organisms, psitticosis lymphogranuloma trachoma organisms, viruses and thelazia have also been found. Predisposing cases included ultraviolet light, dust and insects. Treatment could be by means of topical ointment such as chloramphenicol. However, it should be remembered that ointment only remains in the ocular area for about 60 minutes and drops for about 20 to 30 minutes. The sub-conjunctival depot approach was used successfully by many practitioners but the reason for its success was debatable. The possibility of using the systemic approach was suggested, particularly the use of sulphonamides.

Professor Leslie Vaughan and Barrie Edwards, Department of Surgery and Obstetrics, Royal Veterinary College, then provided a demonstration under farm conditions in the NAC Beef Unit. They demonstrated the use of the mobile Hannover trolley whereby it was possible to rotate an animal from the standing to the lateral position. The use of intravenous regional anaesthesia of the bovine feet was shown. Following application of a tourniquet at the foot, injection into the lateral metatarsal vein was performed and produced anaesthesia of the foot. By applying pressure at the carpus an injection into the radial vein produced anaesthesia of the front foot. After anaesthesia the application of a wooden shoe to a foot was shown as can be successfully used to treat fractured pedal bones. Following their demonstrations at the beef unit both Professor Vaughan and Mr. Edwards gave lectures on lameness in cattle. Professor Vaughan concentrated his attention on the stifle joint. He described upward fixation of the patella and stated it was mentioned in many of the old text books where it was called dislocation of the patella. In fact it was not really a dislocation but a hooking of the medial patella ligament over the femoral trochlear and so it was a physiological fault. It was particularly seen in thin cattle, hence its reference in old text books and also to it being common in Asia. The condition is mostly towards the end of gestation and often the animal has shown a stringhalt-type action prior to fixation. Sectioning the medial straight patella ligament corrects the condition. It can be done in the standing position using xylazine. Another condition resulting in rigidity of the hindleg with hock extended and stifle flexed was spastic paresis. Lateral dislocation of the patella was another condition of cattle. Although it had been seen in a few adult cattle it was more commonly diagnosed in calves as a congenital problem. The patella slips and dislocates laterally so no weight can be taken. When examining the patella can be felt to be lateral. The condition is operable but such cattle should not be used for breeding. Internal derangement of the structures in the stifle joint can occur. The structures involved are the cruciate ligaments, the menisci and the meniscial ligaments. Lameness is of sudden onset in the adult and is particularly common in bulls. It occurs following rotation of the stifle when bearing weight on the limb and can occur in bulls following service. In a few days there is complete destruction of the joint so that when examined post mortem it is usually impossible to know what structures were involved first. The condition is often hard to diagnose but flexing of the stifle produces crepitus but often hard to locate the site. The use of local anaesthetic into the joint can be helpful as the lameness will show some improvement. In addition the tibia can be pushed forward when the animal is cast. Peroneal paralysis is often the consequence of recumbency, particularly in milk fever. It is the result of pressure on the peroneal nerve at the level of the fibula head.

Mr. Barrie Edwards then dealt with foot lameness. There was often infection of the interdigital cleft, wall of hoof or in the sole. Once infection was in the foot what was important was to know the structures involved. The area of the navicular bursa, joint capsule and insertion of the deep flexor tendon was very important. If infection reaches one it is liable to affect them all. The condition of the middle area of the foot was important, namely ulceration of the sole (medial aspect) and separation of the white line (lateral aspect). Sole ulceration is very common in the West of Britain and was very painful. It began as direct or indirect trauma of the sensitive laminae and later resulted in ulceration. When the horn is removed exudate is revealed and granulation tissue. All underrun horn should be incised and granulation tissue removed. If the lesion is not treated then the navicular bursa and flexor tendon may be involved. About 50 percent of cases occur in the first two months after housing. White line separation involves the lateral aspect of the foot and was a separation of the wall of the hoof. There is then a triangular space for infection to gain access. Treatment is to incise underrun horn. Often the condition is a herd problem, and is often seen in wet conditions. Husbandry and feeding are important. Often laminitis in cattle is not taken sufficient note of, chronic or sub-acute laminitis occurs and can be seen in some animals as several layers of horn. Hoof deformities can be of an inherited nature, particularly disparity in size of the claws. A crossed claw may be seen and this is associated with increased vascularity in the claw. This results in discomfort and in many cases considerable pain.

And so with feet firmly on the ground again the conference on practical ruminant surgery and anaesthesia came to a close.

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The Richard-Götze Clinic for Cattle Diseases, Hannover Veterinary School

Prof. Dr. M. Stöber
Hannover, Republic of West Germany

(English translation by Mrs. Laverne Jones, Oklahoma State University Library and Prof. Dr. Stober.)

