

LECTURE V.

INORGANIC AND MINERAL CHEMISTRY: SERIALS

- A. Serials containing original papers, general.
- B. Serials, abstract and review, general.
- C. Special serials, on minerals, metals, ores, alloys, etc.

A. *Zeitschrift für anorganische chemie* (und allgemeine, now in title since 1914), 1892 to date, founded to rescue the papers on inorganic from being submerged in the organic ones. Annual index in final volume for each year (3 or 4). Collective index, v. 1-50.

More general and containing some abstracts, are *Journal of the society of chemical industry*, 1882-, *Zeitschrift für angewandte chemie*, 1887~~8~~, *Journal of industrial and engineering chemistry* 1909-, (has only a few abstracts, chiefly of U. S. and State publications), and *Chemical and metallurgical engineering* (fourth variation of title). 1902 to date. The last is particularly electrochemical.

B. For abstracts and reviews, use those noted on page 19, under reference literature. For some subjects, add *Jahresbericht* (Wagner) 1855 to date.

Current prices for metals, etc., are found in *Jour. of ind. and eng'g chem.*, in *Chem. and met. eng'r*, and in *Engineering and mining journal*, (mining, ores, etc.)

- C. Special serials.

Metallurgy

In German, the former *Metallurgie* is now two, *Ferrum*, and *Metall und erz*, the latter for all non-ferrous ores and metals.

In French, *La Metallurgie*, weekly, is a trade paper, rather than a scientific one; *Revue de metallurgie*, leans to metallography strongly, particularly for iron and steel.

The Italian *La metallurgia italiana*, includes material as from both the French ones.

Metallography

Here the *Metallographist* became the *Iron and steel magazine*, and was then merged in what is now *Chemical and metallurgical engineering*. Similar material is in the *Journal of the Institute of metals* (English) and the *Transactions of the American Institute of metals* (now a part of the *Bulletin of the American Institute of mining and metallurgical engineers*), and in the *Internationale Zeitschrift für Metallographie* (here in part).

Mining and Minerals

Bulletins and Technologic papers of the U. S. Bureau of mines.

Bulletins of the U. S. and various State Geological surveys, have much of interest to chemists; the U. S. Geological survey.

Mineral resources of the U. S. is good, but slow in publication.

Engineering and mining journal has valuable material, with a timely summary in February. *The Mineral Industry*, is an annual statistical and descriptive volume, an outgrowth from the preceding one, and has no rival.

Alloys

Here are some very practical serials, *The Brass world*, and, a little more inclusive in scope, *The Metal Industry*, while most of the literature upon metallography takes up alloys, from the scientific standpoint.

Iron and steel

For this field alone there are a number of serials, *Stahl und eisen* (German), *Journal of the iron and steel institute*, *Bulletins and reports of the American iron and steel association*, *Eisen-zeitung*, and *Ferrum*.

Publications of the International and the American societies for testing materials deal with the metals as well as other structural materials.

The bibliographies, given in Abegg, and in Gmelin-Kraut Ed. 7, form good starting points with fairly complete lists down to their dates, of the important papers and books.

LECTURE VI.

SUMMARY OF THE HISTORY OF CHEMISTRY WITH REFERENCES

During the ancient period, we find a gradual accumulation of facts about substances and processes, use of materials, and a number of very important discoveries, made in part seemingly, by accident. Means of record, however were few, there was no general wish to share knowledge and the loss of valuable information was the result. Theory was neglected, so far as we know at present.

In the period of alchemy, chemical knowledge was deliberately restricted to persons whom the teacher thought suitable, generally an apprentice or assistant who worked years before being told his master's secret methods. Wrong translation of earlier records caused men to work for transmutation of metals, with no permanent result except a few improvements in apparatus and technique.

The iatrochemists looked upon chemistry as an aid to medicine; even Paracelsus scarcely conceded it a place as an independent science, though he claimed every physician should be taught it. Here the magic "philosopher's stone" was sought to prolong life, restore health, or youth, since by means of it a universal remedy, or an elixir of youth, could be prepared. Theory here had no part. The will and the means for communicating knowledge were greater, but aside from a few isolated discoveries, soon lost, like Van Helmont's work on gases, there is not much.

