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PROCEEDINGS

OF THE

CHEMICAL SOCIETY.

Vol. 22. No. 313.

Thursday, July 5th, 1906, at 8.30 p.m., Professor R. MELDOLA, F.R.S., President, in the Chair.

Certificates were read for the first time in favour of Messrs.:

Reginald de Vere Cornwall, Medical and Public Health Dept., Salisbury, Rhodesia, S. Africa.

Henry Ernest Crocker, 452, Slade Road, Gravelly Hill, Birmingham.

James Herbert Dinwoodie, Johannesburg.

Gopal Chandra Sen, M.A., 23, Bond Street, Leeds.

A ballot for the election of Fellows was held, and the following were subsequently declared duly elected:

Shelton Gottlieb Agar.
Robert Anderson.
Percy Corlett Austin, M.A.
Arthur John Berry.
William John Bowis, Ph.D.
Harold Calam, B.Sc.
John Denton.
Lionel John Drinkwater.
Bertie James Eaton.
Bernhard Flürscheim, Ph.D.
Reginald William Malyon Gibbs, B.Sc.
Thomas William D. Gregory.
Edgar Percy Hedley.
Charles H. Hertz, Ph.D., Ph.B.
Arthur Edwin Hill.
Frederick Gowland Hopkins, M.A., M.B., D.Sc., F.R.S.
John Gerard Hughes.
Ernest Arthur Jenkinson.
Thomas Macdonald.
Frederick James Martin.
Herbert Arthur Mills.
William Rest Mummery.
Arthur Charles Palmer, B.Sc.
Leonard Edward Beard Pearse.
Harold Lawson Pendlebury.
Percy George Pennymore.
Samuel Shrowder Pickles, B.Sc.
Thomas Ebenezer Pye.
Walter Hansen Rawles.
Frederick John Salmon.
Surendra Prasad Sanyal, D.Sc.
Willie Macro Seaber, B.Sc.
John Senior.
Arthur Burton Shepherd, B.Sc.
Allan Sime.
Fred Smith.
Emanuel George Streimer.
Richard Lumley Treble, B.Sc.
Robert Hutchison Turnbull.
James Neil Watts.
Charles Wightman.
Edward Jocelyn Wortley.
Henry Wren.
George Young, B.A. B.Sc.

Of the following papers, those marked * were read:

*132. "Saponarin: a new glucoside coloured blue with iodine." By George Barger.

Dissolved in the cell sap of the leaf epidermis of various plants, there occurs a substance which is coloured blue by iodine, and which is known to botanists as "soluble starch." This substance has been isolated from *Saponaria officinalis*, and is a glucoside; the name saponarin is suggested for it.

Saponarin crystallises in microscopic needles melting at 231—232°, and having the composition $C_{21}H_{24}O_{12},2H_2O$. The glucoside dissolves in alkalis with a yellow colour, gives with ferric chloride a reddish-brown coloration, and with iodine a substance closely resembling that formed from starch.

Ennea-acetyl saponarin, $C_{21}H_{15}O_{12}(C_2H_3O)_9$, melts at 183—185° and crystallises in needles.

Acids hydrolyse saponarin, thus:

$$C_{21}H_{24}O_{12} + H_2O = C_6H_{12}O_6 + C_{15}H_{14}O_7,$$

yielding glucose and vitexin, a colouring matter obtained by A. G. Perkin from a New Zealand dye wood (*Trans.*, 1898, **73**, 1030, and 1900, **77**, 416).

At the same time another colouring matter is formed, apparently isomeric with vitexin, or closely related to it, for which the name saponaretin is suggested. Vitexin and saponaretin both yield phloroglucinol and *p*-hydroxyacetophenone on boiling with caustic potash. Molecular weight determinations of vitexin and of acetyl vitexin prove that Perkin's formula, $C_{21}H_{20}O_{10}$, must be changed to $C_{15}H_{14}O_7$. Vitexin differs therefore from apigenin by two molecules of water, and probably is a flavanone derivative containing either a reduced pyrone ring or a reduced phloroglucinol nucleus. It would be a representative of a new class of colouring matters to which scoparin, which Perkin regards as methoxy-vitexin, would also belong.

Discussion.

The President asked whether the new glucoside was widely distributed in the vegetable kingdom, and whether it was contained in any considerable quantity in any particular plant. He also asked whether the isomeride of vitexin was, in the author's opinion, to be regarded as a natural product, or whether it resulted from the isomerisation of vitexin during the hydrolysis of the glucoside. He considered that Dr. Barger had satisfactorily established the identity of the product of hydrolysis of his glucoside with vitexin, and that

he had also established the formula of the latter compound. He considered that the author had made an important contribution to plant chemistry.

Mr. GRANT HOOPER said that in the microscopic examination of vegetable substance, traces of what had hitherto been regarded as soluble starch were not infrequently observed. He would like to know whether Dr. Barger had detected and identified the interesting glucoside which he had just shown them in substances other than those from which he had isolated the new compound.

Dr. BARGER, in reply, said that saponarin, which is optically active, occurs in about twenty plants; one of the richest of these, namely, *Saponaria*, contains less than 1 per cent. of the weight of dry leaves. Saponaretin is a product of secondary decomposition; vitexin is formed from the pure glucoside.

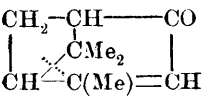
*133 "The constitution of umbellulone." By Frank Tutin.

The ketone, umbellulone, was isolated from the essential oil of *Umbellularia Californica* by Power and Lees (*Trans.*, 1904, **85**, 629), who showed it to possess the formula $C_{10}H_{14}O$.

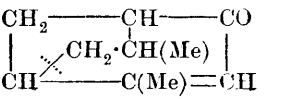
The behaviour of umbellulone towards certain reagents was further studied by Lees (*Trans.*, 1904, **85**, 639), and its investigation has been continued by the present author.

Umbellulone, on oxidation, yields a *saturated keto-acid*, $C_9H_{14}O_3$ (m. p. 102°), called *umbellulonic acid*, which, on distillation under suitable conditions, is partially converted into an *unsaturated lactone*, $C_9H_{12}O_2$ (b. p. 217—220°). This lactone, on hydrolysis, yields umbellulonic acid, and is produced by the elimination of water from the enolic modification of the keto-acid. On oxidation, a polymethylene dicarboxylic acid, *umbellularic acid*, $C_8H_{12}O_4$ (m. p. 120—121°), is obtained, which is remarkably stable.

By the bromination of umbellulone, and subsequent distillation of the products, *p*-cymene was obtained, together with substances containing bromine. It would therefore appear that the molecule of umbellulone has a structure capable of yielding this hydrocarbon without undergoing any profound change. The only formulæ which offer a satisfactory explanation of the behaviour of umbellulone on oxidation and on bromination are the following:



I.



II.

Both these substances, through the rupture of the bridge by the addition of hydrogen at the point indicated by the dotted line, would give compounds capable of yielding *p*-cymene. Formula I represents a keto-pinene, which would yield, on oxidation, a dimethyltetramethylene dicarboxylic acid, identical or stereoisomeric with the norpic acid obtained by the oxidation of pinene. On the other hand, the compound represented by formula II would yield 1-methylpentamethylene 3 : 5-dicarboxylic acid.

It is considered most probable that formula II represents the constitution of umbellulone.

Discussion.

Dr. Power congratulated Mr. Tutin on the accomplishment of this excellent work. He thought the evidence brought forward was so complete as to leave no doubt respecting the correctness of the constitutional formula assigned to umbellulone by Mr. Tutin. It was of interest to note that only one other ketone possessing the same empirical formula as umbellulone, namely, carvone, had been observed to occur in nature, but this had a very different constitution.

***134. "The action of ethyl iodide and of propyl iodide on the disodium derivative of diacetylacetone." By Alexander William Bain.**

As the result of the action of ethyl iodide on the disodium derivative of diacetylacetone, suspended in alcohol, the following substances have been obtained :

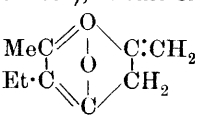
(1) Dimethyldiethylpyrone, $C_{11}H_{16}O_2$ (m. p. 64°).

(2) Dimethylethylpyrone, $C_9H_{12}O_2$ (m. p. 58°).

Each forms a hydrochloride and a platinichloride.

(3) Diethyldiacetylacetone, $C_{11}H_{18}O_3$.

(4) A compound, $C_9H_{12}O_2$ (m. p. 66—67°, b. p. 289°), isomeric with dimethylethylpyrone, to which the formula



is ascribed. This compound on boiling with concentrated hydrochloric acid yields dimethylethylpyrone hydrochloride, and by the action of sodium hydroxide solution is changed into an orcinol derivative.

By the action of propyl iodide on the disodium derivative of diacetylacetone, the author has obtained dimethylpropylpyrone, $C_{10}H_{14}O_2$, and also an isomeric substance which possesses similar properties to the corresponding ethyl compound.

135. "A possible source of error in Stas's nitrogen ratios." By Robert Whytlaw Gray.

Stas's higher value for the atomic weight of nitrogen is supported by very little evidence.

Not only do the researches of Rayleigh, Leduc, D. Berthelot, Guye, and the author confirm the lower value, but an indirect comparison of the atomic weights of nitrogen and silver from the results of Marignac, Scott, and Richards leads to the same result.

By assuming similar errors in the ratio $Ag : NH_4Cl$ and $Ag : NH_4Br$ of Stas as those found for the ratio Ag : NaCl by Richards and Wells, the value for nitrogen deduced is 14·011. The possible sources of error in the other ratios are discussed.

136. "Electrolytic oxidation." By Herbert Drake Law.

On oxidising benzoin by the electrolytic method, three products are formed, namely, benzil, benzaldehyde, and benzoic acid, as shown by the following equations :

$$C_6H_5\cdot CH(OH)\cdot COC_6H_5 + O = C_6H_5\cdot CO\cdot COC_6H_5 + H_2O,$$
$$C_6H_5\cdot CH(OH)\cdot COC_6H_5 + O = C_6H_5\cdot CHO + C_6H_5\cdot CO_2H.$$

In addition to these, however, a certain amount of tarry matter is always obtained. This formation of complex tarry matter is a property of high potential discharge at the anode, and always takes place in the case of unsaturated compounds. The amount of any of these products which is formed is influenced very largely by the conditions of the experiment. Thus, strongly acid solutions promote the formation of tar, but none is observed when the anodic discharge is kept low. Similar experiments conducted with compounds resembling benzoin gave results agreeing with the above. Thus, cuminoin on being oxidised electrolytically forms cumic acid, cuminol, and tar. Furoin forms furil and tar, benzfuroin gives benzoic acid and tar, whilst anisoin and piperonyloin yield nothing but complex resinous matter of unknown constitution.

137. "The ethyl esters of acetonyloxalic and ~~acetophenyloxalic~~ acids and the action of ethyl oxalate on acetanilide and its homologues." By Siegfried Ruhemann.

