OBITUARY NOTICES.

RONALD VICTOR GEORGE EWENS.

1913—1948.

DR. RONALD VICTOR GEORGE EWENS met his death in tragic circumstances at the age of 35 on September 21st, 1948. He was educated at Queen Elizabeth's Hospital, Bristol, and went to Oxford as an Open Scholar of Lincoln College in 1932. He was a pupil of Professor N. V. Sidgwick, showed great promise as an undergraduate, and took a First Class in the Honour School of Chemistry in 1936. In the period 1936—38 he carried out an original investigation and presented a thesis entitled " The metallic carbonyls and nitrosyls." This work in which he showed great skill as an experimenter was of outstanding merit and gained for him the D.Phil. degree. For about a year after that he conducted an investigation at the Sir William Dunn School of Pathology, Oxford, into the action of snake venom in the inhibition of fermentation and glycolysis. He then joined the staff of Guy's Hospital Medical School as demonstrator in Chemistry just as the School was evacuated to Tunbridge Wells in 1939 on the outbreak of war. There he was most directly concerned with the teaching of inorganic and physical chemistry. In this he was very successful and the benefits of his wide knowledge were often sought by his colleagues in other departments. He was always generous with his time in this respect. He rendered great service to the school there and on his return to London, and later at the time of reconstruction following the war. In 1948 he had been advanced to the status of Reader.

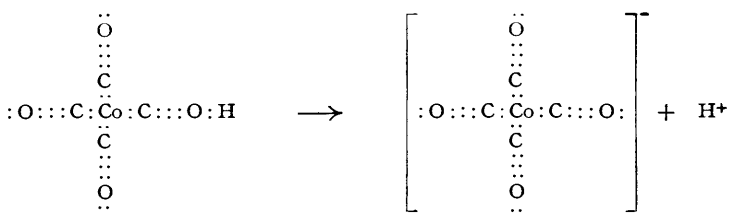
During the war further study of complex compounds of the metals was interrupted, but as soon as possible he returned to it and was energetically engaged with this and other matters. He devoted much attention to reading the MS. of N. V. Sidgwick's book on " The Chemical Elements and their Compounds," and as a result many valuable modifications were made.

Ewens's early published papers arose from his D.Phil. research. In the first of these (with L. O. Brockway and M. W. Lister) on " An Electron Diffraction Investigation of the Hexacarbonyls of Chromium, Molybdenum and Tungsten " (*Trans. Faraday Soc.*, 1938, **34**, 1351), the most probable configuration for the molecules is shown to be that of a regular octahedron and on this basis the metal–carbon distances were determined. They were found to be shorter than an expected set of distances but the shortening was not so great as that found in the carbonyls and nitrosyl carbonyls which have only four groups attached to the metal atom. The interpretation given was that resonance of the type

$$\bar{M}\text{—}C\equiv\overset{+}{O} \qquad\qquad M{=}C{=}O$$

gives a partial double bond character to the metal–carbon link, this effect being less marked the greater the number of bonds round the central atom.

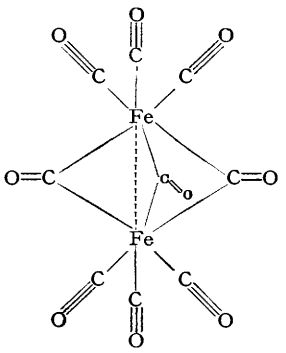
A similar investigation of iron pentacarbonyl, iron carbonyl hydride $Fe(CO)_4H_2$, and cobalt carbonyl hydride $Co(CO)_4H$ showed that the pentacarbonyl had a trigonal bipyramidal structure. For both carbonyl hydrides the CO groups are arranged tetrahedrally around the metal atom. From this it is concluded that the hydrogen atoms cannot be linked directly to the metal. The M–C–O grouping is linear and this, like the acidic character of the hydrogen atoms, is inconsistent with a $-C\lessdot^{H}_{O}$ linking. The hydrogens are therefore linked to oxygen atoms of CO groups, and the structure, *e.g.*, for the cobalt compound is



which shows its ion-forming behaviour.