The presentation of the phlogiston theory for combustion at last gave an explanation for the phenomenon that sounded plausible. When Becher had proposed it, and Stahl urged its acceptance, most men took it for truth. Authority was not to be questioned, though occasionally, some one had doubts. Not before the study of gases had progressed till Van Helmont's *gas sylvestre* had been rediscovered, and analyzed, and oxygen not only isolated, but named and fairly urged upon scientific men, was the phlogiston theory actually given up.

Modern chemistry dates ordinarily from Lavoisier's published paper clear-

also,

1880-1900

540.9 Jones

J71n New era

pp. 1-75

540.9 Moore

M78h History

pp. 212-252

540.9 Bauer

B32h History

pp. 206-222

Work since 1900 must be read in the serials as yet, and what has been done in the most recent decade is not to be considered as settled history but as merely a contemporary account, colored to some degree by each author's personal views and environment.

INDEX, ABSTRACT, AND REVIEW SERIALS, IN ORDER OF TIME

General

- 1789-1870 Annales de chimie et de physique
1822-1850 Jahresbericht über die fortschritte der chemie und mineralogie (Berzelius)
1831-date Chemisches zentralblatt
1834-1870 Journal für praktische chemie
1840-58 The chemist
1841-date Journal of the Chemical society, London
1847-date Jahresbericht über die fortschritte der chemie und verwandter teile anderer wissenschaften (Liebig and Kopp)
1858-date Bulletin de la société chimique de France
1859-date Chemical news
1868-96 Berichte der deutschen chemischen gesellschaft
1879-1905 Journal of the American chemical society
1891-date Jahrbuch der chemie (Meyer)
1901-date International catalogue of scientific literature: chemistry
1904-date Chemical society, London; Annual reports
1907-date Chemical abstracts

Agricultural

- 1858-date Jahresbericht über die fortschritte auf dem gesamtgebiete der agrikulturnchemie (Hoffman)
1872-date Zentralblatt für agrikulturnchemie (Biedermann)
1859-date Experiment station record (U. S. Dept. of Agric.)

Analytical

- 1862-date Zeitschrift für analytische chemie
1876-date Analyst
1896-date Annales de chimie analytique et de chimie appliquée

Food

- 1882-date Zeitschr. für untersuchungen der nahrungs- und genussmittel (1882-90, Vierteljahrschr. d. chemie der . . .)
1889-date Experiment station record
1891-date Zeitschrift für fleisch- und milchhygiene
1901-date Répertoire . . . sur la composition . . . des denrées alimentaires
1908-date Annales des falsifications et des fraudes

Pharmaceutical

- 1830-date American journal of pharmacy
1841-date Pharmaceutical journal and transactions
1851-date American pharmaceutical association, Proceedings (Yearbook, 1912 on.)

Physical

- 1889-1904 Zeitschrift für physikalische chemie
1904-date Fortschritte der chemie, physik und physikalische chemie (Physikalisch-chemisches centralblatt, to 1909)

Physiological

- 1871-date Jahresbericht über . . . tier-chemie . . . (Maly)
1900-date Zentralblatt der experimentelle medizine (Centralbl. f. stoffwechsel-u. verdauungskrankheiten, 1900-1905; Zentrabl. f. physiol. u. pathol. des stoffwechsels, 1906-11)
1902-date Zentralblatt für biochemie und biophysik (Biochemisches centralblatt 1902-09)
1916-date Physiological abstracts

Technological

- 1855-date Jahresbericht über die leistungen der chemischen technologie (Wagner)
1877-date Chemiker-zeitung : repertorium
1880-1905 Technisch-chemisches jahrbuch
1882-date Journal of the Society of chemical industry
1887-1918 Zeitschrift für angewandte chemie; continued as technical section of Chemisches Zentralblatt; (Zeit. f. angew. chem. was preceded by Repertorium der analytischen chemie, 1881-87)
1914-16 Journal of chemical technology
1914-date Journal of industrial and engineering chemistry, for U. S. and State publications, chiefly.

