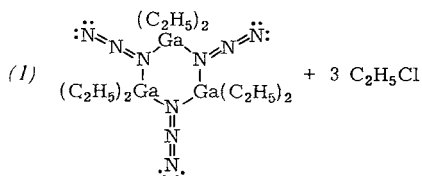
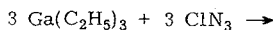


degradation products of chloramphenicol have been isolated from the culture medium. On the basis of these products, it has been possible to suggest a degradation path, the principal steps of which are indicated by arrows showing the presumed order. The reactions are: 1. oxidation, 2. hydrolysis, 3. decarboxylation and oxidation, 4. decarboxylation, 5. reduction and deamination, 6. hydroxylation, 7. oxidative cleavage.

[Rd 658 IE]

Diethylgallium azide (1) has been obtained almost quantitatively by *J. Müller* and *K. Dehnicke* from the reaction of triethylgallium (2) with chlorine azide in benzene.



(1) is a colorless, slightly hygroscopic, viscous liquid, which, unlike (2), does not ignite spontaneously, and which distills at 86°C/0.1 mm without decomposing. Cryoscopic measurement in benzene gives three times the expected molecular weight. In contrast to $(\text{C}_2\text{H}_5)_2\text{AlN}_3$, which decomposes explosively with water, (1) is not wetted by water. It is insensitive to mechanical treatment and to fast heating with an open flame. According to its vibration spectra (IR and Raman), diethylgallium azide forms a six-membered Ga-N ring open flame. According to its vibration spectra (IR and Raman), diethylgallium azide forms a six-membered Ga-N ring (D_{3h} symmetry). / *J. organometallic Chem.* 7, P1 (1967) / -Sch.

[Rd 662 IE]

The mass-spectrometric detection of extremely small quantities of alkali metal is reported by *J. Kremer*. A small droplet (about 0.05 ml) of the test solution is placed on a strip of molybdenum and evaporated to dryness in the absence of dust. The strip is heated until thermal emission of alkali metal ions takes place, and the ion current is measured in a mass spectrometer adjusted to the mass of the nuclide to be detected. Measurement is continued until the ion source has given off all the alkali metal. A Geiger counter tube is used as the detector. The total number of pulses counted is then a measure of the quantity of the nuclide in question that was present in the sample. This method is only of theoretical interest for the detection of the lighter alkali metals up to and including Rb, since water cannot be sufficiently freed from alkali metals (the purest water examined contained about 10^{-10} g of K per ml). Only cesium is present in water in such small quantities that test solutions of definite concentration can be prepared. Cesium can be determined in concentrations of 10^{-14} g/ml. / *Z. Physik* 199, 94 (1967) / -Hz. [Rd 663 IE]

Carbon trioxide CO_3 has been obtained by *N. G. Moll*, *D. R. Clutter*, and *W. E. Thompson* in three ways: (i) photolysis of solid CO_2 at 77°K with vacuum UV from a xenon resonance lamp; (ii) photolysis of ozone in a matrix of solid CO_2 at 50–60°K with the 2537 Å mercury line; (iii) radio-frequency discharge in gaseous CO_2 and freezing of the products at 50–70°K. Spectroscopic studies, partly with isotope-enriched CO_2 , indicate a planar molecule having symmetry C_{2v} , in which one oxygen is strongly bound to the carbon by a carbonyl-like bond, while the other two oxygen atoms are more weakly bound. There is probably also a covalent bond between the two equivalent oxygen atoms. CO_3 decomposes into CO_2 and atomic oxygen on photolysis with visible and ultraviolet light. / *J. chem. Physics* 45, 4469 (1966) / -Hz.

[Rd 664 IE]

BOOK REVIEWS

Ullmanns Encyclopädie der technischen Chemie. Band 16:

Soja bis Terpentinöl (Ullmann's Encyclopedia of Industrial Chemistry. Vol. 16: Soya to Oil of Turpentine). Chief editor *W. Foerst*. Editor *Hertha Buchholz-Meisenheimer*. Verlag Urban & Schwarzenberg, München-Berlin 1965. 3rd fully revised Edit., 779 pages, 235 figures. Vol. 17: Terpentinöl bis Uran und -verbindungen (Oil of Turpentine to Uranium and its Compounds). 1966, xii, 789 pages, 240 figures, per volume DM 182.-. (obtainable only as the complete work).

