculty of Veterinary Science of the University of Zimbabwe) introduced the subject of the re-orientation of the veterinary curriculum. He stated that: 'The changing global environment, politics and economics have direct bearing, internationally, regionally and nationally, on agriculture and disease dynamics'. He noted some examples such as: extreme and changing weather conditions, the policy to reduce public spending and to encourage privatisation, changing disease patterns and 'new' diseases. The veterinarians have to be prepared for the consequences. As trainers, the Veterinary Schools have to re-orientate the curriculum. Including subjects such as: farming systems, epidemiology, veterinary practice and business studies, were some of his suggestions. Discussions centred around the question of how much knowledge and many facts a veterinary student can absorb in a four or five year period. What can be removed from the curriculum if new subjects have to be introduced? Some of the solutions that were discussed are: development of elective courses and differentiation in the last part of the study. In this case not all the students follow all the courses, but they make some choices and select subjects. The shifting of certain subjects to a postgraduate study programme is an other option. In this respect Prof. J.A.W. Coetzer (University of Pretoria, South Africa) presented the initiative taken by five veterinary faculties of the SADC (Mozambique, South Africa, Tanzania, Zambia and Zimbabwe) to develop jointly a 'Regional MSc in Tropical Animal Health'.



AITVM 1998 Standing Committee (Photo: collection Paling)

Domestic and wildlife resource management

This session started with an introduction by Dr. J. Grootenhuis (Kenya).

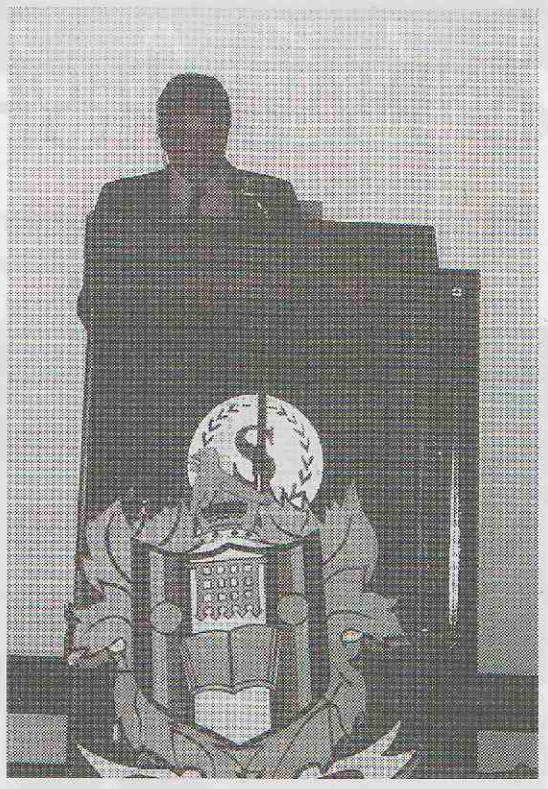
He introduced examples of sustainable and economic land use systems where a multi-disciplinary approach is made to the use of the natural resources in semi-arid zones of Africa. The economic use of land and vegetation can be combined with utilisation and protection of wildlife species. The presentations in this session were concerned with wildlife and livestock interactions and the use of (improved) local livestock breeds (cattle, goats and chicken) for increasing livestock production under certain adverse conditions. The presentation by Dr. W.H. Stotsz (University of Pretoria) about the enormous prices that were paid in South Africa for FMD-free, theileria-free and tuberculosis-free buffalo was an eye opener for many of us.

Veterinary public health and food safety

The subject of this session was introduced by Dr. A. Robinson of USAID-Middle East Cooperation Programme (MERC), who is based in at Veterinary Department of the Ministry of Agriculture in Amman (Jordan). Most presentations centred around subjects related to parasitic zoonoses.

Recommendations

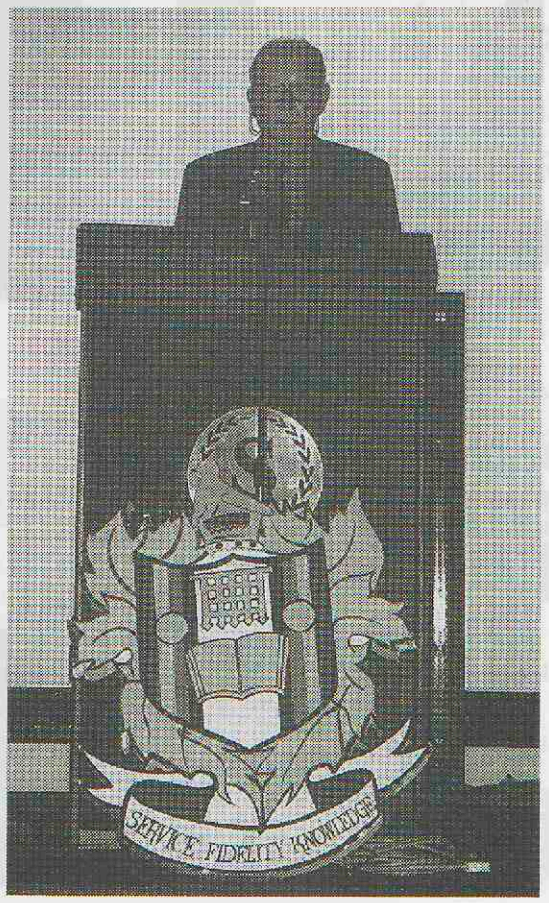
Each session was concluded with a discussion, steered by a moderator, during which the major objectives and threats for achieving these objectives, were identified and summarised in recommendations.
During a final half a day plenary session, the conclusions of the five sessions were presented and discussions were held to formulate the recommendations of the Conference.
These summaries and recommendations will be widely distributed in the near future. Of course these will also be published in the proceedings of the Conference and in one of the next issues of EQUATOR.