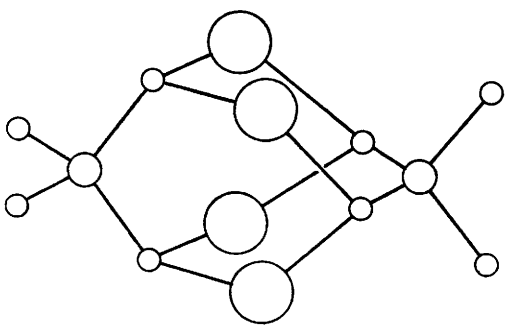
The great structural resemblance between nickel carbonyl, iron and cobalt nitrosyl carbonyls, and the carbonyl hydrides is explained. In each case the central atom has a co-ordination number four and an effective atomic number 36.

At about this time Ewens, with the writer, carried out a crystal structure examination of iron enneacarbonyl (*J.*, 1939, 286), and of this period the happiest recollections remain. Ronnie, as he was usually known, came one day into the laboratory with hard-won crystals. Unlike some who have crystals the next thing he did was to take off his coat and consequently the work started that day and was completed very quickly. It would have been done in half the time but for the demon who, as commonly happens, planted an arithmetic slip in its invariable place at the beginning of a long computation. His good-humoured comminations of that demon survive with the prolonged laugh that greeted the emergence of the molecule as



Of the several structures contemplated for this molecule, of previously unknown constitution or even molecular weight, none had been permitted anything in the nature of a $>C{=}O$ group, but three such groups, forming bridges between the two iron atoms, were found. The two iron atoms are at a distance appropriate to a covalent bond between them.

Later work by Ewens at Guy's dealt with polynuclear carbonyls and nitrosyls (*Nature*, 1948, **161**, 530), and he also worked on compounds of gold and platinum. As an example, the structure suggested for tetraethylsulphatodigold $(Et_2Au)_4(SO_4)_2$ (*J.*, 1941, 109) is as shown, with



Large circles, gold; medium, sulphur; small, oxygen.

two ethyl groups attached to each gold atom. A last communication (*Nature*, 1948, **162**, 693) dealt with a new method of obtaining trimethylplatinum derivatives by suitable reactions of *cis*-dipyridinotetrachloroplatinum.

This record of achievement, but for the interruptions of the war, would have been much more extensive and, had he lived, would have been many times multiplied.

In 1942 he married and he leaves a widow and a young daughter.

H. M. Powell.

ERICH HEYMANN.

1901—1949.

Physical chemistry in Australia, and particularly in the University of Melbourne, has suffered a severe loss by the death of Associate Professor Erich Heymann on November 23rd, 1949, in Chicago. He had visited England in the summer of 1949 and was travelling through the United

States of America with the aid of a Carnegie Corporation Fellowship on the return journey to Australia when he died peacefully in his sleep from coronary occlusion. His letters gave no indication of any ill-health; they reflected the enjoyment which he experienced in the rich opportunities for personal contacts and study afforded by travel and the enthusiasm with which he looked forward to resuming his own researches in Melbourne. He was unmarried and is survived in Australia by a widowed mother.

Heyman was born in Frankfurt-am-Main in 1901 and received his education in science at the universities of Munich and Frankfurt. He graduated at Frankfurt (Ph.D., *summa cum laude*) in 1924 and became research assistant at the Institute of Colloid Science in his native city, later becoming senior demonstrator and then lecturer in physical chemistry at Frankfurt University under Bonhoeffer in 1932. The increasing difficulties which beset those of Jewish origin in Germany led him to go to London, where he spent two years as I.C.I. Research Scholar under Professor F. G. Donnan. This step decided his future career, for when in 1936 an opportunity came to transfer to the University of Melbourne as Carnegie Research Scholar and lecturer in physical chemistry he accepted it on Donnan's advice. Heymann never regretted coming to Australia and spoke often in the warmest terms of the kindness and help he had received from Professor Donnan in reaching this decision. It was a source of great comfort to him when later he was able to arrange for his parents to join him in Melbourne. He became senior lecturer in 1938 and Associate Professor in Physical Chemistry in 1945. He was elected a Fellow of the Chemical Society in June, 1944.

Heymann's main interest, from his early graduate days, was in problems of colloid and surface chemistry. He was, however, both widely read and a versatile experimentalist and therefore quick to perceive and investigate important problems in other fields which were even distantly allied to his primary interest.

