The History of the Institute of Chemistry

Authors: Alfons Schöberl, Gerhard G. Habermehl and Waldemar Ternes

In the annual reports of the royal Roßarzneischule chemistry lessons were already mentioned in the year 1802, and the fact that they were taught at the former location of the School of Veterinary Medicine at Clewer Tor. At first, chemistry was taught at the Hannoverian universities at the School of Veterinary Medicine (at that time called Roßarzneischule or Vieharzneischule).

In his book Historisch-topographisch-statistische Beschreibung der königlichen Hannover (Historical topographical statistical description of the royal court of Hannover) Hahn’sche Hof-Buchhandlung, Hannover, 1819, page 278, B. C. v. Spichler describes lessons at the Vieharzneischule as follows:

In einem Lehrjahre von Michaelis zu Michaelis werden vorgetragen: die Kenntniß des äußeren Pferdes in Beziehung aus dessen Gesundheit und Tüchtigkeit zu verschiedenen Diensten; die Lehre von dem Bau der Füße der Pferde, sowohl im gesunden, als krankhaften Zustande und dem hiernach einzurichtenden Beschlag; Naturlehre, Chemie und Botanik; Geburthilfe und Anatomie mit Physiologie verbunden. (In a teaching year from Michaelmas to Michaelmas the following is lectured: knowledge of the exterior of a horse in relation to its health and proficiency in various services; teaching of the construction of the horse’s foot, not only in a healthy but also in an abnormal condition and the hereafter fitted shoe; physics, chemistry and botany; obstetrics and anatomy in conjunction with physiology.)

The first teacher whose existence is verifiable and who co-supervised the subject chemistry was Ulrich Friedrich HAUSMANN, born in 1776. Already in the year 1794 (at the age of 18) he joined the Roßarzneischule in Hannover as a scholar. Hausmann went to Berlin to undertake studies at the Veterinary School there. At the University of Berlin he also attended physics and chemistry lectures. In 1798 he completed his studies in Berlin and accepted a post as veterinarian at the royal court in Weimar. At the end of 1801, Hausmann was appointed teacher in Hannover, and in 1802 he went to Göttingen for six months, among other things to attend lectures in chemistry. Hausmann took up a teaching post in chemistry in Hannover, but in 1803, when the French Army occupied Hannover, Hausmann escaped to England.

After the end of the French occupation, Hausmann returned to the Königliche Tierarzneischule (Royal School of Animal Medicine) (TAS, as it was now called) in Hannover and, among other things, he took up teaching chemistry again. Friedrich GÜNTHER (born in 1793), pupil at the TAS from 1816 to 1818, is also mentioned as a teacher. In Easter 1820 he took up his teaching post, teaching chemistry along with anatomy and botany. In 1847, his son Karl GÜNTHER took over teaching chemistry in addition to other subjects.

Until this time, chemistry teachers had been veterinarians, who prepared themselves for teaching this subject by studying at other universities. However, in the winter semester 1848/49 the pharmacist Carl BEGEMANN (born in 1815) took up a teaching post for physics, natural history and pharmacology. In Göttingen, where Begemann had studied pharmacy (1841/42), he had attended lectures given by the brilliant chemist Wöhler. Begemann was appointed professor in 1876. The advancement of pharmacy was his own merit which, from 1853 onwards, he undertook on his own account. In January 1871, organic chemistry was introduced as a new subject. From the beginning of the winter semester 1875/76 the physics and chemistry lectures were relocated to the Technical School and Begemann gave a course of lectures in medical chemistry.

Friedrich HEEREN (1803-1885), who graduated as a Dr. Phil. in Göttingen, took over teaching chemistry for veterinarians at the Technical School. Since 1831 Heeren had been the second teacher of the technological-chemical subject at the Technical School. His subjects included physics and mineralogy (until 1853), practical chemistry (until 1858, i.e. working in the laboratory and analytical chemistry), theoretical chemistry (1840 until 1876, i.e. inorganic, organic and technical chemistry (since 1853)). However, already in the winter semester 1878/79 chemistry was relocated to the TAS and was assigned to Begemann again.

