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**HEALTHY ANIMALS: SAFE PRODUCTS:
A HEALTHY COMMUNITY**

PROF CM VEARY



University of Pretoria

INTRODUCTION: PROFESSOR CM VEARY

Ladies and Gentlemen, a hearty word of welcome to the University of Pretoria and to Professor Veary's inaugural address. We appreciate the interest you show in this event and particularly appreciate the support you give our colleague.

Courtney Martin Veary, better known as Tubby, was born in Johannesburg on 21 September 1939. He matriculated at St Johns College, Houghton in 1956, where he also completed a post-matric year. He obtained his BVSc degree from the University of Pretoria in 1963 and from the same University, a Diploma in Veterinary Public Health in 1978 and the MMedVet degree in veterinary public health in 1991. He is also registered with the Royal College of Veterinary Surgeons, London.

On qualifying, Professor Veary assisted in private practices in Johannesburg and Durban in predominantly small animal practice until joining the Durban City Council in 1969 as the Veterinary Meat Hygiene Officer at the Durban Abattoir. On the legislated reorganisation of the meat industry, he became a State Veterinarian until his promotion to Regional Meat Hygiene Officer in 1979, when he transferred to the Natal Regional Office in Pietermaritzburg. Transferred again in 1982, he became Regional Director, Meat Hygiene, Transvaal, based in Pretoria. Professor Veary joined the staff of the University of Pretoria in 1985 as an Associate Professor in the Department of Veterinary Public Health, Faculty of Veterinary Science.

His involvement in academia has also included lecturing at the Medical University of Southern Africa (MEDUNSA) and in the Department of Community Health, Medical School, University of Pretoria. He has moderated examinations in the Diploma of Public Health for the Department of National Education, the Food Hygiene III examination for the Northern Transvaal Technikon and has evaluated proposed degrees in Veterinary Technology for the Certification Council for Technikon training (SERTEC). He is currently external examiner in the subject Veterinary Jurisprudence and Ethics at the Veterinary Faculty and the Examination Officer for Foreign Graduate Registration Examinations for the South African Veterinary Council, having also examined for restricted registration in Meat Hygiene.

Professor Veary is a Life Vice-President of the South African Veterinary Association and represents the SAVA on the World Association of Veterinary Food Hygienists and on the General Council of the Community Health

Association of Southern Africa (CHASA). He serves on the Editorial Committee of CHASA's professional journal - *Journal of Comprehensive Health* - and on the Executive Committee as honorary treasurer. Since 1993 he has been a member of the Editorial Advisory Board of *Preventive Veterinary Medicine*, an international journal on research and development in veterinary epidemiology, animal disease prevention and control, and animal health economics. He served as a member of review panel of the book *Food Safety and Quality Assurance: Foods of Animal Origin* in 1991. Elected to the Council of the South African Veterinary Council in 1992, he chairs the Education Committee and is a member of the Committee on Specialisation.

Professor Veary has nine scientific, seven popular and two chapters for books to his credit and has presented numerous papers at international congresses, national congresses and workshops, as well as many lay presentations.

Professor Veary has been awarded the Boswell award of the South African Veterinary Association for dedicated service, the Silver Medal for outstanding service to and advancement of the veterinary profession in South Africa and the Natal Branch citation in recognition of the outstanding contribution to the veterinary profession and to the Natal Branch in particular. He is an honorary life member of Natal Branch and an honorary member of the Witwatersrand Branch.

Tubby Veary was married for almost 32 years to Annette (née Nienaber), when she died in 1996, and has two children and four grandchildren. He dedicates this address to his family, including his son- and daughter-in-law, for the wonderful support he has enjoyed over the years and in memory of his wife.

Ladies and gentlemen, it is my pleasure to call upon Professor Veary to present his inaugural address, titled "**Healthy Animals, Safe Food, a Healthy Community**".

Prof. J. van Zyl
VICE-CHANCELLOR AND PRINCIPAL

DEPARTMENT OF ANIMAL AND COMMUNITY HEALTH

INAUGURAL ADDRESS: PROFESSOR CM VEARY

HEALTHY ANIMALS: SAFE PRODUCTS: A HEALTHY COMMUNITY

BACKGROUND AND INTRODUCTION

Homo sapiens and the ancestors of our domestic animals were recognisable some 2 million years ago and by 500 000 BC there was planned hunting of animals - as evidenced by archaeological findings. By 5000 BC the world had arrived at the age of settled agriculture and with it the domestication of sheep, cattle and pigs. The agricultural economy of today is based on cereal crops and in South Africa mainly grass eating animals, rather than the deer-pig based economics on which mankind relied in antiquity¹². The grain and grass eaters have always been preferred to carnivores by civilised man, and these same species form the basis of our meat supplies today. These are supplemented by rabbit, poultry and game meat. Albert Einstein reminds us of the cosmic religious belief that "an empty stomach is not a good political adviser". Cats, dogs and even rats have been consumed in times of famine, stress and war, an example being at Mafikeng during the Anglo-Boer War. However, the longstanding man-deer relationship was important because it showed a trend towards animal husbandry of a deer population on which there was a high degree of economic dependence³³. This complex and delicately balanced association is revealed in the diggings at Molino Casarotto, where 75 per cent of the animals killed consisted of young individuals and which cannot be considered as random culling¹². This apparent deliberate concentration on only certain species, ages and sexes, implies a form of intelligent management of the animal resources¹⁵.