Prof. Luis Alfaro Cardoso of Portugal, the new AITVM Chairman, addresses the meeting (Photo: Paling)

Where will the 10th AITVM Conference be held?

The members of the AITVM Standing Committee, of which some members were represented by other staff members of their institute, met also in Harare. Prof. Obwolo was thanked for his great personal commitment and congratulated with the success of the Harare conference. Looking forward some important decisions had to be taken by the Committee. A new chairman and secretary of the Standing Committee had to be elected and the venue of the jubilee (10th !) Conference had be chosen. During the final plenary session Prof. Obwolo announced that Prof. Luis Alfaro Cardoso of the Tropical Research Institute of the Faculty of Veterinary Medicine of Lisbon (Portugal) was elected as the new Chairman. The undersigned, Dr. Robert Paling of Utrecht University (the Netherlands), took over the function of the AITVM Secretary from Prof. Dieter Mehlitz. And finally the venue of the next Conference was announced: Copenhagen in Denmark.
Dr. Kaj Bruhn of the Veterinary and Agriculture University (Denmark), who represented Prof. Peter Nansen, invited the participants to a sunny Copenhagen in the year 2001.



Dr. Kaj Bruhn invited the participants to a sunny Copenhagen in the year 2001 (Photo: Paling)

Dr. Robert Paling
Secretary of the AITVM

FIRST MASTERS IN ANIMAL PATHOLOGY IN UTRECHT

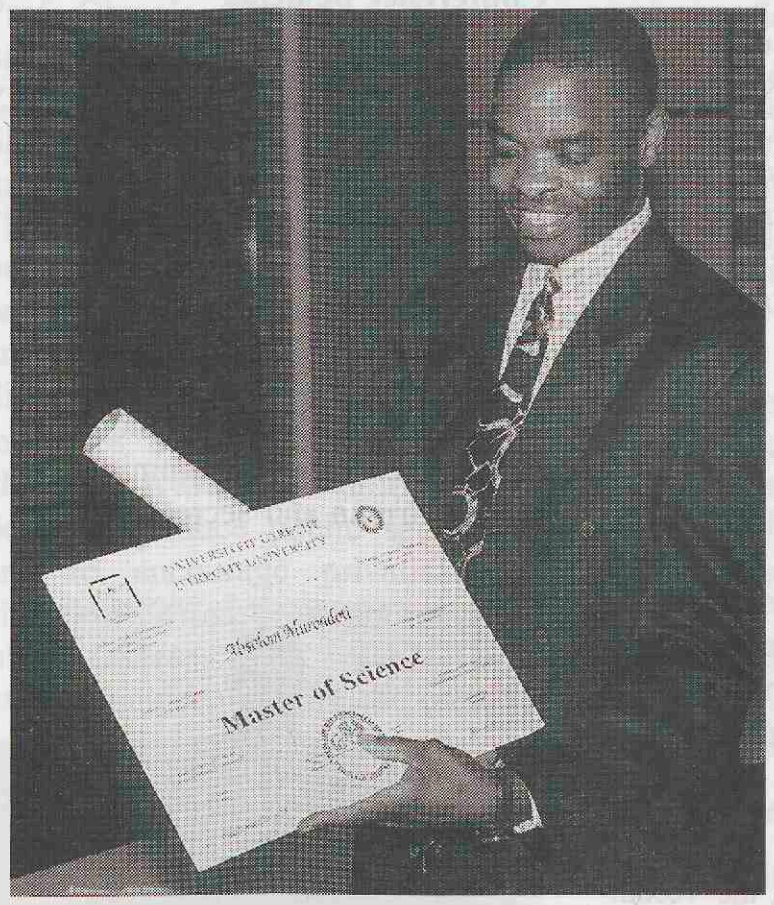
On Tuesday, September 15, 1998, the first Master of Science course on Animal Pathology at the Faculty of Veterinary Medicine of Utrecht University came to a conclusion with the presentation of the results of the scientific work by Drs. Ronnie Chamanza, Blessing Dzoma, Borden Mushonga, Absolom Murondoti, and Elma Zanamwe, all of them staff members of the Faculty of Veterinary Science of the University of Zimbabwe. The subjects of study were: "Acute phase proteins and poultry diseases", "Veterinary problems of the ostrich (*Struthio camelus*) up to 12 weeks of age", "The role of the patellar lock mechanism in the stabilization of the equine stifle joint during quiet standing", "Protein and apoliprotein metabolism in relationship to the pathogenesis of fatty liver in dairy cows and The limitations and constraints of phosphorus deficiency in grazing livestock production" respectively.

