the other hand, Fernelius on the basis of Burgess' discovery hoped to prepare $K_4[Pd(CN)_4]$ and his success in doing so must be considered as a strong support of the potency of the effective atomic number.

SUMMARY

When the metal carbonyls were first discovered, their properties were startling because they seemed to violate nearly all the previously recognized generalizations of chemistry. Even to-day the existence of the carbonyls is not particularly emphasized in elementary courses of chemistry because it is rather hard to reconcile them with the first presentations of the generalizations of chemistry. Nevertheless, as the student progresses deeper into the knowledge of chemistry it becomes desirable to include the knowledge of the carbonyls both because they become more comprehensible when viewed in the light of Werner's system of coordination and because they themselves contribute to the comprehension of the Werner theory.

As long ago as 1931, Reiff in his discussion of cobalt nitrosyl carbonyl recognized the correlation between the effective atomic number and the volatility of carbonyls. A more recent study of *charged* Werner coordination complexes, that is, of complex ions, has shown a similar role of the effective atomic number.

We are standing on fairly firm ground when we point out the correlation between E.A.N. and the volatility of the carbonyl complexes and the existence of complex ions. Be it noted that we have made no postulates as to the arrangement of the electrons in quantum levels. In the inert gases the outer principal quantum group is supposed always to contain eight electrons. In the carbonyls and other Werner complexes there is no compelling reason to suppose that the electrons in the coordinating layer, be this layer of eight, ten, twelve or sixteen electrons, are not all at the same energy level.

Although we have confined our discussion almost exclusively to the property of volatility, the carbonyls are very interesting from the standpoint of several other properties, for example, magnetic susceptibility and dielectric constant. Enthusiasts in the interpretation of such properties try to draw conclusions as to the condition of the electrons, sometimes they become so dogmatic as to seem really to believe in the actual existence of the condition they postulate.

As Professor Smith said, "Theories come and theories go, but facts live on forever." The facts of chemistry are so multitudinous that we would be utterly helpless to use them had we not means of correlating them. Any postulates which reach beneath the surface of the directly observable to give a mechanism to correlate the facts are helpful. But a scientist without a sense of humor is pretty hopeless. Who in his right mind can regard as other than absurd the idea that an electron pair can simultaneously occupy positions in two atom shells to make up the supposedly necessary number in each atom? In fact, is not the electron itself a pretty ridiculous figment of the imagination? To be sure, we recognize the electron as a discrete entity with certain very definite properties, but in the light of comparison with any mechanism within our comprehension is not the electron perfectly impossible? By all means let us use a postulate which allows us to make a useful classification of facts, but never let us lose the sense to see how utterly ridiculous the postulate will look to one who has not like ourselves grown attached to it.

We do not expect ever to discover the ultimate reason for things, but we do expect ever to make progress in correlating and classifying the facts which we have already discovered and shall continue to discover. Dogmatic belief in ridiculous postulates retards this progress.

Since the foregoing manuscript was submitted the paper by Hieber and Lagally, *Zeit. Allgem. Anorg. Chem.*, 245: 321, November, 1940, has come to our attention in which the preparation of carbonyls of iridium by Hieber's high pressure technique is described. Non-volatile $[Ir(CO)_3]n$, corresponding to the cobalt tricarbonyl, is the principal product, but there is evidence that compounds corresponding to $[Co(CO)_4]_2$ and the volatile $HCo(CO)_4$ are also formed. A very volatile compound containing iridium is in evidence whenever traces of water or hydrogen are present in the autoclave, and although this compound can not be isolated for analysis it presumably is the carbonyl hydride $HIr(CO)_4$ in which iridium has the E.A.N. (86) of radon.

OBITUARY

WILLIAM FRANCIS GANONG
1864–1941

THE death of William Francis Ganong removes from the field of botany one of its outstanding leaders during the past fifty years. Dr. Ganong, a Canadian of loyalist descent, was born in St. John, New Brunswick, on February 19, 1864, the son of the late James H. and Susan E. Ganong. He was graduated from the University of New Brunswick with the degree of B.A. in 1884 and with that of M.A. in 1886, and in 1887 received his A.B. from Harvard. He obtained his Ph.D. from Munich in 1894, and in 1898 and 1920

was granted the honorary degrees of Ph.D. and LL.D., respectively, by the University of New Brunswick.