The book Deuteronomy not only gives us the TEN COMMANDMENTS and STANDARDS FOR SOCIAL BEHAVIOUR, it also outlines which animals and birds may or may not be eaten. It also wisely dictates that we should not eat the meat of dead animals - surely the earliest reference to cold slaughter.

["And ye shall be holy men unto me; neither shall ye eat any flesh that is torn off beasts in the field; ye shall cast it to the dogs"]

It is on this extract from the Old Testament that the Hebrew laws of Terephah

and Kosher are based, while the same in the Qu'ran lays the basis for Muslim laws on what does or does not constitute meat acceptable for consumption. These are so firmly established that religious representatives still conduct ritual slaughter in our modern abattoirs.

The word "abattoir" is derived from the French word meaning to "knock down", and as humane slaughter results from the control exercised in such establishments, I prefer it to the old English word "shambles". Napoleon I established five abattoirs in France in 1807, all abattoirs were controlled by law by 1829 and by 1879 there were meat inspection laws. A similar control mechanism was developed in the United Kingdom over the 30 years up to 1877. The laws of licence, hygiene and prevention of the fraudulent practice of substitution and misrepresentation, formulated in Renaissance Florence in the 13th and 14th centuries to control the powerful butchers' guild, still hold good today.

In the United States of America the advent of refrigerated transport revolutionised the meat industry, and meat packing houses flourished with such disregard for hygiene that fingers were sometimes found in pies and cans. This chaos was presented to the American Senate following public outcry when Upton Sinclair's sensational novel *The Jungle* was published, leading to compulsory inspection and sanitary control.

Animals were chased and slaughtered in the streets of Cape Town until an abattoir was established there in 1699. The Dutch East India Company also introduced compulsory meat inspection. This and the abattoir were abandoned when the British occupied the Cape. Fortunately the Dutch carried their awareness of hygiene north from the Cape in the Great Trek of 1835/36 as each commando had a "vleis korporaal" whose duty it was to inspect meat and pass it as fit for human consumption. The Public Health Act of 1919 contained the famous regulation about food, "**good, sound, wholesome, unadulterated and free from contamination**", and it is on this foundation that the health control of foodstuff in many spheres rested and still rests.

I have used my specialised field of study, meat hygiene, to give you a selected historical overview of quality assurance in FOOD HYGIENE. The hygiene of food of animal origin encompasses all measures necessary to ensure that the product of animal origin is **SAFE, SOUND AND WHOLESOME IN ALL STAGES** of its growth, synthesis, production, handling, transport or manufacture/process until its final consumption as an aesthetically acceptable product at a reasonable price. The concept that the hygiene of food of

inarian in agriculture in South Africa through the erection of hospitals for farm animals, the promotion of the total herd health concept and more meaningful involvement of the rural veterinarian in meat and milk hygiene.

["Our future does not rest on professional preference alone, but that the dire need for human food will help control our destiny", Dr Barry du Casse, 1966].

Veterinarians will have to play a vital role if the world, and Africa in particular, hopes to solve the increasing problem of food shortage. Lord Carter, in a debate in 1993 on biotechnology, records that in the next 23 years **by the year 2020, when it is probable that the world population will have reached 8 billion, world agriculture will have had to produce as much food as has been produced in the last 10 000 years**¹⁶! As the 21st century approaches, there can be no doubt of the enormous challenges which face the veterinary profession to assure the future well-being of humans and their animals²⁶. Herd Health is a holistic approach to managing the health and production efficiency of production animal populations - dairy and beef cattle herds, beef feedlots, pig herds and sheep and goat flocks - and is essentially about the efficient production of food- and fibre-producing animals. The primary objectives are to

- ◆ improve and maintain animal health, reproduction, growth and production at the most efficient level that will provide maximum economic returns to the farmer (performance related diagnosis),
- ◆ maintain a balance between animal health and production,
- ◆ ensure the welfare (wellbeing) of animal populations (freedom from malnutrition, provision of comfortable housing, behavioural freedom, freedom from pain, stress, fear, injuries and disease),
- ◆ ensure holistic sustainable resource management (protection of biota, maintenance of biodiversity and sustainability of biotic populations),
- ◆ the provision of a safe, sound and wholesome animal product to the consumer.