With the publication of the present two volumes (*), this huge work draws slowly toward completion. The longer articles in Vol. 16 deal with steels (135 pages), spirits and alcoholic liquors (62 pages), explosives (54 pages), sulfonic acids (53 pages), tar and pitch (45 pages), starch (42 pages), coal (41 pages), synthesis gas (37 pages), sulfonamides (37 pages), and radiochemistry (30 pages). The shorter articles include sorbic acid, ice cream, injection molding masses, strontium and its compounds, sweeteners, superconductivity, tobacco, tall oil, tea, telomerization, and surfactants.

A large part of Vol. 17 deals with textile problems: textile bleaches (18 pages), textile printing (64 pages), textile processing aids (65 pages), and textile technology. Other long articles are concerned with the clay industry (132 pages), oil of turpentine products (64 pages), uranium and its compounds (50 pages), drying oils (44 pages), motor fuels (36 pages), and veterinary remedies (36 pages). This volume again contains a series of shorter articles dealing with, e.g. tetrahydrofuran, therapeutic acids, thiourea, toluene, peat, and driers. Not only do these later volumes present new

material corresponding to the new entries, but an attempt is also made to include supplementary material on topics discussed earlier, so that the presentation is varied and stimulating. Thus the short article on injection molding masses follows on from Plastic Processing, Vol. 11, 1960, and describes the transition from piston-type injection molding machines to the screw type, as well as the associated material and processing problems. The article on steels follows on from the methods of steel production described under Iron, Vol. 6, 1955, but presents a very informative account of the progress and the present state of steel production. The article on coal is intended to supplement the discussion on coal and the upgrading of coal, which appeared in 1957 and 1958. Many more examples could be quoted. It has been possible in this way to bring the entire work (the first volume of which was published 13 years ago) up to date at the time of publication of the last volume.

The main emphasis in these two volumes is again placed on the industry. Of the 128 contributors, only 24 are employed at universities and public research establishments. The industrial contributors deal not only with problems of applied science, but also with basic research themes such as thermoelectricity, superconductivity, tellurium and its compounds, and veterinary remedies. One cannot quite escape the impression that the universities in Germany do not play any great part in the investigation of topics that are important in industry, even when these topics lie in the field of pure science and theory.

The article on steel is by *I. Class*, who has for some time been manager of the BASF Materials Division. The aim of the

article is "to describe the relationships between the composition and history of a steel and its properties and to offer the chemist or chemical engineer a guide to the selection of a steel suitable for a special application." Theory and practical experience are skilfully blended in this well-founded discussion. It would have been better if the use of different type sizes and faces (bold, italic, spaced) to indicate main sections and subsections had been more consistent throughout the work. The article on the clay industry is a joint contribution by 12 authors, with a very good introduction by *U. Hofmann*, Heidelberg. It gives an all-round detailed picture of the perfusion of this, the oldest industry in the world, with modern technology.

The articles on textile bleaches, textile printing, textile processing aids, and textile technology show how important textile problems have become in the chemical industry. The bleaches are discussed by two former colleagues at Degussa. Current developments in this field are marked by an increase in the importance of peroxy compounds. A detailed description of textile printing is given by two authors from *Farbenfabriken Bayer*, and textile processing aids are discussed in similar detail by two colleagues from *Böhme Fettchemie*. The *Deutsche Forschungsinstitut für Textilindustrie* and the *Staatliche Ingenieurschule für Textilwesen*, both in Reutlingen, are largely responsible for the article on textile technology. Since this chapter is intended for those who do not work in this field, short explanations of technical terms would have been useful. Thus it is difficult for the layman to distinguish between "Wirkerei" and "Strickerei". Similarly, the "degree of pilling" is described as ranging from pill-free to "verpillt" (literally "completely pilld"), but these terms are not explained, nor is the reader told where to find explanations. In pressing forward into the textile field, chemistry has not only gained a large new production sector, but it has also come into very close contact with the consumer with its new products. This field is scientifically and technically very interesting; however, it is not an easy field to work in, since it is not the chemical composition of the products that is of primary importance, but some rather intangible technological properties. Moreover, the chemist and the physicist are forced to match their products to many old-established processing methods. The discussion is very instructive to anyone concerned with this cooperation. The chapter on textile technology is particularly instructive to the chemist.