Except for a few years of teaching at Harvard his entire academic life was spent at Smith College, Northampton, Massachusetts. Coming in 1894 as the first professor of botany and director of the Botanic Gardens, he built up the department of which he served as head or chairman until his retirement in 1932, when he was appointed professor emeritus. During his service here, the Botanic Gardens were established, and the Lyman Plant House and Burton Hall, the present biology building, were erected. For many years he gave generously of his time to administrative matters.

A man of broad interests, he published in the fields of morphology and ecology, although his primary interest was in physiology. Here he was widely known for his research and the apparatus which he developed for student use. But to those who knew him best he will be remembered primarily as a teacher. Possessed of an enthusiasm which was easily passed on to his students he taught both by precept and example, instilling into their minds the love of honest, thorough work and regard for the truth. His interest in botanical education led to the publication of *The Teaching Botanist,* one of the earliest books in this field now growing in importance. Other books of his were "A Laboratory Course in Plant Physiology," "The Living Plant" and "A Textbook of Botany for Colleges."

He had served as secretary for the Society of Morphology and Physiology and as president of the Botanical Society of America. He was also a corresponding member of the Royal Society of Canada, and in December, 1940, was awarded the Charles Reid Barnes Life Membership by the American Society of Plant Physiologists.

In addition to his work as a botanist he was recognized as an authority on the natural history of New Brunswick. From his early days he had followed this subject with great enthusiasm and during this time had assembled an unusually valuable collection of books, papers, maps and other documents bearing upon New Brunswick history. This collection has been presented to the New Brunswick Museum and has been described as "undoubtedly the most valuable that has yet been offered to the Museum." Of him and his work Dr. J. Clarence Webster, C.M.G., of Shediac has said: "As a worker Dr. Ganong has been characterized by great honesty and accuracy. Regarding New Brunswick he was the greatest authority who ever lived on the subject; its natural history, its settlement, its geology, its Indian life and its general development. As an authority on the cartography of the entire eastern coast of North America, he and Mr. Prowse of Winnipeg are two of the greatest." Dr. Ganong translated and edited Denys' "Natural History of Acadia," LeClerq's "New Relation of Gaspesia" and Champlain's "Voyages to Acadia and New England."

Dr. Ganong was married in 1888 to Jean Murray Carman, of Fredericton, New Brunswick, the sister of Bliss Carman, the well-known Canadian poet. She died in 1920 and he later married Anna Hobbet, of Eagle Grove, Iowa, who with two children, William Francis, Jr., a freshman at Harvard, and Ann, survive him. His death occurred on September 7, at St. John, New Brunswick, after a long illness.

FRANCES GRACE SMITH
HELEN A. CHOATE

SMITH COLLEGE

DEATHS AND MEMORIALS

DR. FRANK BURR MALLORY, since his retirement in 1932 professor emeritus of pathology in the Harvard Medical School, died on September 27 at the age of seventy-eight years. Dr. Mallory joined the staff of the school as assistant in histology in 1890. He was pathologist of the Boston City Hospital from 1908 to 1932, when he became consulting pathologist.

DR. CARROLL MASON SPARROW, professor of physics in the University of Virginia, died suddenly at his home on the evening of August 30. He was sixty-one years old. He had served on the faculty for thirty years.

DR. THOMAS HARDY TALIAFERRO, professor of mathematics and dean of the faculty of the University of Maryland, died on September 25 at the age of seventy years.

DR. ANDREW RICHARD BLISS, JR., professor of pharmacology and dean of the School of Pharmacy of Howard College, Birmingham, Ala., died on August 12 in his fifty-third year.

DR. ELMER SAMUEL IMES, professor and head of the department of physics at Fisk University, Nashville, Tenn., died on Setember 12 at the age of fifty-eight years.

A COPY of the Congressional resolution designating February 11 as "Thomas A. Edison Day" and the pen with which it was signed by President Roosevelt were presented on September 25 to Mrs. Mina Edison Hughes, widow of the inventor, at a dinner, attended by three hundred and fifty persons, which had been arranged by the Chamber of Commerce and Civics of the Oranges and Maplewood, N. J.