The research was suggested by a note of Claisen's (*Ber.*, 1891, **24**, 128) that ethyl sodioacetonyloxalate, on boiling with glacial acetic acid, yielded the sodium compound possessing the empirical formula

$C_5H_3O_3Na$. This is violet, as is the substance which Ruhemann and Merriman (*Trans.*, 1905, **87**, 1383) obtained in the course of their investigation on the reaction between phenylpropiolyl chloride and sodioacetylacetone. The compounds which are produced by the condensation of aromatic aldehydes with the ethyl esters of acetonyloxalic and acetophonyloxalic acids react with aniline and its homologues to yield yellow substances, which are constituted according to the type:

Me·CO·CH—C:N·Ph
Ph·CH·O·CO .

With the object of ascertaining whether a relationship exists between these yellow substances and xanthoxalanil, which W. Wislicenus and Sattler (*Ber.*, 1891, **24**, 1245) obtained, although in an impure form, from acetanilide and ethyl oxalate, the author has repeated the experiments of these chemists and has prepared xanthoxalanil in a pure state by crystallisation from nitrobenzene; its constitution is expressed by the formula

$$\mathrm{Ph{\cdot}N}\!<\!\begin{array}{l}\mathrm{CO{\cdot}CH_2 \quad CO{\cdot}CO}\\ \mathrm{CO{\cdot}C{=\!=}C{-}CO}\end{array}\!>\!\mathrm{N{\cdot}Ph}.$$

Similar compounds have been prepared by using, instead of acetanilide, aceto-*p*-toluidide (see Wislicenus and Sattler, *loc. cit.*), aceto-*o*-toluidide, and aceto-α-naphthalide. These substances differ from each other, especially in colour and solubility. Xanthoxalanil is deep orange and sparingly soluble in nitrobenzene, xanthoxalo-*p*-toluidide, $C_{22}H_{16}O_5N_2$, is lighter in shade and more soluble, whilst the corresponding ortho-compound is canary-yellow and readily dissolves in this solvent; finally, xanthoxalo-α-naphthylanil, $C_{28}H_{16}O_5N_2$, is also yellow, but dissolves in glacial acetic acid.

138. "An oxidation product of indigotin." By Arthur George Perkin.

It has been shown by Sommargua (*Annalen*, 1879, **195**, 305) that, on sublimation under reduced pressure, refined natural indigo yields pure indigotin; again, Bloxam (*Trans.*, 1905, **87**, 982) has found that this is the case with the commercial synthetical product. With limited access of air, however, pure indigotin and also these commercial varieties give a small quantity of a yellow sublimate which crystallises in needles, m. p. 258—259°, is very sparingly soluble in alcohol, and can be distilled without appreciable loss. It appears to have the formula $C_{15}H_8O_2N_2$ (Found, C = 72·59; H = 3·17; N = 11·59 per cent.), is very resistant to acid oxidising agents, but on boiling with strong potassium hydrate solution gives anthranilic acid. When treated in boiling glacial acetic acid solution with hydriodic acid, an unstable *hydriodide*, forming colourless, prismatic needles (Found, N =

7·42 per cent.), is produced; this, on treatment with water, splits off hydriodic acid and is reconverted into the substance $C_{15}H_8O_2N_2$; it is therefore probably the salt of an unstable reduction product of the latter. On reduction with tin and hydrochloric acid, a *compound*, $C_{15}H_{12}ON_2$ (Found, C = 76.33; H = 5·34; N = 11·88 per cent.), crystallising in colourless needles, m. p. 190—193°, is formed, which on oxidation is reconverted into the substance $C_{15}H_8O_2N_2$. A trace of indole is also formed during the reduction. By the prolonged action of hydriodic acid, a compound crystallising in yellow needles, m. p. 200—203°, is produced, which can also be reoxidised to the original product. The author hopes to devise a better method for preparing this yellow compound, as hitherto, with much labour, only 8 grams of the pure substance could be obtained from 2 lb. of indigo.

139. "Indigo-yellow." By Arthur George Perkin.

In a previous communication (*Proc.*, 1904, **20**, 172) it was shown that the yellow colouring matter usually present in Java indigo is kampherol. Examination has now shown that it is derived from a glucoside present in the leaves of the Java and Natal indigo plants (*Indigofera arrecta*), which is probably hydrolysed during the fermentation process. The material employed was chiefly the air-dried Natal leaf. This glucoside, for which the name *Kampheritrin* is proposed, has the formula $C_{27}H_{30}O_{14}$ (Found, after being dried at 100°, C = 56·00; H = 5·27 per cent.); the air-dried substance contains $3\frac{1}{2}$ mols. of water (Found, H_2O = 9·79 per cent.). It crystallises in colourless needles, which are sparingly soluble in water, is very nearly devoid of tinctorial properties, and, when heated, congeals together at 190—192° and melts at 201—203°. It is hydrolysed by acids according to the equation

$$C_{27}H_{30}O_{14} + 4H_2O = C_{15}H_{10}O_6 + 2C_6H_{14}O_6$$

into kampherol (Found, $C_{15}H_{10}O_6$ = 49·19 per cent.) and rhamnose, identified by means of its osazone. Analyses of the kampherol thus obtained, m. p. 275—277° (Found, C = 63·01; H = 3·68 per cent.), and its acetyl compound, m. p. 181° (Found, C = 60·77; H = 4·43 per cent.), were made for purposes of confirmation. By the method employed, 1·5 per cent. of the glucoside was isolated, but considerably more of this is really present, as 2 per cent. of an impure kampherol contaminated with a reddish-brown substance, probably the so-called "indigo-brown," could be obtained by hydrolysing the aqueous extract of the leaf.

140. "1 : 3-Diphenylbarbituric acid and some coloured derivatives. Synthesis of 1 : 3-diphenyluric acid." By Martha Annie Whiteley.

1 : 3-*Diphenylbarbituric acid*, $CO<^{NPh\cdot CO}_{NPh\cdot CO}>CH_2$, prepared by heating malonyl chloride and carbanilide or malonic acid, phosphorus oxychloride and carbanilide in chloroform solution, forms colourless, prismatic needles and melts at 238°; the *dimethyl* derivative,

$$CO<^{NPh\cdot CO}_{NPh\cdot CO}>CMe_2,$$

crystallises in colourless needles, melts at 230°, and sublimes at a slightly higher temperature; the iso*nitroso*-derivative (*diphenylvioluric acid*), $CO<^{NPh\cdot CO}_{NPh\cdot CO}>C<^{NH}_{O}$, crystallises in colourless needles, melts and decomposes at 227°, and yields the red or violet salts characteristic of this type of compound; the *potassium*, *aniline*, and *piperidine* salts were prepared; the *acetyl* derivative, $C_{16}H_{10}O_3N_3\cdot OAc$, crystallises in colourless prisms and melts at 245°. 1 : 3-*Diphenyl*-5-*aminobarbituric acid* (1 : 3-*diphenyluramil*), obtained by reducing diphenylvioluric acid, forms colourless crystals, melts and decomposes at 195°, and condenses with potassium cyanate to form 1 : 3-*diphenyl*-ψ-*uric acid*,

$$CO<^{NPh\cdot CO}_{NPh\cdot CO}>CH\cdot NH\cdot CO\cdot NH_2,$$

which crystallises in colourless prisms, melts and decomposes at 217°, and on boiling with hydrochloric acid yields 1 : 3-*diphenyluric acid*, $^{NPh-CO\cdot C\cdot NH}_{CO\cdot NPh\cdot C\cdot NH}>CO$, which crystallises in colourless needles, softens at 238°, but does not melt at 306°.

1 : 3-Diphenylbarbituric acid condenses readily with aromatic aldehydes or diazonium chlorides, and the resulting compounds are of a bright yellow or orange colour. 5-*Benzylidene*-1 : 3-*diphenylbarbituric acid*, $CO<^{NPh\cdot CO}_{NPh\cdot CO}>C{:}CHPh$, forms pale yellow, prismatic needles from most of the ordinary solvents, crystallises from acetone or ethyl acetate in a mixture of colourless and yellow needles, each form melting sharply at 214°, and yielding on reduction 5-*benzyl*-1 : 3-*diphenylbarbituric acid*; 5-*cinnamylidene*-1 : 3-*diphenylbarbituric acid*,

$$CO<^{NPh\cdot CO}_{NPh\cdot CO}>C{:}CH\cdot CH{:}CHPh,$$

forms bright yellow needles and melts and decomposes at 268°. 1 : 3-*Diphenylalloxanphenylhydrazone*, $CO<^{NPh\cdot CO}_{NPh\cdot CO}>C{:}N\cdot NHPh$, forms bright yellow needles and melts and decomposes at 264°;

1 : 3-*diphenylalloxan*-p-*nitrophenylhydrazone*,

$$CO\langle{}^{NPh\cdot CO}_{NPh\cdot CO}\rangle C{:}N\cdot NH\cdot C_6H_4\cdot NO_2,$$

forms well-developed orange prisms and melts at 274°; 1 : 3-*diphenylalloxanbenzyl*-p-*nitrophenylhydrazone*,

$$CO\langle{}^{NPh\cdot CO}_{NPh\cdot CO}\rangle C\langle{}^{CH_2\cdot Ph}_{N{:}N\cdot C_6H_4\cdot NO_2}$$

or $CO\langle{}^{NPh\cdot CO}_{NPh\cdot CO}\rangle C{:}N\cdot N\langle{}^{CH_2\cdot Ph}_{C_6H_4\cdot NO_2}$, from 5-benzyl-1 : 3-diphenylbarbituric acid and diazotised *p*-nitraniline, crystallises in beautiful yellow prisms and melts and decomposes at 180°. *Alloxanphenylmethylhydrazone*, $CO\langle{}^{NH\cdot CO}_{NH\cdot CO}\rangle C{:}N\cdot NMePh$, from alloxan and phenylmethylhydrazone, crystallises in brick-red, hexagonal plates, which melt and decompose at 189—190°.

141. "The alkylation of rhamnose." By Thomas Purdie and Charles Robert Young.

By complete methylation with silver oxide and methyl iodide, acetone- and methyl-rhamnosides yield respectively *dimethyl acetonerhamnoside* and *trimethyl methylrhamnoside*, and by hydrolysing these compounds *di-* and *tri-methylrhamnose* respectively are obtained. The rhamnose derivatives described are liquids, but, all of them excepting dimethyl rhamnose being volatile without decomposition, it was possible to isolate them by fractional distillation under reduced pressure.

Dimethyl- and trimethyl-rhamnose give crystalline phenylhydrazones, and display the ordinary properties of reducing sugars. Trimethyl rhamnose is reconverted into trimethyl methylrhamnoside by condensation with methyl alcohol and also by the silver oxide method of alkylation; the former process gives mainly the α-form of the aldoside, the latter a mixture composed largely of the β-form. The presence of the β-isomeride was recognised not only by its rotatory power, but also by the rapidity of its hydrolysis. The rotatory powers of the substances described fall into line with those of glucose and its corresponding derivatives.

142. "The alkylation of *l*-arabinose." By Thomas Purdie and Robert Evstafieff Rose.