Introduction

The present Clinic for Diseases of Cattle was organized in 1953 as one of three scientific-didactic and administrative units from the Clinic for Obstetrics and Cattle Diseases founded in 1925/26 by Prof. Dr. Dr. h.c. Richard Götze, and which he so excellently directed for almost three decades. Through its consequent practice-related orientation to the most important species of domestic animal, i.e., the bovine, it initiated the orientation of other Hannover veterinary clinics towards "species-specialization." (Today there is a special clinic for each animal species–horses, cattle, pigs and small animal ruminants, dogs and cats, poultry, fish.) The mission of the "Cattle Clinic" embraces, with the exception of the diseases of the sexual organs and the udder, all diseases of the domestic ruminant, namely: sporadic organic diseases, infectious diseases, parasitoses, metabolic disturbances, deficiency diseases, poisonings, malformations and hereditary diseases. Since it became independent, the Clinic for Diseases of Cattle has been under the guidance of Prof. Dr. Dr. h.c.mult. Gustav Rosenberger for 25 years. For a more thorough discussion of this era it should be borne in mind that there is further historical data on the Clinic for Diseases of Cattle in the commemorative

publication of the Veterinary School in Hannover from the years 1953 (175th year celebration) and 1963 (XVII World Veterinary Congress) as well as in the Richard Götze memorial papers (1956).

Personnel and Buildings

In addition to the Director, the personnel of the clinic consists of two lecturers, two academic officials (lifetime), eight research assistants, three secretaries, a photographer, six medical technicians, two laboratory technicians, two dairy men, two surgical suite aides, five herdsmen, three drivers, and six research aids (students from the clinical section, employed part time). In addition, a number of both German and foreign pre- and post-graduated guests (hospitants), scholars, and doctorands (young veterinarians occupied with unpaid research work for his DVM thesis), take an active part in the clinical work. Throughout life many of them declare a close affection towards this site and period of veterinary training.

The clinic has at its disposal stables, sterilization and demonstration halls (erected in 1928), as well as a portion of the addition constructed for stables in 1952. Further rooms are located in the Richard-Götze-Building (completed 1952), namely offices, clinical laboratories (for the routine examination of blood, serum, rumen fluids, feces and urine, as well as for investigative analysis of other body fluids), doctorands' laboratories, display room, library, storage area for instruments and medicine, workroom for the research assistants, sterilization and srugery areas, and, in addition, three much used large rooms (lecture, demonstration, and exercise halls) held in common with other institutions of the veterinary school. The collection includes bovine instruments, restraint, equipment, a great number of preparations (preserved organs showing pathognostic changes, parasite stages, various poisons and poisonous plants, etc.), 90 large wall charts (anatomical diagrams, classification tables, differential diagnostic tables), 93 black/white or colored teaching films, and in addition countless slides. These teaching aids are indispensable both in modern clinical instruction and for the continuing education of the practicing veterinarian. The clinical library is an essential prerequisite for scientific study and the framework for the edition of own clinical textbooks. It contains 1500 medical and veterinary medical books and periodicals as well as an extensive, etiologically organized, currently held literature index (over 500 key words). Among the large apparatus of the clinic worthy of mention are the x-ray machines, an electronic installation for the recording and reproduction of ausculatory findings (heart, lung, rumen, abomasum and intestinal sounds) as well as an atom absorption spectrometer.

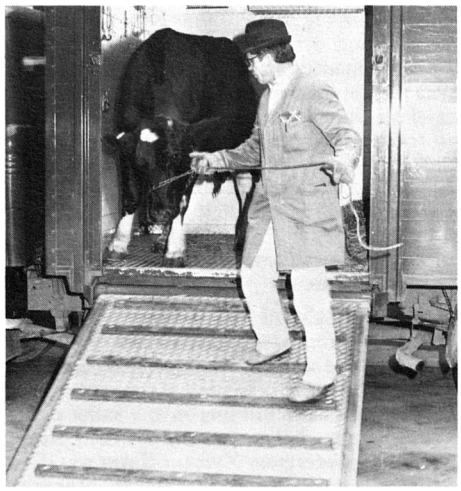
Operation of the Clinic

The clinical in-patient area can hold a total of 90 patients (calves, yearlings, adult cattle) and experimental animals, though often in the winter

months (which bring more cattle problems and thus more work) there is barely enough space. The animals are brought to the clinic by the owner or by the clinic's own trucks after a phone call or notification by letter to the clinic veterinarian, and they remain there as long as is necessary for examination and treatment. Economic considerations also naturally play a role; protracted and costly therapeutic measures (aside from the cases of specific scientific interest for the benefit of the owner) are mostly unprofitable with domestic animals, which cattle can be slaughtered for food. Often it is the wish for a clear decision in diagnosis and for prognosis of further treatment, which causes the owner to bring the sick animal to the Cattle Clinic.