I consider now some thoughts on animal welfare and environmental health. There are "four essential elements of holistic veterinary preventive medicine that can be derived from the ethos-ecos paradigm:

- **right breeding** (for example, avoidance of inbreeding harmful traits);
- **right nutrition;**
- **right environment;** and
- **right understanding** (for example, good stockmanship)"⁷

By way of explanation, a Venn diagram: *ethos* is the nature of animals, *telos* their role and purpose in nature, and *ecos* the nature of the ecosystem they inhabit, all of which are interconnected. Can the veterinary profession afford not to broaden its telos horizons and become more involved in animal welfare and environmental health, thus promoting ethoveterinary and ecoveterinary medicine? I believe not, for it is the veterinary profession that must help educate humankind to understand its critical role in maintaining this fine balance - a balance which it can so easily destroy through ill-judged human influences. [**Poverty poses the most serious environmental threat to the less developed areas of South Africa**"³²]. It is through close attention to the health and welfare of all animals, domestic and wild, that the earth's natural resources are preserved. Environmental changes will have important implications for the pattern of animal disease and animals are important sentinels by which to monitor the environment¹⁷. With increased intensification of livestock, the disposal of farm animal waste will become an environmental health problem which the veterinarian must be conscious of and be able to advise on. Managing our environment demands the special skills which veterinarians possess²⁶.

At the Agricultural Health Forum held by the Community Health Association of Southern Africa (CHASA) in 1995, I stated in a talk, "**Residues in food of animal origin**", that the role of the veterinarian in agricultural health is the animal related occupational health of people (physical, chemical and biological) and the control of veterinary drugs as food and product contaminants. We have a unique situation with agro-chemicals in South Africa compared with the rest of the world. [**Product group sales in South Africa are uniquely of a TOXIC rather than a REMEDIAL nature and therefore potentially more dangerous in agricultural health. Sykes RD, personal communication.**] Nevertheless, with an enlightened approach to herd health, a swing will be seen in the next decade, with a steady move away from drug-based control of animal disease to that based on biological products³.

Veterinary epidemiology is defined as the study of diseases in populations and the factors that play a role in these diseases. The prime aim is to deal with "disease" in populations, but it has expanded to include aspects of herd health and economics. Epidemiologists study disease in its natural habitat, away from the controlled environment of the laboratory. Epidemiology has two principle uses, which are not mutually exclusive:

- It serves as the investigative or diagnostic discipline for populations or herd medicine
- It supports various forms of directed action against diseases

It is the integrated science of clinical epidemiology and biostatistics that provides the tools for collecting, analysing and interpreting information from groups of patients. Epidemiology will increase in importance as population-oriented health maintenance programmes become more widely integrated into livestock production systems. Structured methods of problem solving and the design and interpretation of clinical trials, when integrated with concepts of sensitivity, specificity, predictive value and agreement beyond chance levels, will enable veterinarians to more adequately assess and improve their effectiveness in terms of diagnostic strategies and in prognostic and therapeutic activities. Whether a science or a tool, epidemiology is a discipline which assists the endeavours of veterinary public health and herd health in achieving quality/safety assurance along the whole food production chain.

SAFE FOOD

In opening a session "Effective Health Standards and Quality" during a National Milk Forum: Good Safe Milk - a Constitutional Right in 1996, I said that since the early beginnings of industrialised mass production and mass distribution of milk almost a century ago, it has become increasingly clear internationally that disease in cows and the production and handling of milk under poor hygienic conditions, can lead to widespread outbreaks of human disease. Statistics on milk-borne diseases in South Africa are not readily available, and an efficient surveillance system for the regular monitoring and further epidemiological investigation of such diseases requires co-ordinated development. We can assume that milk-borne diseases are probably at least as prevalent in South Africa as in other countries under conditions of industrialised mass production and distribution of raw and pasteurised milk and dairy products. Raw milk constitutes a risk factor significantly more serious than pasteurised milk. However, pasteurised milk is not without risk

because it cannot be completely protected from failures in the pasteurisation system and post-pasteurisation contamination. High standards of hygiene are essential throughout the production and distribution of milk.

The definition of VETERINARY PUBLIC HEALTH as the application of professional veterinary skills, knowledge and resources for the protection and improvement of **human health** was expanded on by my predecessors in their inaugural addresses.