The presentations were followed by a festive ceremony. After speeches by Dr. H. Hendriks, the course co-ordinator, and Prof. Dr. E. Gruys, the course director, Prof. Dr. H.W. de Vries, Dean of the Faculty of Veterinary Medicine, took the floor to present the diplomas to the new Masters of Science.

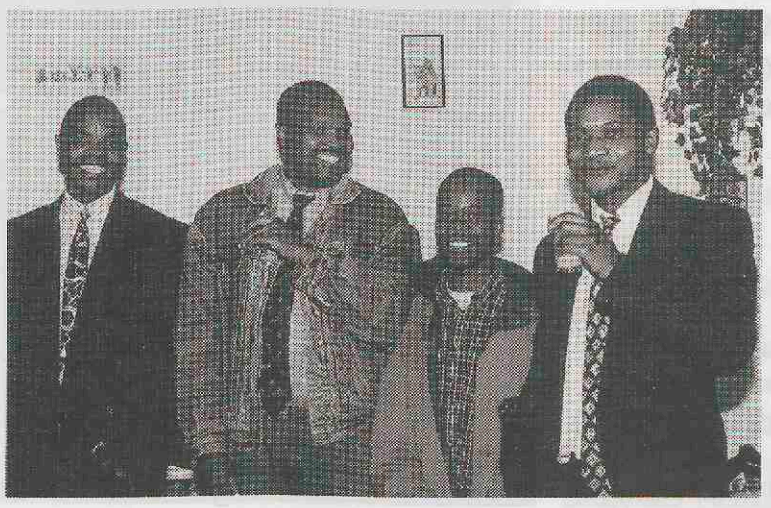
Jean de Gooijer

Nota Bene: From 1998 the Master of Science course on Animal Pathology will start every year in September! The duration of the course is 24 months. For further details see the Calendar in this issue of EQUATOR.

Dr. H. Hendriks (centre), the course co-ordinator, addresses the graduates (Photo: De Gooijer)



Dr. A. Murondoti proudly shows his Master of Science diploma (Photo: De Gooijer)



Four of the new Masters of Science: Drs. A. Murondoti, B. Mushonga, R. Chamanza and B. Dzoma (left to right) (Photo: De Gooijer)

VACANCIES

INTERNATIONAL COOPERATION

This section contains vacancy announcements which the editorial board considers to be of possible interest to Dutch veterinarians. Besides vacancies that will be taken from Vacatureblad Internationale Samenwerking, Tijdschrift voor Diergeneeskunde, Veterinary Record, Intro vacatures (RPD Advies/ Ministry of Internal Affairs) etc., there will be room for personnel advertisements. For further information about the vacancies please contact the institution or company directly.

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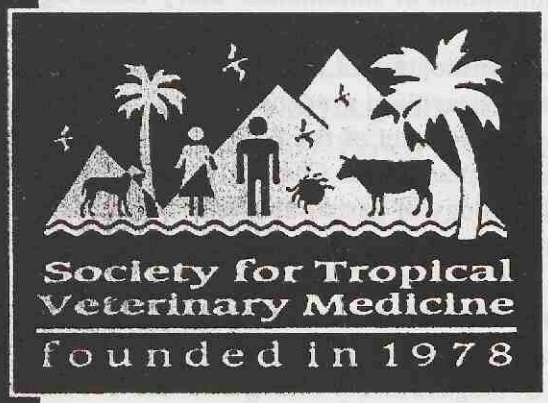
FOR YOUR INFORMATION 1

The Society for Tropical Veterinary Medicine (STVM) held its 4th biennial meeting entitled: 'Tropical Veterinary Medicine', at the Centre de Cooperation International en Recherche Agronomique pour le Dévelopement (CIRAD) in Montpellier, France, from 5-9 May, 1997. The meeting was divided in three areas: Molecular epidemiology of tropical diseases, hemoparasites and their vectors and general topics on tropical veterinary medicine. Recently (1998) the proceedings were published by The New York Academy of Sciences (Address: 2 East 63rd Street, New York, NY 10021, USA). The proceedings, covering more than 500 pages, provide an extensive collection of research papers on diagnosis and disease and vector control of mainly tick borne diseases of livestock in the tropics.
The full details are: Tropical Veterinary Medicine; Molecular epidemiology, hemoparasites and their vectors and genera topics. (1998). Eds. F. Jongejan, W. Goff and E. Camus. Annals of the New York Academy of Sciences, New York Vol. 849. pp. 503. (ISBN 1-57331-141-1).

TROPICAL VETERINARY MEDICINE

MOLECULAR EPIDEMIOLOGY, HEMOPARASITES AND THEIR VECTORS, AND GENERAL TOPICS



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