The extensive patient supply is the result of a situation of confidence, built up over many years between the animal owner, the clinic personnel, and the "around the clock" ready-to-serve organization of the clinic available nights and holidays for urgent cases which require immediate examination and treatment (including emergency operations). This requires equally the special personal commitment of the clinic staff and adequate financial assistance of the state.

Approximately 3000 animals of all ages are treated in the Clinic for Cattle Diseases each year, about half of which are surgical cases, particularly those suffering from lameness (especially the foot), while the remainder suffer from internal diseases. The methods of treatment employed, which vary from case to case, fall into three categories: medical, nutritional, or surgical. Each year about 400 abdominal operations are carried out (ruminotomies to remove foreign bodies or spoiled rumen contents, laparatomy for reposition of the displaced abomasum or caecum, as well as enterectomy). As many of the patients suffer also from an affection of the sex organs or udder, they will for these be taken care of traditionally by the two sister clinics (Clinic for Obstetrics and Gynecology of Cattle, and the Institute for Andrology and Artificial Insemination of Domestic Animals). A high patient



number is the preliminary condition for a varied referral clinical instruction course and thus the chief attraction of the Hannover Clinic for Diseases of Cattle for students as well as postgraduate veterinarians. For many research purposes, an adequate patient supply is equally necessary; that is true as much for the demonstration of "new" diseases as for the testing of modern drugs. Only thus is it possible to accomplish that portion of scientific research. In specifically designated cases (stock problems, environmental damage, forensic expert opinion) the research assistants of the Clinic for Diseases of Cattle will also be active outside the clinic area. Thus they come in contact with actual problems,and retain a feeling for the daily routine of the practitioners.

A further task of the clinic is to provide veterinary services for the cattle stock at the college's own teaching farm, Ruthe.

Instruction

By tradition, the clinical instruction in the diagnosis, differentiation, interpretation, treatment and prevention of cattle diseases at the Hannover Clinic has always included not only the students in the clinical semester but also the professionally practicing veterinarian. The basic training of veterinary students comprises, according to the study plan, the following obligatory teaching preparation:

Semiology in cattle (instruction/1 hour per week/first half of the third year): Introduction and familiarization with the cow (mechanical and drug restraint), symptomatology of the organic systems, technics of drug application.

Cattle diseases (lecture/3 hours per week/third year): Description of the most important diseases of large animals in organological arrangement, with the aid of slides and teaching films.

Clinical demonstraton (instruction/10 hours per week/third, fourth and fifth year): The conversational exchange between professor and student with the resulting concepts, makes up the midpoint of clinical teaching, "departing" from the rest of the teaching preparation of the clinic. As the number of available cattel allows, each student has at least one and usually more patients per term for examination and supervision during the course of the disease, as well as the basis of their assigned written report. Furthermore, it makes it possible for each student group or "Quota" (which, at this time, includes about 65 students) to have a two-hour-long presentation every day (in summer for 14 days, in winter for three weeks) without repetition of the cattle diseases and problems shown to them.

Diagnostic-therapeutic instruction (instruction/2 hours per week/second half of the fifth year): Practical instruction in the most important methods of treatment.

Examinations are taken after the third student year (preliminary instruction) and after the fifth student year (internal medicine and surgery), and the examination system of the Hannover University warrants that each student is tested on his knowledge in the diseases of all kinds of domestic animals, including cattle.

The postgraduate training of practicing veterinarians is based on courses within the clinic (lectures, surgical instruction)* and outside the university (contributions to congresses, conventions or locally organized veterinary meetings).** These meetings are usually widely announced in the professional journals and are also eagerly attended, since these individuals are participants in the professional "Academy for Continuing Veterinary Education." The themes are often practical problems and the results of the latest research.

For the veterinarian active in cattle practice, the attractice specialization towards a "veterinarian specialized in cattle" provides, among other things, a two-year internship in those clinics and institutions, which deal with the diagnosis, therapy and prophylaxis of cattle diseases (including obstetrics, gynecology, andrology and artificial insemination).

Over many years an average of one course per year.

**Over many years an average of about 10 contributions per year.*

This has lead to the custom that the assistants of such clinics are recruited in increasing numbers from candidates for this professional specialization.