Chemistry teaching at the TiHo (School of Veterinary Medicine) mirrors the chemistry education in Germany at that time. At the beginning of the 19th century, famous chemists gave chemistry lectures, but they did not teach by way of experiments. In the year 1824, J. v. Liebig founded the first German Chemical Research and Teaching Institute in Gießen, in a military guardhouse inside the barracks. Before that, Döbereiner had fitted out a chemical teaching laboratory in Jena with the help of Goethe, but this news did not reach J. v. Liebig. In the summer vacation of 1876, Begemann visited Berlin, Leipzig, Halle and Göttingen in order to have a look at the institutes of chemistry and labs there, as he had been given the task of setting up such an institute at the TAS. Michaelmas 1879 the new institute of chemistry was completed, so that the School of Veterinary Medicine followed this development.
Carl ARNOLD, born on 12th March 1853 in Uffenheim as the son of a Bavarian pharmacist at court, took up his work at our School in 1880. With C. Arnold a new era began, as for the first time a lecturer almost only represented the field of chemistry in view of research and teaching therefore holding the first chemistry chair. From the 1st of May 1880 onwards he was in charge of chemistry exercises and became chemistry and physics tutor. From 1918 onwards, tutors became assistants. Arnold had completed a pharmaceutical education, and in 1877 he passed the teaching examination for scientists. C. Arnold was assistant under the famous Professor of Hygiene, Max v. Pettenkofer, as well as Lothar Julius Meyer, co-founder of the periodic system. He did his doctoral thesis under the Old Master of inorganic and physical chemistry in Heidelberg, Robert WilheIm v. Bunsen. First, Arnold became chemistry and physics tutor and leader of the chemical laboratory. In December 1883, when Begemann fell ill, Arnold took over the chemistry courses. In 1885, after Begemann’s death, he was appointed lecturer in chemistry, pharmacy and pharmacognosy, and he managed the university pharmacy. During this time, Arnold worked on a plan for new chemical labs and a new auditorium. In the winter semester 1899, he put this new building into operation at the Bischofsholer Damm. From 1889, he had been director of the Institute of Chemistry as sole chemistry lecturer.

From the scientific point of view he worked on determining chlorides, sugar, urea, uric acid, alkaloids and phosphates under physiological conditions. Furthermore, the main emphasis of his work was on disinfectants such as hydrogen peroxide, formalin, ozone, creole soaps and lysol. He developed determination methods in order to characterise those substances in name-brand medication. His scientific work was completed by studies on milk and food ingredients and tests on air hygiene in stables. For a long time, the Repetitorium der Chemie (Chemistry Revision Course) was a standard work for vets, medics and pharmacists. It was reprinted sixteen times and came out in its last edition in 1923. His book Anleitung zur qualitativen, chemischen Analyse anorganischer und organischer Körper sowie zur toxikologisch-chemischen und medizinisch-chemischen Analyse (Instruction Manual on Qualitative, Chemical Analysis of Inorganic and Organic Bodies as well as on Toxicological-Chemical and Medical-Chemical Analysis) was reprinted five times. Pharmacognosie, pharmazeutisch-chemische Präparate und Rezeptierkunde (Pharmacognosis, Pharmaceutical-Chemical Substances and the Science of Prescribing) was reprinted three times. Together with Prof. Tereg (Professor of Physiology), C. Arnold published a more extensive work in three volumes, the Tierärztliche Arzneibuch für Studierende und praktische Tierärzte (Veterinary Medicinal Book for Students and Practising Veterinarians). First, C. Arnold solely represented several scientific fields, from which various existing institutes derive today of the University of Veterinary Medicine. When the rectorship was introduced, C. Arnold was elected first Vice-Chancellor of the School of Veterinary Medicine, but in view of his advanced age and other demands he did not accept the election, so that Malkmas (1913 - 1915) took up the first Vice-Chancellorship. From 30th May 1915 to 1st August 1915 Arnold replaced Vice-Chancellor Malkmas, who was called up for military service. On 24th June 1929, C. Arnold died.

In the year 1921, Peter-Walter DANCKWORTT was offered a chair at the Institute of Chemistry at the School of Veterinary Medicine (official term since 1887). In the same year he was appointed Professor of Pharmaceutical Chemistry at the University of Greifswald. In 1906, P.-W. Danckwört, food chemist and pharmacist, completed his Dr. Phil. as a student of the Privy Councillor Ernst Beckmann, director of the Kaiser-Wilhelm Institute in Berlin. In 1912 he qualified as a university lecturer for Pharmaceutical and Food Chemistry at the University of Breslau near Gadarmer. Due to his colleagues’ confidence in him and enjoying a good reputation, he was appointed Vice-Chancellor of the School of Veterinary Medicine in 1930. From 1931 onwards he took over the duties of an Honorary Professor for Food Chemistry and Toxicology at the former Technical University of Hannover.