ABSTRACT OF DECIMAL CLASSIFICATION

These class numbers include the principal classes of books on chemistry

- 016.54 Bibliography of chemistry
340.6 Medical jurisprudence
389 Weights and measures
510 Mathematics
530 Physics
532 Liquids 533, Light 537, Electricity, 537.85 Electrometallurgy
540 Chemistry
541 Theory, physical chemistry
542 Laboratory handbook, tables
543 Analysis
544 " qualitative
543.1 " of food, .2 milk, .3 water, .4 drugs
543.5 " of poisons, .6 rock, .7 gases, .8 oils and fats

543.9	“	of animal body			
544	“	qualitative			
545	“	quantitative			
546		Inorganic chemistry			
547		Organic chemistry			
548		Crystallography			
549		Mineralogy			
550		Geology			
575		Evolution			
580		Botany	589.9	Bacteriology	
590		Zoology			
611		Anatomy			
612		Physiology			
612.01		Physiological chemistry			
614		Hygiene, public			
615		Materia medica, pharmacy			
616		Pathology			
620		Engineering			
622		Mining engineering			
628		Sanitary engineering			
628.1		Water supply,			
628.16		Water purification			
628.2		Sewerage work			
628.3		Sewage			
630		Agriculture			
630.16		Soils, chemistry			
631		Soils and fertilizers			
635.4		Feeding stuffs			
637		Dairy			
640		Domestic economy			
643		Food			
660		Chemical technology, manufacturing processes			
661		Chemicals			
662		Explosives			
663		Beverages			
664		Foods			
665		Fuel, gas, oil			
666		Ceramics, glass			
667		Dyes, paint, bleaching			
668		Soap, glue, glycerine			
669		Metallurgy, assaying			
670		Manufactured articles (chemistry incidental)			
671	Metallic	674	Wooden	677	Textiles
672	Iron and steel	675	Leather	678	Rubber
673	Brass, bronze	676	Paper	679	Celluloid
690		Building			
691		Materials, processes, preservatives			

- 698 Painting
- 770 Photography
- 920 Biography (B for lives of individuals)
- 925.4 Biographies of chemists (several together)

Any of the above may have the form divisions, or designations, thus: 03, dictionaries; 05, serials; 06, society publications; 09, history.

Call number consists of class number, as 546

author mark, as M72 t3Ef; *M72, Molinari*

t, indicates first word of title, 3 the third edition, E a translation into English, f the initial of translator's name.

LECTURE VII.

ORGANIC CHEMISTRY: BOOKS AND SERIALS

I. Books

- A. General; 1. Comprehensive. 2. Briefer. 3. Laboratory texts
- B. Special, 1. Methods. 2. Preparations. 3. Analysis
- C. Reference, 1. Cyclopedias. 2. Dictionary. 3. Tables of data
- II. A. Serials containing original papers chiefly.
- B. Serials containing abstracts principally.

I, A, 1. The texts in English, now (1919) do not cover the ground very well. The best is Cohen's Organic chemistry, Ed. 2, in three volumes; this is rather a discussion of selected topics than a comprehensive treatise. The organic part of Roscoe and Schorlemmer, has not been revised for thirty years. The English version of the eleventh edition of Richter's Chemie der kohlenstoffverbindungen is the best of the kind.

In German, the best is Meyer and Jacobson, Ed. 2 in course of publication; Kekulé and Kolbe are similar works of nearly or quite fifty years ago. The Richter, Ed. II, 1909-1913, 2 volumes, can be had in English too; it is less elaborate than Meyer and Jacobson.

A,2. Here in English, there are a number of books about equal in size, and of about the same time; Cohen, Theoretical, has very small type, resembling in this **Perkin and Kipping**, which has more laboratory material. Clarke, Introduction, ~~has been out of print for a year; it~~ is less than Cohen, larger than Noyes', and easy to read. Hilditch, Third year course, takes up certain classes of compounds. Norris is about the size of Holleman, Ed. 4, but the latter gives laboratory directions. Price and Twiss, resembles Holleman, Moore is frankly elementary, and Haskins, Ed. 2, is for medical students who want a minimum; Chamberlain's Organic agricultural chemistry is for students of a special phase.

A,3. Some of the newer ones are the latest revision of Gattermann, Cohen's Laboratory manual, Jones, Sudborough and James with photographs of apparatus used, the revised Bernthsen.