- ◆ **Food-borne Diseases and Safety of Foods of Animal Origin**
- ◆ **Zoonotic Diseases**
- ◆ **Epidemiology**
- ◆ **Biostatistics**
- ◆ **Preventive Medicine**
- ◆ **Antimicrobial Drug Use**
- ◆ **Animals in Society**
- ◆ **Environmental Health**
- ◆ **Community and International Health**
- ◆ **Disaster Action and Relief**
- ◆ **Laboratory Biosafety**
- ◆ **Veterinary Regulatory Programmes⁵**

Veterinary public health activities involve a diverse range of functions within public health, and the main scientific and applied disease control areas are illustrated as I talk. These reflect the broad community of interests between veterinary and human medicine and indicate the opportunities for profitable interaction. Dr Brückner, Director of Veterinary Public Health, National Department of Agriculture, expressed the opinion that the World Health Organisation definition "implies in many ways a *carte blanche* assignment to the veterinary and para-veterinary professions, but is also restrictive as it only implies the application of veterinary knowledge and skills to protect and improve human health without acknowledging the co-ordinated and integrated effort necessary from all related disciplines in a fast changing environment to achieve this goal". However, although the veterinary profession claims to be the only health care profession involved in all stages of food production, it has not yet assumed a leadership role¹⁹. In the same report, "Veterinary Public Health in Africa"²⁰ 1996, it is conceded that in South Africa the current "approach to and delivery of Veterinary Public Health services characterised by a single and selective disciplinary approach, with the delivery of services by a fragmented and uncoordinated multitude of government agencies". This fragmentation is referred to in a

1995 FAO report, "Food Control Activities: Republic of South Africa"⁴, in which a recommendation is made for the consideration of combining all food control functions within a single government department or a **National Food Control Body**.

The incidence of foodborne diseases is increasing throughout the world. [**Food of animal origin plays an important role and people should be more aware of the potential dangers of pathogens in food, especially as the presence of many zoonotic diseases is often unsuspected or unrecognised in animals**].¹³ Food-associated disease generally occurs as a result of a combination of heavy infectious pressure and a lack of gross colonisation resistance in animals together with inadequate hygiene control and "temperature abuse" in foods of animal origin²¹. It need not necessarily be the food animal, the farmer's husbandry techniques nor the abattoir that is always to blame. Organisms may also be transferred to food by the food handler, either directly, or by cross-contamination from hands, surfaces, utensils and equipment which have not been adequately cleaned and disinfected. Food-transmitted diseases of microbial aetiology not only lead to the classic, acute syndromes, but may often result in **serious chronic sequelae**²¹. These are reviewed in an article by Mossel, but some sequelae are highlighted. [**Cholecystitis, colitis, endocarditis, meningitis, myocarditis, septicaemia and pancreatitis can all, for example, be caused by salmonellosis and campylobacteriosis**.]

The assessment and management of risks arising from zoonoses and the identification of ways of reducing or controlling them throughout the food chain are as important to the farmer as they are to the consumer. If there is anybody who doubts this statement, think for a moment about the effect plague had on the Indian economy or more relevant to our own situation, the recent crisis in our ostrich industry and the sad loss of life caused by Crimean Congo Haemorrhagic Fever. Bovine Spongiform Encephalopathy (BSE or Mad Cow Disease) shook the world, crippled the beef industry in Europe, drastically changed eating habits and caused immeasurable economic loss to the beef producer. It will comfort meat eaters to see the most recent conclusion in this regard issued by the Institute of Food Science and Technology [**that provided that the control measures are fully implemented, muscle meat, milk, milk products, gelatin and tallow would appear to be without significant risk of causing Creutzfeldt-Jakob disease in humans and that BSE will become extremely rare**"]. These control measures entail, *inter alia*, correct sterilising procedures for condemned material and a ban on the use of nervous system tissue as a binder or filler

material in manufactured products.

A HEALTHY COMMUNITY

The RDP programme is an **"integrated programme, based on the people, that provides peace and security for all and builds the nation, links reconstruction and development and deepens democracy"**²⁸. The Committee for the Development of a Food and Nutrition Strategy for southern Africa (1990)¹⁴ made an effort to identify the extent of nutritional deficiency and their report suggests that 47 per cent of black people live under the poverty line. However, based on anthropometric rather than income criteria, 2,3 million people in South Africa can be considered for nutritional assistance, as against the 16,3 million according to income criteria. Street food vending has arisen as a consequence of social, political and economic pressures and it might help solve the need to supply food to large masses of the population in urban areas². It plays an important role in the economy of the country as it incorporates many people in the labour force and offers low-priced food to the urban consumers, whose preferences hinge on the ease of finding food that satisfies their taste and in economics rather than safety. [**"The problems facing us today cannot be solved by thinking the way we thought when we created them" (Albert Einstein).**] The food chain needs to be more cost-effective with innovative thinking and marketing, including direct selling from producers to consumers, but with risks to consumers being assessed, prioritised and managed accordingly. Consumers must be given the opportunity to make the right choices based on appropriate education, with information supplied in a sustained, co-ordinated programme so that discriminating consumers can identify their preferred sources of animal-derived food with full awareness of risks as well as benefits.