P.-W. Danckwört’s scientific work dealt with problems of pharmaceutical chemistry, food science and toxicology and he proved himself to be a master of the analytical research method of luminescence analysis. In 1928 as pioneer he extended the use of ultraviolet radiation in food examinations to the use of fluorescence reactions. In investigating and elucidating animal poisoning, P.-W. Danckwört gained deep respect for his many achievements far beyond Hannover. He was co-author of the Handbuch für Lebensmittelchemie (Manual on Food Chemistry) (1933). His book Lumineszenz-Analyse im filtrierten Licht (Luminescence Analysis in Filtered Light) came out in 1964 in its seventh edition. Forever, this field of work will be associated with his name. Only in 1950, at the age of 74, did he hand over the responsibility for the chair and the institute.

In the winter semester 1950/51, Alfonso SCHÖBERL, student of the Privy Councillor Otto Dimroth, took over the directorship of the institute and the chair of chemistry. In 1934, Schöberl qualified as a university lecturer at the University of Würzburg. At the Technical University of Hannover he held an honorary chair of Physiological Chemistry. Due to his tireless commitment for the university and appreciation on the part of his colleagues he was appointed rector in 1962. A main field of A. Schöberl’s work was the chemistry of sulphur
compounds, proteins and enzymes. He especially directed his attention to sulphurous amino acids. While his predecessors were mainly involved in chemical analytical research, Schöberl`s main emphasis was put on synthesis. The development of the anaesthetic Rompun can be attributed to his scientific work. He can also be called one of the fathers of the cold perm. Papers on the dyeing of sheep`s wool, preparation of paracasein and its usability for the production of protein fibres are examples of research with raw materials from animals. Papers on lead poisoning in animals and the localisation of this element in animal organs and tissue were carried out in his last creative decade. In 1971, at the end of the summer semester, Schöberl completed his full-time office as a university lecturer.

Peter DECKER was born on 19 April 1916 in Jalta (Crimea) as the son of an ethnic German chemist. He studied chemistry in Jena (1925-1939) and Munich (1940) and in 1942 he did a doctor`s degree on pteridines at H. Wieland. From 1943 to 1955 he worked at the Second Clinic for Internal Medicine at the University of Munich. From the 1st of July 1955 he worked under Prof. Hill at the Institute of Physiology of the School of Veterinary Medicine in Hanover as Academic Senior Councillor. After Prof. v. Engelhardt took up the physiology professorship he was posted to the Institute of Chemistry to set up chemistry teaching for qualified biologists. From 1966 until his retirement in 1981, Decker worked at the Institute of Chemistry.

Decker was a scientist with a lot of ideas ahead of their time. He was one of the first to conceive the genesis of life on earth by means of the primeval soup. In 1974, he received the Bavarian Scientific Academy prize for his work on the Evolution of Open Systems. There is a whole series of publications concentrating on the forming of carbohydrates from formaldehyde on physiological conditions. Further research topics were the chromatographic separation method, in particular paper chromatographical analysis and the analysis of aromatic and heterocyclic urea contents. In 1960 he succeeded in detecting the ruminohepatic nitrogen cycle. He seasoned his lectures to biologists with some interesting anecdotes. On May 17th 1983, P. Decker died at the age of 68.

Similar to P. Decker, H. RÜSSEL was appointed lecturer and professor. Two further professors with their own fields of work were added to the existing chair of chemistry, both in the Schöberl era.

Harald Rüssel was born on 28th September 1928 in Leipzig, and from 1949 to 1952 studied chemistry at the University of Göttingen. From 1952 to 1955 he carried out his undergraduate dissertation and chemistry doctorate thesis at the Technical University of Stuttgart. For three years he worked at Griesheim AG as a research chemist and from 1958 to 1962 he joined the Federal Institute of Soil Research in Hannover. In 1963 he started working at the Institute of Chemistry of the School of Veterinary Medicine. First he became assistant, then member of the tenured research staff, academic senior councillor, scientific councillor and Professor as well as University Professor.