By methylating Fischer's α-methylarabinoside with silver oxide and methyl iodide, *trimethyl α-methylarabinoside* is obtained in large, well-formed crystals (m. p. 43—45°), and by hydrolysing this with dilute

hydrochloric acid *trimethyl arabinose* is produced. This substance is a liquid (b. p. 148—152°, 19 mm.), but otherwise it exhibits the usual properties of a reducing sugar. It can be methylated by condensation with methyl alcohol, and also by treatment with methyl iodide and silver oxide, the product in both cases being a mixture of the isomeric trimethyl methylarabinosides. The condensation process yields the crystalline α-isomeride in large proportion, the silver oxide process mainly the β-isomeride. The latter substance is apparently a liquid and it could not be isolated, but its presence in the mixture was recognised by its undergoing hydrolysis more rapidly than the isomeric α-form.

In preparing Fischer's α-methylarabinoside, a small quantity of the *β-methylarabinoside* was obtained in crsytalline prisms melting at 115—117°.

With respect to rotatory power, the isomeric methylarabinosides and trimethyl methylarabinosides show relations similar to those of the corresponding derivatives of *d*-glucose.

143. "The esters of triacetic lactone and triacetic acid." By Foster Sproxton.

Ethyl triacetate, $Me{\cdot}CO{\cdot}CH_2{\cdot}CO{\cdot}CH_2{\cdot}CO_2Et$, is formed by heating triacetic lactone with dry alcohol in sealed tubes, and may be obtained pure by decomposing its copper salt with sulphuretted hydrogen. It gives a deep red coloration with ferric chloride.

The *ethyl* and *methyl* salts of triacetic lactone have been prepared by the action of ethyl and methyl iodides on the silver salt of the lactone. The ethyl ester could not be obtained in the pure condition. Like the analogous esters of dehydracetic acid, they have an acid reaction in aqueous solution. This property has been shown to be due, in both the triacetic lactone and dehydracetic acid derivatives, to partial hydrolysis of the esters by water. Complete hydrolysis takes place on boiling, and the parent lactone can be recovered from the solution.

144. "Optically active reduced naphthoic acids. Part II. The resolution of the tetrahydronaphthoic acids." By Robert Howson Pickard and Joseph Yates.

1 : 2 : 3 : 4-Tetrahydro-1-naphthoic acid and 1 : 2 : 3 : 4-tetrahydro-2-naphthoic acid have each been resolved into their optical antipodes by the fractional crystallisation from acetone of the *l*-menthylamine salts.

The lævo-isomeride of the first has $[M]_D$ – 28·1° in chloroform and – 92·1° in benzene, that of the second having $[M]_D$ – 91·2° in chloro-

form and $-87{\cdot}9°$ in benzene. The sodium salts when dissolved in water have respectively $[M]_D - 21{\cdot}1°$ and $-90{\cdot}5°$.

145. "The velocity of chemical change in the pentamethylen series." By N. Menschutkin, sen.

The general results of the study of the velocity of chemical change in polymethylene derivatives are as follows:

(1) The formation of the closed polymethylene chain from an open saturated chain of normal structure proceeds with increase of velocity. The maximum increase occurs in the formation of the pentamethylene ring; in the case of the hexamethylene ring the increase is less, and the heptamethylene ring is formed with the minimum increase of velocity.

(2) The increase of velocity at the closing of the open chain is not a specific property of the polymethylene ring, but is a general phenomenon observed in the formation of all closed chains, alicyclic and heterocyclic.

(3) The constants of velocity decrease according as the number of methylene groups in the polymethylene rings increases. The decrease is of the same order as is observed in the homologous series of open chain saturated carbon compounds of normal structure.

(4) The secondary polymethylene alcohols, in which the hydroxyl group is attached to the carbon atom of the ring, are typical secondary alcohols. Their esterification constants are higher than those of the saturated secondary alcohols of normal structure. Hence, the polymethylene alcohols give higher constants than all of the secondary alcohols studied. The constants of the derivatives of *cyclo*pentanol are the highest; *cyclo*hexanol gives much lower values, and *cyclo*-heptanol still less.

(5) The side chain combined with the carbon atom united with the hydroxyl group gives rise to the formation of the polymethylene tertiary alcohols. Their esterification constants are very low, but esterification proceeds regularly; this is not the case with saturated tertiary alcohols, but is characteristic of phenols.

(6) When the side chains are in the ortho- and diortho-positions, a great decrease in the esterification constants is observed. This effect, commonly ascribed to the benzene ring alone, is a general property of all classes of chains whether open or closed, and containing carbon or other elements.

(7) When the side chain is in the position 3 or 4 of the polymethylene ring, an increase of esterification constants is observed, so much so that in the hexamethylene series the value of the constant of the first member of the series is exceeded.

(8) This property is not confined to the polymethylene ring, but applies generally to ringed systems, alicyclic and heterocyclic. As open chain compounds show no such increase of velocity, this is an important character of the closed chains.

(9) When a hexamethylene ring is introduced into the open chain of an alcohol, the decrease of the esterification constant is much more than is effected by the benzene ring.

(10) Hexamethylene, like hexane, exerts a very considerable retarding influence when used as a solvent in these reactions.

146. "Hydrolysis of ammonium salts by water." By Ernest George Hill.

The author aspirated a measured volume of air through solutions of different ammonium salts, the strengths of the solutions being normal, fifth-normal, and twenty-fifth-normal. The ammonia passing over was absorbed in water, or, when the amount was large, in acid. In the first case, the ammonia was estimated from the conductivity of the solution; in the latter case, by titration. It was found that for strong acids the equation $\frac{C_{\text{Acid}} \times C_{\text{Base}}}{C_{\text{Salt}}} = K$, and for weak acids

$$\frac{C_{\text{Acid}} \times C_{\text{Base}}}{C^2_{\text{Salt}}} = K$$

holds good for the concentrations of salt used.

The constants obtained in the case of the salts of mono-basic acids are inversely proportional to the molecular conductivities of the acids, and agree well with the values obtained for the strength of the acids by the various dynamical methods. In the case of dibasic acids, the constants are irregular. It is shown that the constant must depend on both the first and second ionisation-coefficients of the acids.

The author described the method employed for estimating ammonia by taking the resistance of its solution in conductivity water and comparing this with the resistance curve of ammonia. The method gave good results with solutions containing from 0·00027 to 0·009 per cent.

147. "The addition of alkyl halides to alkylated sugars and glucosides." By James Colquhoun Irvine and Agnes Marion Moodie.

When solutions of the equilibrium mixture of tetramethyl glucose in ordinary organic solvents are cooled from $+20°$ to $-20°$, the specific rotations undergo very little alteration, and, on re-heating to the initial temperature, the values originally found for the rotatory powers are exactly duplicated. When, however, an alkyl halide is used as solvent, the specific rotation at first increases slightly with fall of temperature

and then rapidly diminishes on further cooling. On re-heating the cooled solution to 20°, distinct downward multi-rotation was observed before the initial value was reached. The same regularities were shown by solutions of molecular proportions of the sugar and alkyl halides or hydrogen chloride in carbon tetrachloride.

The results point to the formation, during cooling, of oxonium compounds of the sugar with alkyl halides, and the α-form of the aldose appears to be more reactive than the β-isomeride. This was shown by a cycle of changes in specific rotation observed in the case of a solution in *iso*propyl iodide which had been cooled from 20° to 0°: (*a*) rapid decrease at 0°, due to oxonium formation; (*b*) subsequent upward multi-rotation at 0°, owing to the partial conversion, $\beta \longrightarrow \alpha$, in the uncombined sugar; (*c*) on re-heating to 20°, owing to dissociation of the oxonium compound, a rapid increase at constant temperature took place, followed by (*d*) downward multi-rotation at 20° to the initial value.

Tetramethyl α-methylglucoside also behaves abnormally when cooled in ethyl iodide solution, but the β-isomeride gives no indication of addition of the solvent. Comparable results were obtained with tetramethyl mannose and tetramethyl α-methylmannoside, but non-alkylated sugars or glucosides, when examined in mixtures of methyl alcohol and alkyl iodides, gave negative results.

The following notes have been received since the meeting:

148. "Note on the preparation of ethyl acetonedicarboxylate." By Ernest Ormerod.

In attempting to prepare ethyl acetonedicarboxylate, on fractionating the crude ester prepared by the method described by v. Pechmann (*Annalen*, 1891, **261**, 160) under reduced pressure, only a small quantity of volatile material was obtained, which on examination proved to be principally acetoacetic ester. The main product, which on cooling solidified to a white, crystalline mass, was ethylorcintricarboxylate.

Wolfman and v. Pechmann (*Ber.*, 1898, **31**, 2014) have shown that ethyl orcintricarboxylate is formed if an alcoholic solution of acetonedicarboxylic acid saturated with hydrogen chloride is allowed to stand for two or three weeks, and it was at first thought possible that the condensation had been brought about in this way during the preparation, but on examination it was found that the crude ester contained only a very small quantity of the orcinol derivative. It appeared very strange that the condensation should take place so readily, as according to Jerdan (Trans., 1899, **73**, 808) the pure ester may be heated at 180°

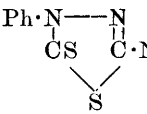
for a considerable time without any condensation taking place. Finally it was found that the condensation was brought about by the presence of a small quantity of calcium chloride which had been dissolved by the alcohol-ethereal solution of the ester. This view was shown to be correct by the fact that if the pure ester be heated with a trace of calcium chloride at 180° for a short time the amount of orcinol derivative formed corresponds to 4 per cent. of the theoretical. If the ethereal solution of the crude ester is dried over fused sodium sulphate, it may be distilled under reduced pressure without any condensation taking place.

During an attempt to prepare pure methyl acetonedicarboxylate, Dootson (Trans., 1900, **74**, 1196) obtained a crude product which, on distillation under reduced pressure, condensed very readily to form methyl orcintricarboxylate, and he came to the conclusion that the methyl ester cannot be distilled without this condensation taking place. It seems improbable that the methyl ester should differ in this respect from the ethyl ester, and, although Dootson does not state how the ethereal solution was dried, it is probable that the crude ester contained some inorganic substance which promoted the condensation.

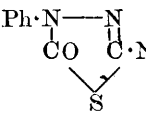
149. "The interaction of nitroformazyl, carbon bisulphide, and potassium hydroxide. A contribution to the chemistry of the thiobiazalones and the xanthates." By Ernest Ormerod.

The peculiar position of the nitro-group in nitroformazyl confers on this compound very abnormal properties: thus, by the interaction of nitroformazyl, carbon bisulphide, and potassium hydroxide, three compounds are obtained:

1-*Phenyl*-3-*azophenyl*-*dithiobiazalone*,



1-*phenyl*-3-*azophenyl thiobiazalone*,



and 1-*phenyl*-3-*azophenyl*-2-*thioaziethane*,

The three compounds are formed in varying quantities, depending on the solvent used and the conditions under which the experiment is carried out. Using alcohol as solvent, at the ordinary temperature the monothiobiazalone is almost exclusively formed, whilst if the interaction takes place at higher temperatures all three compounds are pro-

duced simultaneously; on using acetone or carbon bisulphide as the solvent, only the dithiobiazalone is formed.

The results obtained are interesting, as proving that a boiling alcoholic solution of carbon bisulphide and potassium hydroxide contains potassium xanthate, potassium dithiocarbonate, and potassium trithiocarbonate.