The vision is that the RDP will integrate growth, development, reconstruction and redistribution into a unified programme. The aim is to create a restructured agricultural sector that spreads the ownership base, encourages small-scale agriculture, further develops the commercial sector and increases production and employment. Agriculture must be oriented toward the provision of affordable food to meet the basic needs of the population and toward household food security²⁸. In contrast to most other African countries, the bulk of rural household income in South Africa does not derive directly from smallholder agriculture. [**"It is often mistakenly assumed that the self provision of food equates to security of food supply"**³¹.] Research shows that a high percentage of rural households

are in fact net consumers of food, even though many of them are engaged in food-crop agriculture. Sales of food are also highly skewed, with a small minority of households accounting for more than 80 per cent of sales³¹. Nevertheless, the contribution of livestock to food supplies in developing countries is increasing at a higher rate than that of cereals. Heinz quotes FAO figures of a total meat production in developing countries of 30 million tons in 1970 rising to a projected 105 million tons in the year 2000 and 143 million tons in 2010¹⁰. Sadly in Africa the benefit of increased livestock food products providing essential amino acids, minerals and vitamins in a concentrated form and fat providing energy (especially to the young, the old and pregnant women) is lost as the human population grows faster than that of the livestock, meat is scarce and the cost is high.

The commercial agricultural sector will remain an important provider of food, fibre, jobs and foreign exchange - without unnecessary controls and levies²⁸. However, although commercial agriculture in South Africa has seemed highly sophisticated and successful, detailed analysis shows otherwise [**"the development pattern was inadequate, inefficient and centralised - therefore unsustainable"**³⁰]. Owner-operated farm enterprises appear to have clear advantages over other forms of operation when the majority of goods are produced for the market. South Africa's agricultural sector vision has been expanded on by Professor Johan van Zyl in the book *Agricultural Land Reform in South Africa: Policies, markets and mechanisms*³⁰.

Under the new Act on the Marketing of Agricultural Products, 1996, **the control boards and the various schemes** fall away (including the execution of statutory functions and the collection of statutory levies), with the result that the marketing of agricultural products will be left to the free market [**"the days of single channel marketing, fixed prices and control boards are over"**, Mr Derek Hanekom, Minister of Agriculture and Land Affairs, 1996]. In essence, the new act allows government to retain control over the introduction of any statutory measures, but the implementation of such measures remains the responsibility of the agricultural industries. Provision is made for a **National Marketing Council** and for the current assets of marketing boards to be transferred to trusts, more than likely established within Article 21 companies. These companies will act on behalf of the various segments of the industry as national policy-making bodies to perform sensitive statutory functions, i.e. privatisation. Cost-recovery functions (for example, collection and collation of industry related data, primary meat inspection services and the physical execution of classification) are func-

tions that will be contracted out to third parties. The Article 21 company will not be funded directly from statutory levies, but will charge a fee for performing certain industry-related functions.

The Department of Animal and Community Health is ideally suited to service computer-based bureau systems for all the food animal segments of the industry. Software programs are already in place to analyse, interpret and use efficiently the data collected by and in consultation with the different segments, thus providing farmers on a regular and timely basis with meaningful basic reports. A development of this nature, alone or in conjunction with other role players, will form an integral part of the holistic approach to herd/flock health maintenance in South Africa, a field in which we will become internationally recognised.

With its wide base of expertise the Department is ideally placed to improve health education and extension to and personal involvement with farmers **and** consumers. Its personnel can address the specific needs of **all** communities, promoting a herd health approach and with it, improved farmer attitude/co-operation, in monitoring, controlling and eventually eradicating specific food animal zoonoses while improving knowledge on pet-related zoonoses. The Department is involved in and must expand its involvement with the promotion and auditing of acceptable, cost-effective quality assurance and management programmes in food production, harvesting, processing and handling (HACCP) and in creating community awareness and understanding of food quality and safety. The basic epidemiological approach to community health problems must be expanded on to identify needs as well as resources.

The World Health Organisation has recognised that the laboratory is the cornerstone of all programmes aimed at guaranteeing food safety¹. The departmental laboratories are already rising to the challenge and striving to become centres of excellence in selected areas of diagnostic work related to food of animal origin. The improved diagnostic techniques form a vital link between what is happening at grassroots level, improved veterinary health technologies, improved veterinary research and improved animal health and production. It must now be quite apparent that the concept **healthy animals, safe products and a healthy community** is an integral link in the socio-economic impact that animal health (as opposed to animal disease) has on the improved quality of human life.

How does the Department prepare students both undergraduate and post-graduate to meet these lofty ideals? It is the vision of the World Association

of Veterinary Educators for a veterinary curriculum to cover in depth and provide an appropriate understanding of certain listed basic disciplines. These are illustrated.