Harald Rüssel dealt with problems on elementary analysis, analysis by residue and environmental analysis in the matrix of animals. With a paper on lead analysis and the storage of lead in the liver he qualified as a university lecturer of analytical toxicology. Papers on the gas chromatographic analysis of arsen, fluorides, insecticides and p. biphenyls (PCB`s) followed, showing the wide range of Rüssel`s analytical work. With regard to analytical work he put the main emphasis on high performance liquid chromatography with electrochemical detection (sulphonamide, amitrol etc.), which was early established in his research centre. As a principal work Rückstandsanalytik von Wirkstoffen in tierischen Proben ("Residue Analysis of Substances in Animal Samples") (Georg Thieme Verlag, Stuttgart, 1985) can be mentioned. On 1st of October 1993, Rüssel went into retirement.

During the study of veterinary medicine in the 1970s, chemistry played a very important role in the first two semesters. The intention was to establish a scientific chemical basis, in order to make this basis a precondition for a better understanding of affiliated subjects such as biochemistry, physiology, clinical chemistry, pharmacology, toxicology, food science, as well as other multifaceted clinical disciplines. With this aim in mind, a five-hour chemistry lecture was given during two semesters adjusted as much as possible to practical training. From the veterinarian point of view, theoretical aspects in chemistry lectures were treated as practically as possible with selected examples.

In 1972, A. Schöberl`s successor, Gunther SEITZ, was offered a chair at the School of Veterinary Medicine, and he accepted in October 1972. He was born on 8th March 1936 in Hamburg as the son of an old-established pharmacist family. He graduated with a doctorate at H. Böhme (University of Marburg) in 1965. In 1968 he qualified as a university lecturer in pharmaceutical chemistry and in 1970 was appointed lecturer and professor at the Philipps University of Marburg. During the summer semester 1977, G. Seitz was offered a chair of pharmaceutical chemistry at the Philipps University, and he accepted in October 1977, succeeding his teacher Prof. Dr. h. c. mult. H. Böhme. There he is involved successfully in research and teaching. In 1993 he came first in a nationwide competition for a lecture assessment in pharmacies Prüf den Prof.
scientific work is to widen the methods of the synthetic pharmaceutical chemistry, in order to make them successfully usable for the production of modern drugs with improved pharmacodynamics and pharmacokinetism. His most important early papers on non-benzoic aroma can be summarised as follows: hetero sequi fulvalenes; pseudo-azulene; o xo and pseudo o xo carbon compounds. He succeeded in the latter field, and he felt a sense of satisfaction at this success as he is a great enthusiast of symmetrical molecules, especially of the synthesis of tetrathioquadratat. (chem. Ber. 1976, 109, 2208).

When G. Seitz left the Institute of Chemistry, a longer term interregnum period began, due to the necessity of revising fundamental structural conditions in order to improve health protection. During these years, Rüssel and Decker took over the chemistry teaching for veterinarians. In this time biology was established as a qualified course of studies, and chemistry lectures for biologists were also given at the School of Veterinary Medicine.

Gerhard HABERMELH, born on 19th February 1931 in Seligenstadt, was offered a chair of chemistry at the School of Veterinary Medicine in 1980; since 1970 he had held a chair in organic chemistry at the Technological University at Darmstadt. G. Habermehl did a doctorate degree in salamander alcaloids as a student of Clemens Schöpf qualifying as a university lecturer with a thesis on x-ray structure analysis. He worked on salamander and frog toxins, steroids and saponines of starfish and sea cucumber, pigments of bacteria etc., of which the structural analysis was elaborated for the first time. Apart from natural products from the animal kingdom, plant toxins represented a further main topic. The plant toxins were tested and structural analyses of the toxins were carried out. Numerous syntheses of natural products were added to the analytical tests. Important combinations, which will always be associated with Habermehl’s name are, for example pumilotoxin-C, samandaridine, holothurinogenin, spatulenol and myotoxins. By means of four books, Habermehl has reached a large target group far beyond the university. In 1973 the book Röntgenstrukturanalyse organischer Verbindungen ( X-ray Structure Analysis of Organic Connections ) was published. The books Gif-Tiere und ihre Waffen ( Venomous Animals and Their Toxins ), as well as Mitteleuropäische Giftpflanzen und ihre Wirkstoffe ( Central European Poisonous Plants and Their Active Agents ) have been reprinted several times. Venomous Animals and Their Toxins was published world-wide. In 1992, Naturstoffchemie ( Natural Materials Chemistry ) came out as a textbook, which was also directed at chemists, biologists and pharmacists. Prof. Habermehl was a honorary Member of the Japanese Pharmaceutical Society and was furthermore a representative on the Editorial Board of TOXICOIN. In spring 1996, Habermehl ended his career as an active university lecturer. On August 30th 2010, he died aged 79.