The author finds that the nitroformazyl is first reduced to formazylmercaptan, which is then acted on by the potassium xanthate, forming the dithiobiazalone, and by the potassium dithiocarbonate, forming the monothiobiazalone. The thioaziethane is apparently produced by the interaction of the potassium trithiocarbonate and the nitroformazyl.

The constitution of the biazalones obtained was proved by an examination of their decomposition products and by synthesis: the dithiobiazalone was synthesised from formazylmercaptan and thiophosgene, and the monothiobiazalone from formazylmercaptan and phosgene.

150. "Aldehydrol and the hydrates of compounds containing a carbonyl group." By William Morris Colles.

Concentrated aqueous solutions of aldehyde, acetone, formic, acetic, monochloroacetic, and trichloroacetic acids were cooled to low temperatures in an apparatus fitted with a combined filtering and stirring tube. The solutions, made up quantitatively in definite molecular proportions, were contained in a long, stoppered weighing tube into which the combined filtering and stirring tube fitted. This in turn was clamped inside a large vacuum vessel containing absolute alcohol, which, when cooled by liquid air, constituted the freezing mixture. Cooling was brought about very gradually and the solutions were very rapidly stirred. Several crystalline hydrates were obtained, the mother liquor being separated as soon as crystallisation had occurred. The following compounds of special interest were obtained: aldehydrol, $CH_3CH(OH)_2$, at $-90°$, a hydrol of formic acid, possibly *ortho*-formic acid, $HC(OH)_3$, *ortho*-acetic acid, $CH_3C(OH)_3$, and *ortho*-monochloroacetic acid, $CH_2ClC(OH)_3$. The analyses of the last two compounds, owing to experimental difficulties, were not very close. Acetone gave no result, and with trichloroacetic acid a hydrate containing 3 mols. of water was obtained. The hydrates of formic acid were fairly thoroughly investigated, and the following were obtained in a fairly pure crystalline condition: $CH_2O_2,4H_2O$, $4CH_2O_2,7H_2O$, $4CH_2O_2,3H_2O$, $3CH_2O_2,2H_2O$.

The next Ordinary Meeting will be held on **Thursday**, October **18th**, 1906, at **8.30** p.m., when the Longstaff Medal will be presented to Prof. W. N. Hartley, F.R.S.

LIST OF FELLOWS, 1906.

The List of Fellows for 1906 is now in active preparation, and changes of address received *after* 31*st July cannot be included in it.*

In order that the new list may be as complete as possible, those Fellows whose Degrees and Christian names do not appear in full are requested to communicate them to the Assistant Secretary.

THE LIBRARY.

The Library will be closed for Stocktaking from **Monday, August 13th**, until **Saturday, August 25th**, 1906, inclusive.

Fellows are particularly requested to return all books belonging to the Library **not later than Wednesday, August 8th.**

ERRATUM.

PROCEEDINGS, 1906, p. 94.

In the list of Fellows who have resigned :
for "H. W. Lawrence" *read* "W. T. Lawrence."

CATALOGUE

OF

ALCHEMICAL AND EARLY CHEMICAL BOOKS

PRESENTED TO THE

CHEMICAL SOCIETY

BY

SIR HENRY ENFIELD ROSCOE, D.C.L., LL.D., F.R.S.

Accum, *Fredrick.* Description of the process of manufacturing coal gas, for the lighting of streets, houses, and public buildings, with elevations, sections, and plans of the most improved sorts of apparatus now employed at the gasworks in London. Second edition. 1820. 8o. pp. xvi + 334.

Agricola, *Georg.* De re metallica libri XII. Quibus officia, instrumenta, machinæ, ac omnia denique ad metallicam spectantia, non modò luculentissimè describuntur ; sed & per effigies, suis locis insertas, adjunctis Latinis, Germanicisque appellationibus, ita ob oculos ponuntur, ut clariùs tradi non possint. Quibus àccesserunt hâc ultimâ editione, Tractatus ejusdem argumenti, ab eodem conscripti, sequentes. De animantibus subterraneis. Lib. I. De ortu & causis subterraneorum. Lib. V. De natura eorum quæ effluunt ex terra. Lib. IV. De natura fossilium. Lib. X. De veteribus & novis metallis. Lib. II. Bermannus sive de re metallica, dialogus. Lib. I. Cum indicibus diversis, quicquid in opere tractatum est, pulchrè demonstrantibus. Basileæ, Sumptibus & typis. Emanuelis König. 1657. Folio. pp. [xiv] + 708 + [xcii].

Agrippa von Nettesheym, *Heinrich Cornelius.* De incertitudine & vanitate scientiarum & artium. Apud Elorentissimam Antuerpiam. 1534. 8o. ff. 160 ; pagination irregular.

Incomplete, wanting ff. 52—53.

—— Opera, in duos tomos concinne digesta, & nunc denuò, sublatis omnibus mendis, in *φιλομούσων* gratiam accuratissimè recusa. Quibus

praeter omnes tabulas nouiter accessit ars notoria, quam suo loco interpositam reperies. Lugduni, Per Beringos Fratres. [1600.] 8vo. pp. [xxiv] + 668, [xvi] + 440 + [xvi]. [The *Epistolarum* are separately paged.] pp. 480.

Albertus Magnus. De secretis mulierū et virorum. *Colophon.* Impressum Liptzk per Melchiorem Lotter. Anno Millesimo q'ngentesimoquinto. [1505.] 4vo. ff. [xxx].

—— De mineralibus et rebus metallicis libri quinque. Coloniæ, apud Ioannem Birckmannum et Theodorum Baumium, 1569. 12o. pp. 391 + [xi].

Alchymist. Der von Mose. . . übel urtheilende Alchymist. See **Schmid,** *Johann George.*

Arnaldus de Villanova. Opera chymica: videlicet, Thesaurus Thesaurorum: seu Rosarius Philosophorum: ac omnium secretorum maximum secretum. Lumen nouum. Flos florum, & Speculum alchimiæ. Quibus nimirum artis huius mysteria etiam secretissima, luculenter enodantur, & quàm maxima licet, & potest fieri perspicuitate explicantur. Nunc primum ita coniunctim edita, opera & impensis, Hieronymi Megiseri. Francofurti, Typis Ioachimi Bratheringij. 1603. 8o. pp. 120. [The *Speculum* has a separate title-page and pagination.] pp. 80.

—— Chymische Schrifften, Darinnen begriffen. I. Der Schatz aller Schätze. II. Der philosophen Rosen-Garten. III. Das gröste Geheimnuss aller Geheimnüssen. IV. Spiegel der chymischen Kunst. Worbey zugleich mit angefüget. V. Die edle Practica der Prophetin Mariæ, Moysis Schwester. VI. Das Buch Calidis, des Sohns Jazichii, von den Geheimnüssen der Alchimie. VII. Kallid Rachaidibi, von den 3 Worten. VIII. Aristotelis Tractätlein, von der Practic des Philosophischen Steins. X. Ludus puerorum, das Kinder-Spiel und der Weiber-Arbeit. Allen Liebhabern der wahren Alchimie zu Gefallen aus dem Latein mit höchstem Fleiss in Teutscher Sprache übersetzet, Durch Johannem Hoppodamum. Franckfurt und Hamburg. In Verlegung Georg Wolffs, Buchhändlers in Hamburg, in St. Johannis Kirchen. 1683. 8o. pp. [xvi] + 350.

Aureum Vellus. *See* **Trissmosin,** *Salomon.*

Balduinus, *Christianus Adolphus.* Aurum superius & inferius auræ superioris & inferioris hermeticum. Amstelodami Apud Joannem Jansonium à Waesberge. 1675. 12o. pp. [xx] + 96. [Then follows the *Phosphorus hermeticus*, without pagination, pp. xiii.]

Barnaud, *Nicolas.* *See* **Ripley,** *George.*

Barth, *Jeremias.* *See* **Beguin,** *Jean.*

Batsdorff, *Heinrich von.* *See* **Reibehand,** *Christoph.*

Becher, *Johann Joachim.* Natur-Kündigung der Metallen. Mit vielen curiosen, Beweissthumben, natürlichen Gründen, Gleichnüssen,

Erfahrenheiten, und bisshero ohngemeinen Auffmerckungen vor Augen gestellet. Zur Erhaltung der Warheit, Erläuterung der Spagirischen Philosophi, und Gefallen der Liebhabern. . . . In Verlegung Johan Wilhelm Ammons und Wilhelm Serlins. Franckfurt 1661. 8o. pp. [xiv] + 347 + [xxxvii].

Becher, *Johann Joachim.* Institutiones chimicæ prodromæ i.e. . . . Oedipus chimicus obscuriorum terminorum & principiorum chimicorum, mysteria aperiens & resolvens. Opusculum, omnibus medicinæ & chimiæ studiosis, lectu perquàm utile & necessarium. Francofurti, Apud Hermannum à Sande, 1664. 12o. pp. [xiv] + 192 + [viii].

—— Chymischer Glücks-Hafen, oder grosse chymische Concordantz und Collection, von funffzehen hundert Chymischen Processen: Durch viel Mühe und Kosten auss den besten Manuscriptis und Laboratoriis in diese Ordnung, wie hier folgendes Register aussweiset, zusammen getragen. Von Johann Joachim Becher . . . und . . . Paul Flemming. Franckfurt, In Verlegung Johann Georg Schiele, Buchhändlers, 1682. 4to. pp. [viii] + 810 + [xxxv].

Bound with **Ercker,** *L.* Aula Subterranea.

—— Chymisches Laboratorium oder unter-erdische Naturkündigung. Darinnen enthalten wird: I. Die tieffe Zeugung derer unter-erdischen Dinge: Wie auch der wunderbare Bau der ober- und unter-erdischen Erd- Wasser- und Lufft-Kugel: Und dann die absonderliche Natur der unter-erdischen Dinge Aufflöss- und Zerlegung in ihre Theile, und derselben Eigenschafft. II. Neue Chymische Proben, einiger künstlichen gleich darstelligen Verwandelung derer Metallen, nach Anleitung der in vorigen Jahren in Druck gegebenen Physicæ subterraneæ. III. Ein nochmaliger Zusatz und philosophischer Beweissthum̃, derer Chymischen, die Wahr- und Möglichkeit, derer Metallen Verwandelung in Gold, bestreitenden Lehr-Sätze. IV. Ein chymischer Rätseldeuter, derer verdunckelten Wört-Satze Urhebung und Geheimnüsse offenbahrend und aufflösend . . . Franckfurt, zu finden bey Philipp Fievet, Buchhändl. 1690.

Incomplete, Buch I: *Physica subterranea* only, pp. [xxviii] + 732.

—— Physica subterranea profundam subterraneorum genesin, è principiis hucusque ignotis, ostendens. Opus sine pari, primum hactenus & princeps, editio novissima. Præfatione utili præmissâ, indice locupletissimo adornato, sensuumque & rerum distinctionibus, libro tersius & curatius edendo operam navavit & Specimen Beccherianum, fundamentorum, documentorum, experimentorum, subjunxit Georg. Ernestus Stahl. Lipsiæ, Apud Joh. Ludov. Gleditschium. 1703. 8o. pp. [xxx] + 1008 + [xxxvi]. [pp. 655–6 and 823–832 omitted in pagination.] The *Specimen Beccherianum* has a separate title-page and pagination. pp. [viii] + 304 + xvi.