Research

The on-going research projects of the Hannover Clinic for Diseases of Cattle are mostly practice-oriented, that is, drawn from the daily problems of the practicing veterinarians in the area and therefore agriculturally related. This may result in a few specific commissions (for example, the testing of newly developed drugs at the request of pharmaceutical firms) but requires that most of the support come from the state and other means. Some of the countless disease and other cattle related questions, which in the course of the past 25 years have been considered for scientific treatment, seem worthy of mention:

Sporadic or organic diseases

Esophogeal obstruction: Introduction of neuroleptics to facilitate the instrumental removal of the obstructing object.

Traumatic reticuloperitonitis: ("Foreign body disease"): refining diagnostics through palpation of the trachea during the "pain test"; simplification of surgical techniques (extraperitoneal manupialization of the rumen without assistance); introduction of the cage magnet as an effective preventive of "hardware disease"; clarification of the pathogenesis, symptomatology, treatment and prognosis of foreign body related complications (intraperitoneal abscess development, functional stomach stenosis, reticular diaphragmatic eventration).

Syndrome of abomasal-preventricular reflux: Pathogenetic-symptomatologic casuistics, introduction of chloride determination in rumen contents as a diagnostic aid.

Abomasal displacement (left and right sided): Etiologic-pathogenetic research, diagnosis, development of a surgical treatment (Omentopexia destra).

Small intestine intussusception: Introduction of intestinal resection in clinic and practice.

Dilation and displacement of the caecum: Diagnosis, conservative and surgical therapy.

Hepatic disease: Improvement of laboratory diagnosis; pathogenesis, symptomatology and treatment of biliary colic; identification of the relationship between the obstructed main bile duct and photosensitization ("sunburn").

Renal diseases: Introduction of clinical and laboratory differential diagnosis (glomerulonephritis, pyelonephritis, amyloidotic nephrosis).

Pyogenic thrombosis of the posterior vena cava: Clarification of the pathogenesis and symptomatology of the disease (thus far recognized predominantly at the dissection table) as well as its complications (suppurative-metastasizing bronchopneumonia, hemorrhage of the lungs, ascites, diarrhea, hemolytic anemia).

Joint and tendon-sheath diseases: Diagnosis from the synovia; intrasynovial treatment.

Claw diseases: Development of practice-oriented surgical procedures (amputation of the digit, flexor tendon and sesamoid bone resection).

Larynx ulceration, granulomas and tumors: Development of surgical methods of treatment.

In response to certain of the modern management-related problems, *dehorning methods for cattle of all ages* (to prevent contact injury) as well as a simple technique of *sterilization for feeder bulls* (resection and ligation of the tail of the epididymis to prevent pregnancy in female cattle running in the same pasture). These procedures soon became daily surgery in the field. As a worthwhile aid for the practicing veterinary Xylazin-Bayer was discovered - an agent, which as a "chemical restraint jacket" makes the employment of mechanical restraint methods almost unnecessary.

Infectious diseases

Leukosis: Explanation on the nature of enzootic lymphatic leukosis as a diaplacental, colostrum or contact transmitted disease and the evolution of the first leukosis-key (differentiated white blood count) as a basis of governmental disease control methods; extensive causistics of the clinical picture; cytochemical analysis of leukocytic lymphocytes; first description of bovine mast cell reticulosis.

Papillomatosis: Identification of the infectious nature and the later immunity after overcoming the disease; vaccination research.

Tricophytosis: Methods of medical treatment.

Viral diarrhea-mucosal disease, infectous bovine rhinotracheitis and infectious septicemic thrombo-meningoencephalomyelitis: First description of the appearance of these diseases in the Federal Republic of Germany, their clinical pictures and the differential diagnosis.

Klebsiella infection: Pathogenic research.

Brucellosis (epidemic abortion): Discovery of the therapeutic effectiveness of Pecudin-Bayer.

Parasites

Warble fly larvae infection: Detection of the systemic effect of phosphoric acidesters on the grubs, on which the later governmental control of bot flies was founded.

Gastrointestinal worms, lung worms and liver fluke infestation: Testing of the latest anthelmintics on clinic patients and under field conditions.

Stephanofilariasis: Clarification of the etiology of "summer wounds"; therapy with phosphoric acidesters.

Eye worm infestation: First description of the appearance of Thelazia in northwest Germany.

Metabolic disturbances and deficiency diseases

Amaurosis of young calves: Establishment of the causative deficiency of vitamin A (β-carotin).

Grass tetany: Clarification of etio-pathogenic relationships, particularly the effect of feeding; introduction of magnesium gluconate as a therapeutic measure.