Carl ARNOLD, Peter-Walter DANCKWORT, Alfons SCHÖBERL and Gerhard HABERMELH are four excellent creative characters, who assumed responsibility for many years and who structured and adapted teaching for a total of 116 years to further progress. Since July 1985, the field of work endocrinology has been represented by Hans Otto HOPPEN, who succeeded P. Decker. Since 1996 Prof. Dr. Hoppen has acted as Director of the Department for Analytical Chemistry and Endocrinology. After completing his chemistry studies, which he started in 1961 in Bonn, completing his degree in chemistry in 1967, Prof. Dr. Hoppen began his dissertation on the estrogen metabolism under Prof. H. Breuer in Bonn. After a period of research work at the Endocrinological Department of the Medical School of Lübeck, he spent a year doing further research work at the University of Melbourne (Australia), where he contributed his knowledge on reproduction to the Department of Physiology. In 1979 Prof. Hoppen habilitated on the subject of clinical biochemistry and was appointed private lecturer. Finally, from 1980 until 1983, he acted as head of the research group on breast cancer at the Max-Planck-Institute for Experimental Endocrinology in Hannover before working at the Department for Obstetrics und Gynaecology at the Monash University in Melbourne (Australia). There he worked on a project concerning the endocrinology of human in-vitro-fertilisation. In his function as the director of the Department of Analytical Chemistry and Endocrinology, Prof. Hoppen has recently researched into receptor mechanisms in reproductive endocrinology, endocrinologically determined dermatosis as well as immunopathological endocrinological disorders. Further subjects of his research group include the interaction of the hormonal systems of reproduction with hormones of the metabolism, and the diagnosis of endocrinological diseases. After the winter semester 2006/07, Prof. Hoppen ended his career as university lecturer. In September 1994, Waldemar TERNES succeeded to H. A. Rüssel’s position and took over the analytical chemistry field of work in the Zentrum für Lebensmittelwissenschaften (Centre for Food Science). After Prof. Dr. Ternes completed his training as cook and chef, he began studying food technology at the University of Hamburg. While studying, he taught food technology at various colleges of hotel management. He then obtained a doctorate in analytical chemistry at the University of Hannover. At the University of Bremen and several universities and research societies in Brasil, he worked as an associate lecturer and contributed to various research projects. For several years he held the position as head of department at the Institute of Food Sciences at the University of Hannover, where he also started to work towards his habilitation on the subject of food Sciences. In 1991 he accepted the chair in Food Chemistry at the Lippe College in Lemgo. As Professor for Analytical Chemistry at the Insitute for Food Toxicology and Analytical Chemistry, his work focused on two areas: animal matrize analysis was the first, and the second was the functional properties of food components. On the subject of residue analysis, the accumulation and metabolism of halogenorganic compounds (polychlorinated biphenyles, toxaphenes, polbrominated diphenyl ether) and heavy metals were investigated, as well as animal poisoning by rodenticides, herbicides and heavy metals. On the second subject, his study group is involved in the analytics and structural analysis of natural food contents (seasoning, vitamins, egg yolk proteins, lipids and aromas) with functional properties. The metabolism of these food components in the body and its cells is investigated. Furthermore, the relationship between the food components and the quality of the meat is assessed. At the moment, the main focus of research is on the description of the technological and functional properties of egg yolk proteins after physical treatment, as well as innovations in the vitamin sector. For example, an analytical, tecnological and physiological investigation of the role of vitamin B1 in pork is being performed as well as tocotrienols (vitamin E). Prof. Ternes has published six specialist books and textbooks, including the substantial Lexikon der Lebensmittel und der Lebensmittelchemie ( Lexicon of foods and food chemistry ).
In 2007 with the founding of the Institut für Lebensmitteltoxikologie und Chemische Analytik (Institute for Food Toxicology and Analytical Chemistry), a new entity was formed. International contacts, for example to Brasil, South Africa and Madagascar, Japan and Australia, but also within Europe, to Poland, Finland and Spain, are being cultivated and extended.

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Family portrait of the study group Chemische Analytik (Analytical Chemistry) 2009

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“Family portrait” of the study group Chemische Analytik (Analytical Chemistry)
"Family portrait" of the study group Chemische Analytik (Analytical Chemistry)
2013

"Family portrait" of the study group Chemische Analytik (Analytical Chemistry)
2014

Abschied Prof. Dr. Waldemar Ternes