Becher, *Johann Joachim.* Mineralisches A B C. Oder vier und zwantzig chymische Theses von der Geburt, denen Principiis, Unterschied, Vermischung, und Auflösung deren Mineralien, Metallen, und übrigen Unterirrdischen Dingen, &c. Aus dem Lateinischen ins Teutsche übersetzet. Nun aber auf vieler Begehren zum Druck befördert durch Friederich Roth-Scholtzen. Nürnberg und Altdorff, bey Johann Daniel Taubers seel. Erben, Anno 1723. 8o. pp. 150.

Beguin, *Jean.* Tyrocinium chymicum . . . à Christophoro Glückradt, et Jeremia Barthio . . . Notis elegantibus illustratum, formulisq'; medicamentorum optimis & secretis locupletatum: Nunc verò à Johanne-Georgio Pelshofero. . . . Denuo, amicorum rogatu, in publicum emissum, ac triplici Indice ornatum. Wittebergæ, Impensis Andreæ Hartmanni, Bibliopol. Typis Johannis Röhneri, Acad. Typogr. 1650. 8o. pp. [liii] + 480 + [xliv].

—— Tyrocinium chymicum, commentario illustratum. A Gerardo Blasio. Editio secunda. Amstelodami. Apud Casparum Commelinum, 1669. 8o. [xxxvi] + 332 + [viii].

Berward, *Christian.* *See* **Ercker**, *Lazarus.*

Berzelius, *J. Jacob.* Die Anwendung des Löthrohrs in der Chemie und Mineralogie. Zweite Auflage. Nürnberg, 1828. 8o. pp. xvi + 282.

Black, *Joseph.* Lectures on chemistry. Edinburgh. [Manuscript, written after 1760]. 4 vols. 4o. pp. 379, 436, 388, 344.

—— Vorlesungen über die Grundlehren der Chemie aus seiner Handschrift herausgegeben von Johann Robison. Aus dem Englischen übersetzt und mit Anmerkungen versehen von Lorenz von Crell. Neue wohlfeile Ausgabe. Hamburg 1818. 4 vols. 8o. pp. cvi + 444 + [viii], 548 + [xiv], 484 + [x], 284 + [vi].

Boerhaave, *Hermann.* A new method of chemistry; including the theory and practice of that art: laid down on mechanical principles, and accommodated to the uses of life. The whole making a clear and rational system of chemical philosophy. To which is prefix'd a critical history of chemistry and chemists, from the origin of the art to the present time. . . . Translated from the printed edition, collated with the best manuscript copies. By P. Shaw, and E. Chambers. With additional notes and sculptures. London: printed for J. Osborn and T. Longman, at the Ship in Pater-noster-Row 1727. 4o. pp. xvi + 384, 335.

—— Elementa Chemiae, quae anniversario labore docuit, in publicis, privatisque, scholis, Hermannus Boerhaave. Qui continet historiam et artis theoriam. Cum tabulis aeneis. Lugduni Batavorum, sumptibus Joannis Rudolphi Im-Hoff, 1732. 4o. Vol. I [xii] + 896 + [lii]: (423–4 wanting); Vol. II [vi] + 538 + [xlv].

—— Anfangsgründe der Chymie praktischer Theil, aus dem Lateinischen übersetzt. Zwote Auflage, mit Anmerkungen von Johann

Christian Wiegleb. Danzig 1791. 8o. pp. [iv] + 476 + 270 + [xlviii].

Bollinger, *Ulrich.* *See* **Croll**, *Oswald.*

Bormes. Epitre a messieurs les savans et amateurs en chymie. Pour servir de réponse à un article des Elémens d'Histoire-Naturelle et de Chymie de M. de Fourcroy; suivie de plusieurs Mémoires, sur des opérations nouvelles et curieuses en chymie. A Bruxelles 1787. 8o. pp. [iv] + 145.

Bound with **Kirwan**, *Richard.* Essai sur le phlogistique, 1788.

Borrichius, *Olaus.* De ortu, et progressu chemiæ, dissertatio. Hafniæ, typis Matthiæ Godicchenii, sumptibus Petri Haubold, Reg. Acad. Bibl. 1668. 4o. pp. [xii] + 150 + [ii].

Boyle, *Robert.* Opera varia, quorum posthac exstat catalogus. Cum indicibus necessariis & multis figuris æneis. Genevæ, apud Samuelem de Tournes 1677.

A collection of 10 tracts, each having separate title-pages, signatures, and pagination.

Cassius, *Andreas.* De extremo illo et perfectissimo naturæ opificio ac principe terrænorum sidere auro de admirandâ ejus naturâ, generatione, affectionibus, effectis, atque ad operationes artis habitudine. Cogitata nobilioribus experimentis illustrata. Hamburgi, Sumptibus Georgii Wolffi, 1685. 8o. pp. [viii] + 152.

Chambers, *C.* *See* **Boerhaave**, *Hermann.*

Charleton, *Walter.* *See* **Helmont**, *Johann Baptista van.*

Colson, *Lancelot.* Philosophia Maturata: an exact piece of philosophy, containing the practick and operative part thereof in gaining the philosophers stone; with the wayes how to make the mineral stone, and the calcination of mettals. Whereunto is added, a work compiled by St. Dunstan, concerning the philosophers stone, and the experiments of Rumelius and preparations of Angelo Sala, all most famous chymists in their time. London, Printed for G. Sawbridge, and are to be sold at his house upon Clerken-well-Green, 1668. 24o. pp. [x] + 142.

Crell, *Lorenz von.* *See* **Black**, *Joseph.*

Croll, *Oswald.* Basilica Chymica continens. Philosophicam propriâ laborum experientiâ confirmatam descriptionem et usum remediorum chymicorum selectissimorum é lumine gratiæ et naturæ desumptorum. In fine libri additus est autoris ejusdem tractatus nouus de Signaturis Rerum internis. Cum gratia et priuilegio S. Cæs. Maiest: Francofurti, Impensis Godefridi Tampachij. (*No date.*) 4o. pp. [xvi] + 283 + [xxv]; Tractatus de Signaturis, pp. [xv] + 80 + [xvi]; Elegia de Vera Antiqua Philosophica Medicina, scripta à M. Ulrico Bollingero, etc., pp. 24.

This undated edition is a re-issue of that of 1609, with a new title-page. See **Ferguson**, *John*, Bibliotheca Chemica, Vol. I., p. 185.

Croll, *Oswald.* Basilica Chymica continens. Philosophicam propriâ laborum experientiâ confirmatam descriptionem et usum remediorum chymicorum selectissimorum é lumine gratiæ et naturæ desumptorum. In fine libri additus est autoris ejusdem tractatus nouus de Signaturis Rerum internis. Cum gratia et priuilegio S. Cæs. Maiest: Francofurti, Impensis Godefridi Tampachij. (*No date.*) 4o. pp. [viii]+248+xv. Then follows: Oswaldi Crollii Von Wetter auss dem Fürstenthumb Hessen, weyland Fürstlichen Anhaltischen wolverordneten Leib Medici Tractat von den jnnerlichen Signaturen, oder Zeichen aller Dinge . . . Getruckt zu Franckfurt am Mayn, bey Caspar Rötel, in Verlegung Gottfridt Tampachs. 1629. pp. 72+7.

The title-page to the *Basilica Chymica* is identical with that of the previous work; the book, however, is a German translation. The tract on signatures has a separate title-page and pagination.

Dorn, *Gerhard.* Congeries Paracelsicæ chemiæ de transmutationibus metallorum, ex omnibus quæ de his ab ipso scripta reperire licuit hactenus. Accessit genealogia mineralium, atq; metallorum omnium, eiusdem autoris. Gerardo Dorneo interprete. Francofurti Apud Andream Wechelum, 1581. 8o. pp. 277+[i].

[Another copy.]

—— *See* **Paracelsus**, *Theophrastus.*

[**Dossie**, *Robert.*] Das geöfnete Laboratorium oder die entdeckten Geheimnisse der heutigen Chymisten und Apotheker welches viele besondere Dinge in sich enthält, die allen praktischen Aerzten zu wissen überaus nöthig sind. Aus dem Englischen übersetzt von George Heinrich Königsdörffer. Altenberg, 1760. Im Verlag der Richterischen Buchhandlung. 8o. pp. [xxxii]+324+[xii].

Englisches Klee-Blat, oder drey Elementen, Woraus Himel, Erden, Meere, mit allen ihren sichtbaren, hörbaren, fühlbaren, greiff und schmäckbaren Gestalten, bestehen. Durch fleissige Lesung Heil. Schrifft, und Englischer Bücher, Entdecket und Erwachsen. Neben denen Anweisungen Heil. Schrifft, und Meynungen der Weltweisen Ausgesetzet. Und der Königl. Preussischen Weltberühmten Societät der Wissenschafften zuförderst. Dann auch allen und jeden gelahrten und ungelahrten Liebhabern der irrdischen Wahrheiten zur ohnparthenischen, und Hochgeneigten Examinirung. Vom sichern Grund und helles Licht suchenden Authore Uberreichet. Gedruckt Anno 1709. 8o. pp. 40.

Bound with **Schmid**, *J. G.*, Der . . . Alchymist.

Erastus, *Thomas.* Disputatio de auro potabili, in qua accurate admodum disquiritur, num ex metallis, opera Chemiæ, concinnata pharmaca tutè utiliterque bibi possint. Basileæ. Apud Petrum Pernam, 1578. 8o. pp. [viii]+24+148+[xii].

Bound with **Schmid**, *J. G.*, Der . . . Alchymist.

Ercker, *Lazarus.* Aula Subterranea Domina Dominantium Subdita Subditorum. Das ist: Untererdische Hofhaltung, ohne welche weder die Herren regiren, noch die Unterthanen gehorchen können. Oder gründliche Beschreibung derjenigen Sachen, so in der Tieffe der Erden wachsen, als aller Ertzen der Königlichen und gemeinen Metallen, auch fürnehmster Mineralien, durch welche, nächst Gott, alle Künste, Ubungen und Stände der Welt gehandhabet und erhalten werden, da dann fürnemlich hierinn gelehret wird, wie sothanige Ertz- und Bergwercks-Arten, jede insonderheit ihrer Natur und Eigenschafft gemäss, auf alle Metalla probirt, und im kleinen Feuer versucht werden, nebst Erklärung einiger fürnehmer nutzlichen Schmeltzwercke im grossen Feuer, Item Ertz scheiden, puchen, waschen und rösten, auch Scheidung Goldes, Silbers, und anderer Metallen, ingleichem Kupffer saigern, Messing brennen, Salpeter sieden, destillation der Scheidwasser, und ihrem Brauch, auch zu Nutzmachung anderer mineralischen Berg- und Saltz-Arten. Anitzo aber, wegen Abgang der Exemplarien, aufs neue mit vielen nützlichen und nothwendigen Stücken und Secreten, so entweder Herr Ercker übergangen, oder nach der Zeit inventirt worden, und andern Notis über sel. Erckers Text mercklich vermehret, zusambt angehängter Auslegung der Terminorum und Red-Arten der Bergleute, Probirer, Wardeinen und Müntzmeister, deren sie sich, was ihre Profession belangt, zu bedienen pflegen. Ein sehr nützlich und nötig Werck für die Herren der Bergwercke, Berg-Rähte, Ertz- und Artzneykündiger, Probir-Discipeln, Laboranten, und alle, die mit Metallen und Mineralien umbgehen müssen oder wollen. Mit möglichstem Fleiss gestellet und ausgefertiget, durch einige hochverständige Bergwercks Erfahrne und Liebhabere. Franckfurt, In Verlegung Johann David Zunners, Buchhändlers. Druckts Johannes Haass, 1684. 4o. pp. [xiv] + 220 + 123 + [v]. [The *Interpres Phraseologiæ Metallurgicæ . . . zusammen getragen durch Christianum Berwardum* has a separate title and pagination.] 4o. pp. 68.