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|--|------------------------------|
| ◆ Macroscopic and Microscopic Anatomy | ◆ Biochemistry |
| ◆ Physiology (Mammalian and Avian) | ◆ Pharmacology |
| ◆ Parasitology | ◆ Microbiology |
| ◆ Pathology | ◆ Theriogenology |
| ◆ Diagnosis, Treatment and Prevention of Diseases | |
| ◆ Animal Husbandry and Production (Genetics) | |
| ◆ Surgery | ◆ Botany |
| ◆ Immunology | ◆ Cell Biology |
| ◆ ENVIRONMENT | ◆ PROFESSIONAL ETHICS |
| ◆ VETERINARY ECONOMICS | ◆ ANIMAL WELFARE |
| ◆ POPULATION VETERINARY MEDICINE | ◆ EPIDEMIOLOGY |
| ◆ LABORATORY ANIMAL MEDICINE | ◆ PUBLIC HEALTH |

Highlighted in **BOLD** above are essential core or lead-in subjects required for the course work presented in our Department. Emphasised in **BOLD SMALL CAPS** are those courses actually presented by the Department. Relate this to the major subject groupings of the Department per functional unit (see below) and it becomes clear that both herd health and veterinary health are essentially the **practical application** of essential core veterinary subjects in a course resulting in the ultimate biological/biomedical degree, the veterinary degree.

HERD HEALTH

- Pig health and management**
- Small stock health and management**
- Beef cattle health and management**
- Diary cattle health and management**
- Animal health economics**

VETERINARY PUBLIC HEALTH

- Food hygiene (meat and milk hygiene)**
- Safety of food of animal origin**
- Zoonoses (diseases transmitted from animals to man)**
- Veterinary epidemiology (disease outbreaks, disease surveillance)**
- Veterinary environmental and occupational health**

Laboratory animal science

We recognise the importance of veterinary jurisprudence and ethics and believe that it will best be presented **by** the Department along with other regulatory control functions. It seems logical to us that the missing populations, namely **poultry, aquaculture and wildlife**, should not be excluded ultimately from a single department of animal and community health, particularly as poultry is already included in food hygiene and safety teaching.

RESOLUTIONS OF THE XXIV WORLD VETERINARY CONGRESS: Brazil 1993

- ◆ **Food Hygiene**
- ◆ **Veterinary Public Health**
- ◆ **Veterinary Education**
- ◆ **Biotechnology**
- ◆ **Animal Welfare**
- ◆ **Food Safety**
- ◆ **Scientific Aspects of Animal Production and Economics**
- ◆ **Anabolisers and Growth Promoters**
- ◆ **Use of Veterinary Drugs in Developing Countries**
- ◆ **International Trade in Animals and Animal Products**
- ◆ **Activities of the State Veterinary Services**

Justification for the formation of the Department of Animal and Community Health and the relevance of its teaching, research and community service base is to be found in the resolutions of the last two congresses of the World Veterinary Association. More detailed reading of the content of each resolution reveals that the highlighted topics from 1993 and all the resolutions taken at the XXV World Veterinary Congress in Japan in 1995 are relevant to the teaching, research and community service activities of the Department.

The Department offers a curriculum content which is ideally suited to equip the veterinarian to become an integral part of the health team at executive, legislative and consultative levels within a holistic multi-disciplinary approach to animal and community health. In teaching and researching this wide field the Department can act as an educational facilitator and as a source of reference, both locally and further afield in Africa. Veterinary

advice will become more accessible and **true, relevant** information on veterinary-linked community health problems more effectively disseminated in the community - a contribution to the RDP programme.

The Pew Report (Pritchard 1989)²², the European Association of Establishments of Veterinary Education (1990)⁶ and the report of the Working Party to Veterinary Undergraduate Education from the RCVS (Luke 1991)¹⁸ all state that it is no longer feasible nor realistic to attempt to produce an omniscient veterinary graduate. [**"Abandon the unrealistic concept of the universal veterinarian who can minister to the health needs of all creatures great and small" Pritchard (1989)²².**] The undergraduate course is a basic educational platform and changes must consider both the changing environment and the changing needs of society and ensure that the profession will be in a stronger position⁹. The proposed new curriculum correctly places more emphasis on herd health and we must heed the cries from abroad that "the emphasis in the veterinary curriculum should be changed from almost total concentration on clinical practice to include the important public sector needs for veterinarians"²². I believe sufficient emphasis is placed on public health training for veterinarians in South Africa and this is endorsed in the new curriculum. Yet from the report *A Framework for Transformation* of the National Committee on Higher Education (NCHE)²⁷ we learn that South Africa's output in natural science, engineering and technology is low by international standards and that there is a severe shortage of graduates in these very fields that are considered to be "The intellectual engine of economic development". The NCHE report highlights the fact that **one black** (African, coloured and Indian) school pupil to every **sixty white** school pupils obtains a matriculation exemption certificate with higher grade passes in physical science and mathematics. [**"Low African student enrolment in areas such as the natural sciences, engineering and agriculture is therefore not surprising"** (NCHE)²⁷.] However, if *massification* is the process through which participation in higher education is both increased and widened, then this deficiency at primary and further education levels needs to be addressed as a matter of extreme urgency to ensure continued veterinary relevance to the overall needs of society. Larger numbers of students must be recruited from socially more diverse backgrounds and channelled into tertiary education in the natural sciences, engineering and agriculture. To meet the new demands of the 21st century in a reformed South Africa, the veterinarian will have to respond creatively with foresight and imagination to the changing agricultural, demographic, scientific and economic landscape. Our approach to