Acetonemia: Differentiation of primary and secondary ketosis; scope of the occurrence of sporadic acetonuria; testing of appropriate drugs.

Poisonings

Fluorides: Control of the clinical symptoms in relation to the intensity and duration of the fluoride exposure; determintion of the toxic levels.

Alimentary hemoglobinuria: Determination of the hemolytic effect of an excessive feeding with marrow kale and other types of cabbage.

Enzootic vesicular hematuria: Experimental demonstration of the cause (continuous ingestion of bracken fern [Pteris aquilina]) thus enabling to control the disease.

Rumen acidosis: First description of the clinical picture together with pathogenic and therapeutic research in Germany.

Alopecia in nursing calves: Identification of the cause (milk substituents containing whale-oil).

Petroleum oil: Check of the toxicity occasioned by leakage of crude petroleum pipelines contaminating the pasture.

Lead poisoning: Contribution to the clinical picture, introduction of calcium EDTA as a therapeutic measure.

Acorn poisoning: First description of the disease in Germany, broadening of the information about clinical and laboratory findings.

Genetic defects

Congenital corneal opacity: Description of the lesions; demonstration of the heritability and the mode of inheritance (simple-recessive, autosomal).

Parakeratosis: (lethal factor A_{46}): First description in Germany, diagnosis of the disorder as a genetic condition (zinc malabsorption syndrome) development of a treatment by continuous oral dosing with zinc.

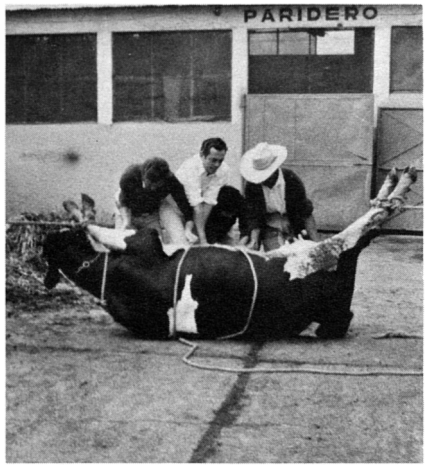
The above described research work has led to the publication of 310 scientific articles (in veterinary journals), 248 dissertations, and 3 original research theses. This many-faceted knowledge has not only found recognition and practical application in veterinary practice, but is also continually used in clinical instruction. Textbooks have been published in cooperation with both past and present lecturers of the clinic, as well as those of the associated institutions of the Richard-Götze-Buildings (Clinic for Obstetrics and Gynecology of Cattle, and the Institute for Andrology and Artificial Insemination of Domestic Animals): **Clinical Examination of Cattle** (1st edition 1964, 2nd edition 1977) and **Diseases of Cattle** (1970) have found worldwide recognition and have been, or will be, translated into Italian, Spanish, Polish, Japanese and French.

Outlook

In closing, one can therefore point out that the maintenance of a clinic "operation" of the nature and dimension of that described above demands an aware inner-organized administration. The aim of its administration has always been defined within this concept to make the didactic-scientific forces of the clinic as strong and "versatile" as possible. During the period of this report, three assistants have qualified as academic lecturers in the Clinic for Diseases of Cattle, namely Gerrit Dirksen 1961, Matthaeus Stöber 1965, and Hans-Dieter Gründer 1970. Of these, M. Stöber was offered a position in Giessen in 1969, but remained nevertheless as department head at his "old" clinic in Hannover. G. Dirksen and H.-D. Gründer respectively followed honorable callings towards Giessen and Munich (1970, 1973) and Giessen (1975). There, they took charge of a department with attached clinic for internal medicine (with special emphasis on the large ruminants). This development, as well as the reaction of the veterinarians of both Germany and other countries to the previously mentioned textbooks about examination and diseases of cattle, point out how correct Götze's ideas were in regard to the division of the veterinary medicine university clinic by species of animals, as well as practice oriented development, present and continuing education, and the scientific basis of actual professional problems, and still are. The Hannover Clinic for Cattle Diseases will continue to work hard in order to preserve and augment this inheritance.

A milestone in the development shown, initiated by this clinic, was the successful founding of the World Association of Buiatrics in Vienna in 1962, which has grown to include 1000 individual members from 46 countries and nine national associations, and representatives from related professions, who are concerned with the diagnosis, treatment, prevention and control of disease of the large ruminants. Traditionally well attended congresses are held by this Association every two years in other countries, and it is an associate member of the World Veterinary Association.

Note: "Buiatrics" means "the study of cattle diseases."



Veterinarians never miss an opportunity to be where the action is. This cow is being rolled to try to correct torsion of the uterus