Bound with **Becher**, *J. J.*, Chymischer Glücks-Hafen.

Eröffnung der Thüre des Königlichen Pallasts, dass sie sey das rohe Antimonium und Materia Secunda Lapidis Philosophorum, welche vor denen mit Blindheit geschlagenen verdecket, und von denen Weisen unter doppelsinnigen Reden denen Unwürdigen verborgen gehalten worden, anjetzo aber auffs klärste durch gründliche Erweisung aller Welt wieder dargestellet wird durch einen Untersucher dieses vortreflichen Geheimnisses, der den Nahmen führet des Vorläuffers. Dressden und Leipzig, zu finden bey Gottfried Leschen, 1718. 8o. pp. [xvi] + 160.

Bound with **Hellwig**, *J. O.*, Arcana maiora.

Fabre, *Pierre Jean.* Hercules piochymicus . . . In quo penitissima, tum moralis philosophia, tum chymicæ artis arcana, laboribus Herculis, apud Antiquos tanquam velamine obscuro obruta deteguntur, & obuia fiunt et clausa omnia Philochymicis referantur. Tolosæ Tectosagum, Apud Petrum Bosc Bibliopolam, 1634. 8o. pp. [xvi] + 192.

Fanianus, *Johannes Chrysippus.* De arte metallicæ metamorphoseos liber singularis. Quo omnia, quæ ad philosophici lapidis opus pertinent, apertissimè describuntur. Item de jure artis alchemiæ veterum auctorum, & præsertim juris consultorum judicia et responsa ad quæstionem. An Alchemia sit ars legitima. Basileæ Apud Petrum Pernam, 1576. pp. [ix] + 118 (p. 24 omitted in pagination).

Bound with **Dorn**, *Gerhard*, Congeries Paracelsicæ Chemiæ.

Figuier, *Louis Guillaume.* L'Alchimie et les alchimistes, ou essai historique et critique sur la philosophie hermétique. Paris, 1854. 8o. pp. iv + 386.

Fourcroy, *Antoine-François de.* Tableaux synoptiques de chimie, pour servir de résumé aux leçons données sur cette science dans les écoles de Paris. Paris, An viii [1800]. Folio. pp. 11, and 12 double folio tables.

—— *See* **Bormes.**

Friedlibii, *Amadei.* *See* **Trium Virorum.**

Geber. Geberi des Königes der Araber, scharffsinnigen Philosophi und wahren Adepti Curieuse vollständige Chymische Schrifften, worinnen in den vier Büchern das Quecksilber, Schweffel, Arsenicum, Gold, Silber, Bley, Zinn, Kupffer, Eissen, &c., Oefen, Instrument, Sublimationen, Descension, Distillationen, Calcination, Solution, Coagulation, Fixation, Ceration, Test, Cement, Feurung, Schmeltzung, &c., ferner deren Anfänge, Præparationen, Essenzen, Saltze, Alaune, Atramente, Salpeter, Salarmoniac, Victriol, Antimonium, Bolus, Cinnober, Glass, Boras, Essig, &c., abgehandelt werden ; wie auch das Testament, Güldene Buch der dreyen Wörter Kallid Rachaidibi, und andere Chymische Tractätgen, Summa, die gantze Kunst die unvollkommenen Metalle als Kupffer, Zinn, Bley, Eissen, &c., in Vollkommene, als Silber und Gold zu verwandeln, das ist: wie man Silber und Gold machen soll, enthalten, Alles aus einen Uhralten MSS. genommen, nach dem vorhandenen Exemplar in der Vaticanischen Bibliothec eingerichtet, mit gehörigen Figuren und Register versehen, und an Tag gegeben von Philetha. Franckfurth und Leipzig, Verlegts Hieron. Philipp. Nitschel, Buchh. 1710. 8o. pp. [xvi] + 288.

Geissler, *Friedrich.* Baum des Lebens ; das ist: Gründlicher Bericht vom wahrhafftigen Auro Potabili, wie ingleichen vom Wunderbahren Stein der Weisen, oder Grossen Elixir derer Philosophen &c., als der Höchsten AReZney. &c. . . . Auff Verlag Veit

Jacob Treschers, Buchändl. in Bresslau. Jena, druckts Joh. Nisius, 1683. 8o. pp. 64.

Bound with **Schmid**, *J. G.*, Der . . . Alchymist.

Girtanner, *Christoph.* Anfangsgründe der antiphlogistischen Chemie. Berlin, 1792. 8o. pp. x + 470 + [ii].

Glauber, *Johann Rudolf.* Furni novi philosophici, sive descriptio artis destillatoriæ novæ ; nec non spirituum, oleorum, florum, aliorumque medicamentorum illius beneficio, facilimâ quâdam & peculiari viâ è vegetabilibus, animalibus & mineralibus, conficiendorum & quidem magno cum lucro ; agens quoque de illorum usu tàm chymico quàm medico, edita & publicata in gratiam veritatis Studiosorum. Amsterodami, Prostant apud Joannem Janssonium 1651. 8o. Pars I, pp. 67 + [iii] ; Pars II, pp. 148 + [iv] ; Pars III, pp. 55 ; Pars IV, pp. 83 + [ii] ; Pars V, pp. 54 ; Annotationes in appendicem, pp. 72.

—— De auri tinctura sive auro potabili vero. Quid sit & quommodo differat ab auro potabili falso & sophistico quomodo Spagyrice præparandum & quomodo in medicinâ usurpandum. Amsterodami, Prostant apud Joannem Janssonium 1651. 8o. pp. 22.

Bound with **Glauber**, *J. R.*, Furni novi philosophici.

—— Pharmacopœæ Spagyricæ. Pars Secunda. Amstelodami 1656. 8o. pp. 128.

—— Opera Chymica, Bücher und Schrifften, so viel deren von ihme bisshero an Tag gegeben worden. Jetzo von neuem mit Fleiss übersehen, auch mit etlichen neuen Tractaten vermehret, und umb mehrer Bequemlichkeit willen, in diese Form zusammen getragen, sampt ein darzu verfertigten vollkommenen Register. Franckfurt am Mäyn, In Verlegung Thomæ-Matthiæ Götzens. 1658. 4o. pp. [xxiv] + 574. Continuatio Operum Chymicorum . . . 1659. pp. [xii] + 444 + [xviii].

Glückradt, *Christopher.* *See* **Beguin**, *Johann.*

Hartmann, *George E.* *See* **Hartmann**, *Johann.*

Hartmann, *Johann.* Praxis Chymiatrica Johannis Hartmanni, Medicinæ Doctoris, et quondam Chymiatriæ in Academia Marpurgensi Professoris publici celeberrimi, & Principum Hassiæ Archiatri, edita â Johanne Michaelis, . . . et Georgio Euerharto Hartmanno, Authoris Filio. Lipsiæ, Sumptibus Gotofredi Grossii Bibliopolæ, 1633. 4o. pp. [xvi] + 238 (*should be* 246) + [xxx].

Heilmann, *John Jacob.* *See* **Theatrum Chemicum.**

Hellwig, *Johann Otto van.* Introitus in veram et inauditam physicam defensus per epistolam ad generosissimùm D.R.R. de St., &c., &c., à Matthia Scheffero. Francofurti, 1680. 12o. pp. 24.

Hellwig, *Johann Otto van.* Introitus in veram atque inauditam physicam. Heidelbergæ, 1680. 12o. pp. 87

Bound with **Hellwig,** *J. C. van,* Introitus . . . Francofurti, 1680.

—— Arcana maiora, oder curiöse und nützliche Beschreibung vieler wahrhaften physicalischen medicinischen, chymischen, alchymischen, chyrurgischen, und oeconomischen Geheimnisse. Aus Weltberühmter Leute, so wohl Indianischen Braminen oder Weltweisen, als auch Teutschen, Spanier, Italiäner, Engellender, Holländer, Dänen, Frantzosen, und anderer vortreflichen Männer Manuscriptis, und Correspondentzen auch eigener Erfahrung, auf seinen zwantzig jährigen weitläufftigen Reisen, mit sonderbaren Fleiss collegiret. Mit unterschiedlichen schönen raren Experimenten, Observationen, und Animadversionen vermehret. Auf inständiges Verlangen vieler (so wohl Hoher als Niedriger) Patronen und Freunden, nunmehro in Druck gegeben, auch mit nützlichen Figuren und nöthigen Registern versehen. Franckfurt und Leipzig, verlegts Michael Käyser, Buchhändler in Mühlhausen, 1717. 8o. Eröfnung I, pp. [xiv]+78+[ix]; II, 93+[ix]; III, 73+[iv]; IV, 103+[ix]; V, [ii]+70+[viii]; VI, [ii]+80+[vi]; VII, ii+71+[vii] (68–69 omitted); VIII, [ii]+54 (should be 55)+[vi]; IX, [ii]+48+[vi].

Helmont, *Johann Baptista van.* A Ternary of Paradoxes. The magnetick cure of wounds, the nativity of tartar in wine, the image of God in man. Translated, illustrated, and ampliated by Walter Charleton. London, printed by James Flesher for William Lee, dwelling in Fleet street, at the sign of the Turks head. 1650. 4o. pp. [lii]+144 (pagination irregular).

—— Opera omnia. Additis his de novo tractatibus aliquot posthumis ejusdem authoris, maximè curiosis pariter ac perutilissimis, antehac non in lucem editis; una cum indicibus rerum ac verborum ut locupletissimis, ita et accuratissimis, Francofurti, Sumptibus Johannis Justi Erythropili. Typis Johannis Philippi Andreæ, 1682. 4o. pp. [xl]+765+[lxxiii]. Opuscula medica inaudita. pp. [xvi]+275+[xliii].

—— *See* **Rixnĕr,** *T. A.,* and **Siber,** *T.*

Hermbstädt, *Sigismund Friedrich. See* **Scheele,** *Carl Wilhelm.*

Hollandus, *Johann Isaac.* Sammlung unterschiedlicher bewährter chymischer Schriften, namentlich: Hand der Philosophen, Opus Saturni, Opera vegetabilia, Opus minerale, Cabala, de Lapide Philosophico, Nebst einem Tractat von den Irrgängen derer Alchymisten, Auctoris incerti, neue und verbesserte Auflage, mit gehörigem Fleise übersehen, und mit einem Verzeichnüs derer in jeglichem Tractat befindlichen wichtigsten Materien vermehret wie auch mit nöthigen Kupffern gezieret. Wien In Verlag bey Joh. Paul Krauss,

Buchhändler, 1746. 8o. pp. [xvi]+762. [pp. 129–138 omitted in pagination, and 224–225 duplicated.]