His earliest papers dealt with the kinetics and equilibria in the system colloidal ferric hydroxide–hydrochloric acid–water, and he showed *inter alia* that colloidal ferric hydroxide had a similar action in the hydrolysis of ferric chloride solutions to that of aluminium hydroxide in the hydrolysis of sodium aluminate.

Studies of adsorption from non-aqueous solution (with E. Boye), in which exceptions to Traube's rule were discovered, led to an investigation of the connection between the degree of adsorption and the dielectric properties of the solvent and to the study of adsorption over the complete mole-fraction range for several binary liquid mixtures. The measurement of dielectric constants gave as an interesting side investigation the determination of the dipole moment of iron pentacarbonyl. He also showed that in aqueous systems the hydrolysis of salts of noble metals was promoted by adsorption of the hydrated oxide on active carbon and that this reaction was accompanied by reduction of the oxide to the metal with the liberation of carbon dioxide, while solutions of ferric chloride were partly reduced to ferrous chloride.

A long series of investigations dealt with the properties of hydrophilic sols of proteins and methyl cellulose, the sol–gel transformation in such systems, and the interactions of the colloid with electrolytes. Such studies with methyl cellulose led naturally to an investigation of the exchange reactions between cellulose and electrolytes, and this work in turn led to the investigation of similar reactions in ion-exchange resins. The measurement of the electrical conductivity of the ions in equilibrium with the resin phase provided a convenient way of studying the binding forces involved.

Probably the most outstanding single contribution made by Heymann was the proof by the partition method that solutions of metals in their molten halides were not, as claimed by R. Lorenz and others, colloidal dispersions but true atomic solutions. This research indicated the desirability for a study of the properties of molten salt systems (ionic liquids), and he carried out with various pupils the investigation of the electrical conductivities, viscosities, surface tensions, and partial molal volumes in a number of binary systems.

Another subject which Heymann investigated was the prevention of evaporation from reservoirs by means of duplex films, a matter of great importance in the drier parts of inland Australia. Such films are remarkably effective in the laboratory but fail in the open owing mainly to the action of the wind breaking them.

Heymann's published researches occupy more than fifty papers in German, English, and American journals. He also published a monograph on the Sol–Gel Transformation. He was awarded in 1942 the Grimwade Prize for Industrial Research in Melbourne and the Smith Memorial Medal of the Royal Australian Chemical Institute " for the development of some branch of chemical science."

Heymann was an admirable teacher; his lectures were models of clarity and thoroughness,

and they were given with remarkable command of the English language, which he had learned after leaving Germany. He was a most fertile and stimulating leader in research, who was able to bring out the best qualities of his research students and co-workers through his own enthusiasm and high ideals. Combining also unfailing good humour with cheerful acceptance of responsibility and sound judgment, he was an invaluable colleague whose influence had steadily grown in the Chemistry School and in the University. His scholarly tastes, unassuming modesty of demeanour, and wide human sympathies endeared him to staff and students alike, and his sudden death while still in the prime of life has left a sense of profound loss.

I am grateful to my colleague, Mr. A. N. Hambly, for help in the preparation of this memoir.

E. J. HARTUNG.

GUSTAV KOMPPA.

1867—1949.