veterinary education must result in the development of scientific skills which enable the veterinarian to identify and describe problems, the ability to access relevant literature/databases and the confidence in the field to jointly promote animal health and product safety in a multi-disciplinary way. The traditional role of healer of individual sick animals is gradually being complemented by the delivery of totally integrated health management programmes [Herd Health: Food Animal Production Medicine]. Maximum productivity on individual farms will only be achieved if modern veterinary skills are properly applied to prevent disease and increase productivity in a clearly cost-effective manner¹⁶. ["Sad though it is for all concerned, the James Herriot approach has to be relegated to history" (Stevens 1986)¹⁶.]

The principles of international trade in the World Trade Organisation (WTO) stipulate trade without discrimination, with transparency, a predictable and growing access to markets, promotion of fair competition and the encouragement of development and economic reform. The Agreement of Sanitary and Phytosanitary Measures (SPS) encourages the wider use of systematic risk assessment among member governments and for all relevant products. It encourages governments to establish national SPS measures consistent with international standards, guidelines and recommendations - a process referred to as "*harmonisation*". Food supplies are thus being rapidly *globalised* and with increasing urbanisation, food chains become more complex from producer to processor to distributor to retailer²³. Nobody really knows what the future will hold: "that depends on too many imponderables"²⁴. "Global pollution and water contamination will impact on the microbiological safety of food of animal origin. Increased urbanisation representing 36% of the world population and expected to increase to 52% by 2010 will force consumers to lose more control of the food they eat⁸." Implementation of good hygiene practices in the handling of food of animal origin is essential and has both primary and secondary purposes. **The primary purpose is to prevent the transmission of animal diseases to humans and to provide a SAFE, SOUND AND WHOLESOME PRODUCT for human consumption. The secondary purpose is to reduce losses in the product and its by-products and to prevent transmission of animal diseases to other animals.**

The farm or production unit is the preharvest point in the food chain and the start of longitudinal integrated quality assurance. A challenge we must help the veterinary profession prepare for will be how to apply integrated quality control throughout the whole production system, irrespective of size, nature

or sophistication. At the same time the academic curriculum must not be deficient in providing students with a sufficiently broad-based scientific education to enable them, as graduates, to respond adequately to the animal welfare and environmental issues that are being raised today⁷. Perhaps the greatest challenge lies in harnessing the energy which abounds in a plethora of one-person disciplines within this Department to focus the wealth of expertise and available data on achieving our main vision and mission. We need to be more aware of the fact that good teaching and good research are inseparable¹⁷ and essential in striving for our improved role in the production animal industry. Irrespective of the sophistication of the production system, longitudinal integrated quality assurance will help to achieve a food supply that is safe, healthy, nourishing, pleasant, inexpensive and available.

REFERENCES

1. Arambulo III, P, Almeida, CR 1993 PAHO Program of Technical Cooperation on Food Protection in the Americas, *Proceedings of the 11th International Symposium of the World Association of Veterinary Food Hygienists*: 393-404
2. Arambulo III, P, Almeida, CR, Cuellar, JS, Belotto, AJ 1993 Street Food Vending in Latin America: some insights into its socio-cultural imperatives and public health implications, *Proceedings of the 11th International Symposium of the World Association of Veterinary Food Hygienists*: 405-425
3. Armour, J 1990 Wooldridge Memorial Lecture: The Role of Vet in Society, *The Veterinary Record*: 249-255
4. Bartz RO 1995 *Food Control Activities: Republic of South Africa* Food and Agriculture Organization report, United Nations: Rome
5. Beran, G 1995 American Veterinary Medical Association Convention Paper: *Where Public Health Fits in the Present Veterinary Medical Curriculum*
6. European Association of Establishments for Veterinary Education 1990 Reflections on the future of undergraduate Veterinary Education in Europe. Annex b to *Report of the Working Party on Veterinary Undergraduate Education 1991*, Royal College of Veterinary Surgeons, 32 Belgrave Square, London SW1X 8QP