Hollandus, *Johann Isaac.* *See* **Stahl**, *Georg Ernst.*

Hoppodamus, *Johannes.* *See* **Arnaldus de Villa Nova.**

Johannes de Padua. *See* **Schaubert**, *Johann.*

Johnson, *William.* Lexicon chymicum. Cùm obscuriorum verborum, et rerum hermeticarum, tum phrasium Paracelsicarum, in scriptis ejus; et aliorum chymicorum, passim occurrentium, planam explicationem continens, Londini, Excudebat G. D. impensis Gulielmi Nealand, apud quem prostant venales sub Signo Coronæ, in vico vulgò vocato, Duck Lane, 1657. 8o. pp. [xii]+228.

Jugel, *Johann Gottfried.* Freyentdeckte Experimental-Chymie, oder Versuch den Grund natürlicher Geheimnisse durch die Anatomie und Zerlegungskunst, in dem astralischen, animalischen, vegetabilischen und mineralischen Reiche durch systematische Grundsätze, Lehrsätze, Beweise, Gegensätze, Gegenbeweise, Anmerkungen, Versuche, Erfahrungen und darauf folgende Schlüsse, nebst dem deutlichen Naturbegriffe der metallischen Generation, wie solche täglich in der Erde getrieben wird, durch eine lange Untersuchung, also vorzustellen, dass es ein jeder Naturforschender einsehen und erkennen kann; In zwey Theile abgefasset, und zu jedermanns Nutzen und Vergnügen dem Drucke überlassen. Leipzig, verglegts Johann Paul Krausse, Buchhändler, 1766. 8o. pp. [xiv]+368. [pp. 209–214 are not numbered.]

Karsten, *Wenceslaus Johann Gustav.* Physisch-chymische Abhandlungen durch neuere Schriften von hermetischen Arbeiten und andre neuere Untersuchungen veranlasset. Halle im Magdeburgschen in der Rengerschen Buchhandlung, 1786. 8o. Heft I, pp. 208; Heft II, [iv]+154.

Keiling, *George.* *See* **Trium Virorum.**

Kelley, *Edward.* Tractatus duo egregii, de lapide philosophorum, una cum theatro astronomiæ terrestri, cum figuris, in gratiam filiorum hermetis nunc primum in lucem editi, curante J. L. M. C. Hamburgi. Apud Gothofredum Schultzen. Anno 1676. 8o. pp. 125.

Khunrath, *Heinrich.* Amphitheatrum Sapientiæ Æternæ Solius Veræ, Christiano-Kabalisticum, Divino-Magicum, nec non Physico-Chymicum, Tertriunum, Catholicon: instructore Henrico Khunrath Lips: Theosophiæ amatore fideli, et Medicinæ utriusq; Doct: Hallelu-Iah! Hallelu-Iah! Hallelu-Iah Phy diabolo! E Millibus Vix Vni. Anno M.D.C.II. Cum Privilegio Cæsareæ Majest: ad Decennium A Prima Impressionis Die. *Colophon:* Hanoviæ Excudebat Guilielmus Antonius, MDCIX. Folio. pp. [iv]+60+222+[i], [10 engraved symbolic plates, not included in the pagination].

Kircher, *Athanasius.* Ars magna lucis et umbræ, in X. libros digesta. Quibus admirandæ lucis & umbræ in mundo, atque adeò universa natura, vires effectusque uti nova, ita varia novorum reconditiorumque speciminum exhibitione, ad varios mortalium usus, panduntur. Editio altera priori multò auctior . . . Amstelodami, Apud Joannem Janssonium à Waesberge, & Hæredes Elizæi Weyerstraet, 1671. Folio. pp. [xxxii] + 810 (should be 710, pp. 424–525 having been omitted in pagination) + [ix].

—— Mundus Subterraneus, in XII libros digestus; quo divinum subterrestris mundi opificium, mira ergasteriorum naturæ in eo distributio, verbo *παντάμορφον* protei regnum, universæ denique naturæ majestas & divitiæ summa rerum varietate exponuntur. Abditorum effectuum causæ acri indagine inquisitæ demonstrantur, cognitæ per artis & naturæ conjugium ad humanæ vitæ necessarium usum vario experimentorum apparatu, necnon novo modo & ratione applicantur. Editio tertia, ad fidem scripti exemplaris recognita, & prioribus emendatior: tum ab Auctore Româ submissis variis observationibus novisque figuris auctior. Amstelodami, Apud Joannem Janssonium à Waesberge & Filios, 1678. Folio. pp. [xviii] + 366 + [vi], [x] + 507 + [ix].

Kirwan, *Richard.* Essai sur le phlogistique, et sur la constitution des acides, traduit de l'anglois de M. Kirwan; avec des notes de MM. de Morveau, Lavoisier, de la Place, Monge, Berthollet, et de Fourcroy. A Paris, 1788. 8o. pp. xii + 344 + [iv].

Kleyn Distillierbüch. Ein newer und leichter Underricht, Künstliche Distillier öfen zumachen, alle Kreutter zubrennen, und warzü ein iedes Distilliert wasser güt zunützen. Franckfurt Chri. Ege. *Colophon:* Zu Strassburg bei Christian Egenolphen, Im Augst, Des M.D. und XXX. Jars. 4o. ff [iv] + xxvi.

Kunckel, *Johann.* Chymische Anmerckungen: darinn gehandelt wird von denen principiis Chymicis, Salibus Acidis und Alkalibus, Fixis und Volatilibus, in denen dreyen Regnis, Minerali, Vegetabili und Animali; wie auch vom Geruch und Farben, &c. Mit Anhang einer chymischen Brille contra Non-Entia Chym. Nach eigener Experientz beschrieben, mit unterschiedenen Experimentis bewähret, und denen Warheit- und Kunst-Liebenden zu Nutz und Dienstlichen Gefallen in den Druck befördert. Wittenberg, In Verlegung Job Wilhelm Fincelii seel. Erben, Druckts Christian Schrödter, 1677. 8o. pp. [xiv + 192].

—— V. Curiose Chymische Tractätlein; als: I. Chymische Anmerckungen, darinn gehandelt wird von denen Princip. Chym. Sal. Acid. & Alcalibus; Fixis & Volatilib. in denen 3 Regnis; wie auch vom Geruch und Farben &c. mit Anhang einer Chymischen Brille, contra Non-Entia Chym. II. Nützliche Observa-

tiones von den Fixen und flüchtigen Saltzen, Auro & Argento Potabili; Spiritu Mundi u. d. g. wie auch von den Farben und Geruch der Metallen, Mineral. &c. III. Epistola, contra Spiritum Vini sine Acido. IV. De Phosphoro Mirabili; dessen leuchtenden Wunder-Pilulen; sampt einem Discurs vom Nitro. V. Probier-Stein, de Acido & Urinoso, Sale Calido & Frigido; contra Herrn D. Voigts Spir. Vini Vindicatum. Wobey zugleich angehänget wird: Christoph Brummets Tractätlein vom Blut der Natur. Nebst einer Vorrede . . . D. Johannis Philippi Burggravii. Franckfurth und Leipzig, 1721. 8o. pp. [xii] + 512 + [xlviii].

[Another copy.]

Kunckel, *Johann.* Ars Vitraria Experimentalis, oder vollkommene Glasmacher-Kunst, lehrende, als in einem, aus unbetrüglicher Erfahrung, herfliessendem Commentario, über die von dergleichen Arbeit beschriebene sieben Bücher P. Anthonii Neri, von Florenz, und denen darüber gethanen gelehrten Anmerckungen Christophori Meretti . . . (so aus den Italien und Lateinischen beyde mit Fleiss ins Hochteutsche übersetzt) . . . Samt einem II Haupt-Theil . . . Alles hin und wieder in dieser dritten Edition um ein merckliches vermehret. Nürnberg, 1743. 4o. pp. [xii] + 472 + [xx].

—— *See* **Neri**, *Antonio.*

Kunst- und Werck-Schul. Wieder Neu aufgerichtete und vergrösserte in Zwey Theilen angewiesene curieuse Kunst- und Werck-Schul, deren Erster Theil meistens alterley Erdenckliche, nutzlich- und bewehrte Feuer-Künste vorstellet: Als I. Die wahre Erkäntnus der Ertzen und Metallen . . . II. Die schöne Form-Kunst, Bereitung guter Feuer-beständiger Haffner-Geschirr, als Oefen, Tiegel, etc. . . . III. All erhand schöne Glas-Künste, wie man schönes Crystallen . . . IV. Von denen natürlichen Edelgesteinen . . . V. Allerley schöne ungemeine Chymische Secreta und Medicinalia . . . Ein Werck so allen Kunstliebenden dienlich und nutzlich, mit grosser Müh und Fleiss zusammengetragen selbst sehr viel davon experimentirt, und endlichen aus Christlicher Liebe mit getheilet und am Tage gegeben durch J. K. sonderbaren Liebhaber der Edlen Chymiæ und anderer natürliche Kunst- und Wissenschafften. Nürnberg, in Verlegung Johann Ziegers, Buchhändlern, 1705. 4o. pp. [vi] + 1357 + [lvii].

Le Febure [*Nicolas*]. A compleat body of chymistry: teaching the whole practice thereof by the most exact preparation of animals, vegetables and minerals, preserving their essential vertues. By Nicasius le Febure. . . . Rendered into English by P. D. C. London, printed by Tho. Ratcliffe for Octavian Pulleyn Junior, and are to be sold at the sign of the Bible in St. Pauls Church-yard near the

little North-door, 1664. 4o. Part I, pp. viii + 312 + [vii]; Part II pp. [ii] + 364 + [viii].

The title-page to part I is missing, the above title-page being that of part II.

Lemery, *Nicolas.* Cours de chymie, contenant la manière de faire les opérations qui sont en usage dans la médecine, par une méthode facile. Avec des raisonnements sur chaque opération, pour l'instruction de ceux qui veulent s'appliquer à cette science. Troisieme edition. Paris, 1679. 8o. pp. [xxx] + 659 + [xv].

—— A course of chymistry, containing an easie method of preparing those chymical medicins which are used in physick. With curious remarks and useful discourses upon each preparation, for the benefit of such as desire to be instructed in the knowledge of this art. The third edition, translated from the eighth edition in the French, which is very much enlarged beyond any of the former. London, printed by R. N. for Walter Kettilby, at the Bishop's Head in S. Paul's Church-yard, 1698. 8o. pp. [xxviii] + 815 + [xvi].

[**Lenglet Dufresnoy**, *Nicolas.*] Histoire de la philosophie hermetique. Accompagnée d'un Catalogue raisonné des écrivains de cette science. Avec le véritable Philalethe, revû sur les originaux. Paris 1742. 3 vols., 12o. pp. xxiii + 486 + xx; xxxii + 120 + 360; [xxii] + 432.