GUSTAV KOMPPA was born in Wiborg, capital of Karelia, on the 28th July, 1867. He was educated at the Wiborg Lyceum and at an early age showed his interest in scientific subjects, more especially in chemistry. Whilst at school he assisted the Science Master in the preparation of his class experiments in chemistry and physics and also took an active part in Sunday excursions for the collection of botanical and zoological specimens. Economic considerations necessitated his leaving school after only five years in the Middle School and, with the object of increasing his knowledge of chemistry, he was apprenticed to an apothecary. His duties in the pharmacy, however, left him little time for study but he was fortunate in that about a year later he was able to become a student in the Polytechnic Institute in Helsingfors. Here he pursued his studies with such diligence that in 1890 he obtained the Institute's Diploma with distinction. His first official appointment was as a chemist in the Helsingfors State Food Laboratory and this lead to the publication of his first paper entitled " The use of soda–lime as a drying agent in the Marsh test." Whilst holding this appointment he continued to work in the University and he passed the Candidate's examination in 1897. Although Komppa's interest had at first been in inorganic chemistry, yet under the influence of Professor H. A. Wahlforss, head of the Chemistry Department in the Polytechnic Institute, he gradually became interested in organic chemistry. Thus the subject for his Doctor's thesis was " Uber kernsubstituirte Styrole," the experimental work being carried out partly in the University Laboratory in Helsingfors under Professor E. Hjelt and partly at the Zurich Polytechnicum under Professor A. Hantzsch. He received the Ph.D. degree in 1894 and was in 1895 appointed Assistant Lecturer in the Polytechnic Institute, Helsingfors. Here he was to remain for his whole life, except for a short period at Leipzig in Ostwald's laboratory and a short stay in Paris. Whilst he was Assistant Lecturer, he acted as lecturer from time to time, and in 1899 he was appointed to succeed Wahlforss. On the reorganisation of the Polytechnic Institute Komppa became professor and head of the Department of Chemistry in the Finland Institute of Technology, a post which he retained until his retirement in 1937, when he became Emeritus. However, he continued his teaching and research work at the Institute until 1946. It was a crushing blow to him when his laboratory and all his specimens and notes were destroyed by an air attack in 1944.

It would be difficult to over-estimate Komppa's influence on the training of Finnish chemists and chemical engineers, which extended over a period of nearly half a century. From his students he required a high standard, and being an excellent lecturer he was able to arouse enthusiasm in even the dullest. The present chemical laboratories of the Finland Institute of Technology, completed only after his death, were with one exception designed by him.

His teaching and administrative duties were heavy, since his department was responsible not only for the teaching of inorganic, organic, and physical chemistry, but also for that in biochemistry and chemical engineering. In spite of this he found time to take a prominent part in the various scientific societies, including the Finnish Chemical Society, the Society of Finnish Chemists, and the Society of Finnish Engineers. He was the permanent secretary of the Finnish Academy of Science and Letters from 1908 to 1936, and he took a very active part in the foundation of the University of Turku, of which he was the head from 1936 to 1945. He represented Finland at many International Congresses, and Fellows of the Chemical Society will remember his last visit to this country in 1947 on the occasion of the meeting of the International Congress for Pure and Applied Chemistry.

His scientific interests were not confined to chemistry, for he was much interested in forestry and horticulture and he had an experimental plantation at Karjalohja. He published a number of papers on botanical subjects.

Komppa's services to science did not remain unrecognised. He was a member of a number of foreign academies and scientific societies. From the Finnish Government he received the Cross of Liberty, First Class, and the Grand Cross of the Order of the White Rose of Finland. He had also the Danish order of Danneborg and the Swedish order of the Polar Star.

In considering Komppa's contributions to science, of which a brief account will now be given, it should be borne in mind that practically the whole of the experimental work was carried out with his own hands. He had very few research students and it was not until 1928 that he had a paid assistant. He published about 160 memoirs which, apart from a few of minor interest, were all concerned with terpene chemistry. In 1899 (*Ber.*, **32**, 1421) he described the preparation of ββ-dimethylglutaric acid but it was not until 1901 (*Ber.*, **34**, 2472) that he published a preliminary note on the synthesis of *apo*camphoric acid, which was followed in 1903 (*Ber.*, **36**, 4332) by the classical preliminary note on the synthesis of (±)-camphoric acid. In October 1905 Komppa reported to the Finnish Chemical Society his complete synthesis of (±)-camphor, and in 1909 (*Annalen*, **370**, 209) the full account of these experiments was published, the resolution of the (±)-acid and the complete synthesis of (+)-camphor having been recorded by Beckman and Sarau in the same year (*Ber.*, **42**, 485). This was, however, only the first of the syntheses in the terpene series which we owe to Komppa, but it undoubtedly established his position as a chemist of the first rank.

Simultaneously Komppa extended his experiments with *apo*camphoric acid and he was able (*Ber.*, 1908, **41**, 2747; 1911, **44**, 863; *Annalen*, 1909, **366**, 71) to establish the structures of pinophanic acid and tricyclenecarboxylic acid; by utilisating reactions similar to those used in the synthesis of camphor he converted *apo*camphoric acid into (±)-α-fenchocamphorone.