7. Fox MW 1995 Veterinary bioethics: ecoveterinary and ethoveterinary perspectives. *Veterinary Research Communications*, 19(1), 9-15
8. Genigeorgis, C 1993 Food Microbiology in the 1990s and Beyond, *Proceedings of the 11th International Symposium of the World Association of Veterinary Food Hygienists*: 212-217
9. Gorman, NT 1994 *Challenge for Change: Undergraduate Education*, 31-34: a symposium to mark the 150th anniversary of the granting of the Charter to the Royal College of Veterinary Surgeons
10. Heinz, G 1995 Preservation and Processing Technologies to Improve Availability and Safety of Meat and Meat Products in Developing Countries, *WAR/RMZ 84/85*: (3-4), 95-103
11. Horwood O 1967 Principal and Vice-Chancellor, Natal University Opening Address: 62nd South African Veterinary Association (SAVA) Biennial Congress
12. Jarman MR 1972 European Deer Economics and the Advent of the Neolithic. Chapter 3: 125-147 in *Papers of Economic Prehistory* Higgs ES (Ed) Cambridge University Press: Cambridge
13. Kampelmacher EH 1987 Poultry Disease and Public Health: Gordon Memorial Lecture *British Poultry Science 28*: 3-13
14. Kirsten J and van Zyl J 1996 The Contemporary Agricultural Policy Environment: Undoing the Legacy of the Past in *Agricultural Land Reform in South Africa: Policies, markets and mechanisms*, Van Zyl, J, Kirsten J, Binswanger, HP (Eds). Oxford University Press: Oxford
15. Kyle R 1987 *A Feast in the Wild*. Kudu Publishing, 1 Lyne Rd, Kiddington, Oxford, OX5 IAE
16. Lord Carter 1994 *Challenge for Change: The Challenge from Agriculture at Home and Abroad*, 7-11: a symposium to mark the 150th anniversary of the granting of the Charter to the Royal College of Veterinary Surgeons

17. Lord Soulsby 1994 *Challenge for Change: Great expectations*, 1-5: a symposium to mark the 150th anniversary of the granting of the Charter to the Royal College of Veterinary Surgeons
18. Luke, J 1991 *Chairman's Report of the Working Party on Veterinary Undergraduate Education*. The Royal College of Veterinary Surgeons, 32 Belgrave Square, London SW1X 8QP. p28
19. Mc Capes, RH, Osburn, BI and Riemann, H 1991 Safety of Foods of Animal Origin: Responsibilities of Veterinary Medicine, *Journal of the American Veterinary Medical Association*: 199(7) 870-874
20. Meslin, F-X 1996 *Veterinary Public Health in Africa* World Health Organisation, Geneva
21. Mossel DAA 1988 Impact of Foodborne Pathogens on Today's World, and Prospects for Management Review series: *Perspectives in Foodborne Disease Animal and Human Health* 1 (1): 13-23
22. Pritchard, WR 1989 *Future Directions for Veterinary Medicine. Pew National Veterinary Education Program*. Duke University, 3101 Petty Road, Suite 1106, Durham N.C. 27707, p189
23. Robinson RA and Nagaraja, K 1993 Principles of Pre-harvest Food Safety in the production of Dairy Products and Meat, *Proceedings of the 11th International Symposium of the World Association of Veterinary Food Hygienists*: 149-152
24. Shephard, G 1994 Speech to Agra-Europe Conference, February 23
25. Snijders, JMA, van Logtestijn, JG and Berends, BR 1993 Integrated Quality Control and HACCP as Prerequisites for a New Meat Inspection System, *Proceedings of the 11th International Symposium of the World Association of Veterinary Food Hygienists*: 123-127
26. The Charter 150 Education Trust 1994 *Challenge for Change: Man and his animals; challenges for change*: a symposium to mark the 150th anniversary of the granting of the Charter to the Royal College of Veterinary Surgeons

27. South Africa: The National Committee on Higher Education (NCHE) 1996 Report: *A Framework for Transformation* Pretoria: Government Printer
28. *The African National Congress: The Reconstruction and Development Programme: a policy framework* 1994, Johannesburg: Umanyano Publications
29. Van Rensburg SWJ 1983 *From the Horse's Mouth: the Story of South Africa's Veteran Vet.* Pretoria: JL van Schaik
30. Van Zyl J 1996 A New Vision for Agriculture and Management of the Transition **in** *Agricultural Land Reform in South Africa: Policies, markets and mechanisms.* Van Zyl J, Kirsten J, Binswanger HP (Eds) Oxford University Press
31. Van Zyl J and Coetzee GK 1990 Food Security and Structural Adjustment: empirical evidence on the food price dilemma in southern Africa. *Development Southern Africa*, 7(1): 105-116
32. Van Zyl J, McKenzie C and Kirsten J 1996 Natural resource management issues in rural South Africa **in** *Agricultural Land Reform in South Africa: Policies, markets and mechanisms* Van Zyl J, Kirsten J, Binswanger HP (Eds) Oxford University Press
33. Wythes JR, Shorthose WR, Powell VH 1988 Cattle Handling at Abattoirs. I. The Effects of Rest and Resting Conditions Before Slaughter and of Electrical Stimulation of Carcasses on Carcase Weight and Muscle Properties. *Australian Journal of Agricultural Research* 39: 87-95

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