The article on synthesis gas can be read in conjunction with the earlier articles on ammonia, the hydrogenation of carbon monoxide, the synthesis of methanol, and the oxo synthesis, and presents a concentrated progress report and an account of the present situation with respect to the production of synthesis gas. This situation is characterized by the increased importance of the production of synthesis gas from liquid and gaseous raw materials in relation to the classical gasification of solids. The number of synthesis gas processes is now so large that it is to the author's credit that he managed to compress the essentials into 37 pages. In no other process does the choice of procedure depend so strongly on the point of view and on the manner of insertion into the rest of the production program. The article also contains a comparison of the cost of production of synthesis gas by pressure gasification of coal, by reaction of natural gas at normal pressure, and by partial combustion of oxygen under pressure, the costs for all these processes being given as a function of the cost of the raw material and the size of the processing units.

The article on tobacco deals with the botany, the production, and the chemistry of tobacco. The pharmacological and toxicological aspects are discussed authoritatively and impartially by a pathologist and a clinical physician. The article on uranium, uranium alloys, and uranium compounds (including processing of spent fuel elements and fuel material) was written by three authors from *Nuklear-Chemie und Metallurgie, GmbH, Hanau*. It presents a good picture of the intensive technological investigation and the spirited efforts that have been devoted to this important problem. The rapid technical development is reflected in the changes in the price

of the products. The article on spirits, which is confined to ethyl alcohol, is somewhat rambling in many places. The short section on sulfite spirit is good. The State Monopoly's term "Primasprit" (refined spirit), as can be seen from the legal section, is not entirely rational; on the one hand the spirit must be produced from agrarian raw materials, while on the other it must be so highly purified that its source is no longer recognizable. The section on physiology and toxicology presents a gloomy picture of the unpleasant effects of the consumption of alcohol on behavior, judgement, self-criticism, and finer psychic coordination.

In the article on veterinary remedies, two colleagues from *Farbenfabriken Bayer* present the essential viewpoints and methods of veterinary medicine. We learn that useful animals and pets are two fundamentally different groups of patients. The veterinary medicine of useful animals is mainly concerned with the prevention and cure of herd diseases, whereas pet therapy is very much more like human medicine, since treatment is individual. The article deals mainly with the fight against parasite and bacterial infection.

Lack of space prevents us from evaluating any more of the articles. In Ullmann, chemistry is treated from the point of view of its practical importance. Consequently, many problems of every-day life are also discussed. These practical problems are often theoretically very complex, so that one often tends not to discuss them scientifically. However, modern physical and chemical methods and the progress of analysis are constantly winning over traditionally empirical fields to the systematic, scientific approach. Ullmann goes into both the practical and the theoretical sides of this problem, and so presents a piece of research that is of interest outside the boundaries of industrial chemistry.

H. Sachsse [NB 595 IE]

[*] Cf. *Angew. Chem.* 78, 652 (1966); *Angew. Chem. internat. Edit.* 5, 618 (1966).

Chemie photographischer Prozesse. (Chemistry of Photographic Processes.) By *H.-M. Barchet*. *Wissenschaftliche Taschenbücher*, Volume 31. Akademie Verlag, Berlin 1965. 1st Edit., 167 pp., DM 8.—.

The author of this little book gives a lucid explanation, from the viewpoint of an organic chemist, of the reactions that are of importance in the formation of photographic images. The division of the subject matter is excellent: Descriptions of substances incorporated in photographic materials and involved in their processing are followed in each case by a discussion of the corresponding chemical reactions and in some cases by a detailed account of their syntheses.

Physicochemical and purely physical aspects are dealt with only so far as is necessary in order to incorporate the purely chemical processes into the photographic process as a whole. Understandably, color photography occupies an important place in the book. Processes not involving silver halides are only mentioned briefly.

The book thus provides a general review of the many problems associated with the chemistry of photographic processes, with reference to specialized literature; this information will hardly be encountered elsewhere in such a concise form.

E. Klein [NB 578 IE]

Anorganische und allgemeine Chemie in flüssigem Ammoniak (Inorganic and General Chemistry in Liquid Ammonia). By *J. Jander*. *Chemie in nichtwässrigen ionisierenden Lösungsmitteln* (Chemistry in non-aqueous ionizing solvents), edited by *G. Jander, H. Spandau, and C. C. Addison*, Vol. I, Part 1. *Friedr. Vieweg & Sohn, Braunschweig* — Interscience Publishers, a Division of *John Wiley & Sons, Inc.*, New York-London 1966. 1st Edit., xxiv, 561 pages, 75 figures, 213 tables, DM 110.—; subscription price DM 96.—.