He devoted considerable attention to the chemistry of santene and its derivatives, and in a long series of memoirs (1911 to 1925) he described the synthesis of camphenilone, *iso*camphenilone, and santene, santenone, and the santenols. His most important researches, apart from camphor were, however, those relating to the fenchenes and pinene.

Mention has already been made of the synthesis of (±)-α-fenchocamphorone and this was followed later (*Ber.*, 1936, **69**, 2606) by the synthesis of (±)-β-fenchocamphorone. Other work which he carried out in this field has thrown much light on the complicated chemistry of the fenchenes, and the structures suggested by him in 1929 (*Annalen*, **470**, 129) have found general acceptance. He himself described the synthesis of α-fenchene, the partial synthesis of β- and γ-fenchenes (*Ann. Accad. Sci. Fennicae, A*, **10**, No. 3, 3), whilst in an important paper (*Annalen*, 1938, **535**, 252) he described the dehydration of the fenchyl alcohols.

It must have given him deep satisfaction when, in his last years of experimental research, he was able to record the complete synthesis of α-pinene. Already in 1937 (*Ber.*, **70**, 788) he had completed the synthesis of (±)-verbanone and (±)-δ-pinene. Five years later (*Annalen*, 1941, **547**, 185) he was able to extend this work by a brilliant synthesis of pinonic acid, pinocamphone, and α-pinene. It is given to few to leave so great a record of achievement in synthetic organic chemistry.

Komppa did not long survive the celebration of his eightieth birthday on the 28th July, 1947, Towards the end of 1948 he had a stroke, and he died on the 20th January, 1949. Komppa's wife, Siiri Andelin, by whom he had a son and a daughter, died in 1946.

J. Palmén.
J. L. Simonsen.

ROLAND VICTOR NORRIS.

1888—1950.

Dr. Roland Victor Norris died at Port Shepstone, South Africa, on the 28th April, 1950, at the age of 62. Dr. Norris went to South Africa in November, 1949, on holiday and was due to return to the Tea Research Institute of Ceylon, of which he had been Director since 1929. His death is a sad loss to the Institute he served so well, and a personal misfortune to his many friends, amongst whom may be included the whole of his Staff. After graduating from Manchester University, Dr. Norris became private assistant to Professor W. H. Perkin. Moving to the Lister Institute of Preventive Medicine, London, in 1910, he joined Professor Arthur Harden's School and took part in the classical researches on the mechanism of alcoholic

fermentation by yeast enzymes, for which work he was eventually awarded the D.Sc. degree of the London University. In 1912, during his career at " the Lister " he was elected to a Beit Memorial Fellowship.

Dr. Norris's long career in the East began in 1914 when he accepted the post of Physiological Chemist at the Imperial Bacteriological Laboratory in India. His first administrative experience was gained in the Indian Army in which his administrative abilities were soon recognised after a brief period of active service in 1915.

In 1918 onwards, Dr. Norris gradually turned towards agricultural research, first becoming Agricultural Chemist to the Government of Madras. When he was Professor of Biochemistry in the Indian Institute of Science, Bangalore, from 1924 to 1929, his research students were largely occupied with biochemical problems relating to agricultural subjects, such as soils, plants, manures, the lac industry, and the spike disease of sandalwood.

In 1929, Dr. Norris was appointed to the Directorship of the Tea Research Institute of Ceylon, when the construction of the permanent quarters at St. Coombs was just starting. The Institute has grown from its foundation on St. Coombs Estate, to its present status, under his guidance and will be a memorial to his industry so long as it exists.

" R. V." as he was known to his colleagues was by no means a pedant. He was a widely travelled and well read man of many interests. Actively interested in sports, particularly rugger and hockey, he regularly attended district games after he gave up playing himself. He enjoyed an evening at the Club as well as any planter, and took part in many social activities, especially amateur dramatics. In his later years he became keenly interest in Freemasonry and achieved the rare distinction of occupying the Chairs of two Lodges under the English Constitution and one under the Irish Constitution.

European, Indian, and Ceylonese colleagues of two generations will remember R. V. with affection. Many members of the Tea Industry will remember Roland Norris either as a personal friend or as a personality. His obituarist having worked under his direction for sixteen years may perhaps be excused a personal tribute to R. V.'s tolerant but firm direction, critical but staunch support, and his fatherly guidance and encouragement.

J. L.