Lewinstein, *Gustav.* Die Alchemie und die Alchemisten. (Sammlung gemeinverständlicher wissenschaftlicher Vorträge, herausgegeben von Rud. Virchow und Fr. v. Holtzendorff. V. Serie, Heft 113.) Berlin, 1870. 8vo. pp. 36.

Libavius, *Andreas.* Alchymia Andreæ Libavii, recognita, emendata, et aucta, tum dogmatibus & experimentis nonnullis; tum commentario medico physico chymico: qui exornatus est variis instrumentorum chymicorum picturis; partim aliunde translatis, partim planè nouis: In gratiam eorum, qui arcanorum naturalium cupidi, ea absq; inuolucris elementarium & ænigmaticarum sordium, intueri gaudent. Francofurti, Excudebat Joannes Saurius, impensis Petri Kopffi. 1606. Folio. pp. [xx] + 196 + xii. Commentariorum . . . Pars Prima. pp. [x] + 402. Pars Secunda. pp. 192 + [x].

—— Syntagmatis selectorum undiquaque et perspicue traditorum Alchymiæ Arcanorum, Tomus primus. In quem congesta sunt commentaria Chymiæ hactenus desiderata: Insertis passim scholijs, & commentationibus ipsis, ad penitissima huius philosophiæ & medicinæ ducentibus. Conscriptus et in IIX libros digestus. Francofurti Excudebat Nicolaus Hoffmannus, Impensis Petri Kopffii, 1615. Folio. pp. [xi] + 480 + [vii] . . . Tomus Secundus. In quem congesta sunt partim noua, eaq; penitiora Spagyrorum secreta, partim prioris tomi nonnulla explicatius tradita, & inter ea etiam ænigmatica Quercetani,

aliorumque Hermeticorum non pauca studiosè inuestigata, declarata & iudicata. . . . . Cum Indice copioso duplici, Chymico & Medico. Francofurti . . . 1613. pp. [xii] + 453 + [xiv].

Lullius, *Raymundus.* Illuminati sacre pagine pfessoris amplissimi magistri Raymundi Lull. ars magna, generalis et ultima: quarūcunq; artium ⁊ scientiarum ipsius Lull. assecutrix et clauigera: ⁊ ad eas aditum faciliorē prebēs: antehac nusq; arti impressorie emūcrius cōmendata: ⁊ per magistrum Bernardum la Vinheta artis illius fidelissimū interpretē elimata. Una cum figuris suo situ decenter intextis ⁊ totius operis enucleatiuis. Incertis preterea cuilibet parti, capitulo et rubrice, titulis et annotationibus: adiecto indice alphabetico siue repertorio, sententias electiores cōplectente: ad folia remissiuo. *Colophon* . . . . Lugduni per Jacobum Marechal calcographum: sumptibus vero Simonis Vincent . . . 1517. 8o. ff. [iv] + 124.

—— Testamentum, duobus libris universam artem chymicam complectens antehac nunquam excusum. Item eiusdem compendium animæ transmutationis artis metallorum, absolutum iam & perfectum. Coloniæ Agrippinæ, Apud Ioannem Byrckmannum, 1566. 8o. ff. [iv] + 240 + [viii] (wanting f. 24).

—— Codicillus seu vade mecum. Coloniæ 1572. 8o. pp. 248.

—— Libelli aliquot chemici: [Testamentum novissimum; Elucidatio vocabulorum; Vade mecum; Compendium de transmutatione animæ metallorum; De compositione gemmarum; Epistola accurtatoria ad regem Neapolitanum; Medicina magna; Dialogus Demogorgon.] Basileæ, Apud Petrum Pernam, 1572. 8o. pp. [xvi] + 480 + [xxxi].

—— Libelli aliquot chemici. Basileæ, Typis Conradi Waldkirchii, 1600. 8o. pp. [xii] + 393 + [xxvi].

—— Aureumsane opus, in quo ea omnia breviter explicantur, quæ scientiarum omnium Parens, tam in scientiarum Arbore, q̄ arte generali tradit. Autore Valerio de Valeriis Patricio Veneto, & scientiarum amatore, 1589. Augustæ vindelicorum imprimebat Michaël Manger. 4o. pp. [viii] + 179.

Manget, *Jean Jacques.* Bibliotheca chemica curiosa, seu rerum ad alchemiam pertinentium thesaurus instructissimus: quo non tantùm artis auriferæ, ac scriptorum in ea nobiliorum historia traditur; lapidis veritas argumentis & experimentis innumeris, immò & juris consultorum judiciis evincitur; termini obscuriores explicantur; cautiones contra impostores, & difficultates in tinctura universali conficienda occurrentes, declarantur: Verùm etiam tractatus omnes virorum celebriorum, qui in magno sudarunt elixyre, quique ab ipso Hermete, ut dicitur, Trismegisto, ad nostra usque tempora de chrysopoea scripserunt, cum præcipuis suis commentariis, concinno ordine dispositi exhibentur. Ad quorum omnium illustrationem additæ sunt quamplurimæ figuræ

æneæ. Coloniæ Allobrogum, Sumpt. Chouet, G. De Tournes, Cramer, Perachon, Ritter, & S. De Tournes. 1702. 2 vols., folio. pp. [xx] + 938, [ii] + 904.

A full list of the contents of this work is given in **Bolton**, *H. C.*, Bibliography of Chemistry, pp. 1005–1013, and **Ferguson**, *J.*, Bibliotheca Chemica, Vol. II, pp. 68–70.

Merrett, *Christopher*. *See* **Kunckel**, *Johann*.

—— *See* **Neri**, *Antonio*.

Meurdrac, *Maria*. Die Mitleidende und leichte Chymie dem löblichen Frauen-Zimmer zu sonderbahrem Gefallen in Frantzösischer Sprach beschrieben durch Jungfr. Maria Meurdrac, und nunmehr in Teutsch übersetzt und heraussgegeben von J. L. M. C. Sampt einem Tractätlein, wie man allerhand wohlriechende Sachen künstlich präpariren sol, durch Johann Muffatz. Franckfurt, In Verlegung Joh. David Zunners, 1673. 12mo. pp. [viii] + 411 + [xxv].

Michaelis, *Johann*. *See* **Hartmann**, *Johann*.

Musaeum Hermeticum Reformatum et Amplificatum, omnes sophospagyricae artis discipulos fidelissime erudiens, quo pacto summa illa veraque Lapidis Philosophici Medicina, qua res omnes qualemcunque defectum patientes, instaurantur, inveniri et haberi queat. Continens Tractatus Chimicos XXI. præstantissimos, quorum nomina et seriem versa pagella indicabit. In gratiam filiorum doctrinae, quibus Germanicum idioma ignotum est, Latina lingua ornatum. Francofurti et Lipsiae, 1749. 4o. pp. [xii] + 862 + [i].

A list of the contents of this work is given in **Ferguson**, *J.*, Bibliotheca Chemica, Vol. II, p. 119.

Neri, *Antonio*, **Merrett**, *Christopher*, and **Kunckel**, *Johann*. Art de la verrerie, de Neri, Merrett et Kunckel. Auquel on a ajouté le Sol sine veste D'Orschall; l'helioscopium videndi sine veste solem chymicum; le Sol non sine veste; le chapitre XI. du Flora Saturnizans de Henckel, sur la vitrification des végétaux; un mémoire sur la maniere de faire le saffre; le secret des vraies porcelaines de la Chine & de Saxe . . . Traduits de l'Allemand, par M. D * * * Paris 1752. 4o. pp. [iv] + lv + 630 + [ii].

Paracelsus, *Theophrastus*. Dess hocherfahrnesten Medici Aureoli Theophrasti Paracelsi schreyben, von den kranckheyten, so die vernunfft berauben, als da sein S. Veyts Thantz, Hinfallender siechtage, Melancholia vnd Vnsinnigkeit, &c., sampt ihrn warhafften curen. Darzu auss gemeldts Authoris Büchern gethan sein etliche lustige und nutzbare Process, Administrationes und würckungen dess Vitriols und Erdenhartzes, in rechter treuw publiciert, durch Adamum von Bodenstein . . . Innhalt und frucht dieses Buchs wird in der ersten Vorrede ordenlich begriffen. (Basilee) 1567. 4o. ff. [58]. [Sig. *, A—O_2; g.l. missing.]

Paracelsus, *Theophrastus.* Aurora Thesaurusque Philosophorum, Theophrasti Paracelsi, Germani Philosophi, & Medici præ cunctis omnibus accuratissimi. Accessit Monarchia Physica per Gerardum Dorneum, in defensionem Paracelsicorum Principiorum, à suo Præceptore positorum. Præterea Anatomia uiua Paracelsi, qua docet autor præter sectionem corporum, & ante mortem, patientibus esse succurrendum. 1577. Basilae. 8o. pp. 63.

Bound with **Dorn,** *Gerhard,* Congeries Paracelsicæ, &c., 1581.

—— Aureoli Theophrasti Paracelsi de summis naturæ mysteriis commentarij tres, à Gerardo Dorn conuersi, multóque quàm antea fideliter characterismis & marginalibus exornati, auctíque. Quorum nomina sequens pagella dabit. Basileæ, Ex Officina Pernæa per Conr. Vvaldkirch, 1584. 8o. pp. [xvi]+173 [should be 149]+x [pagination irregular].

—— Opera omnia medico-chemico-chirurgica, tribus voluminibus comprehensa. Editio novissima et emendatissima, ad Germanica & Latina exemplaria accuratissimè collata: Variis tractatibus & opusculis summâ hinc inde diligentiâ conquisitis, vt in voluminis primi præfatione indicatur, locupletata: Indicibusq; exactissimis instructa. Genevæ, Sumptibus Ioan. Antonij, & Samuelis De Tournes. MDCLIIX. Vol. I, pp. [xxxiv]+828+[xxxix]; Vol II, [xxii]+718+[xxxii]; Vol. III, [xii]+212+[xxvii]; Vol. III, Sect. II, [iv]+119+[vii]. Testamentum, Dictionariolum, &c., 18.

—— Chymischer Psalter, oder Philosophische Grundsätze vom Stein der Weisen Anno 1522. Aus dem höchst seltenen lateinischen Grundtext übersetzt, von einem Liebhaber natürlicher Geheimnisse. Amsterdam, 1771. 8o. pp. [xvi]+32.

—— *See* **Dorn,** *Gerhard.*

—— *See* **Thurneisser,** *Leonhart.*

—— *See* **Trissmosin,** *Salomon.*

Porta, *Giovanni Baptista.* Magiæ Naturalis libri viginti. Ab ipso quidem authore ante biennium adaucti, nunc verò ab infinitis, quibus editio illa scatebat mendis, optimè repurgati: in quibus scientiarum naturalium diuitæ & deliciæ demonstrantur. Accessit index, rem omnem dilucidè repræsentans copiosissimus. Librorum ordinem, qui in hoc opere continentur, versa pagina indicabit. Francofurti apud Andræ Wecheli heredes, Claudium Marnium, & Ioann. Aubrium. 1591. 8o. pp. [xxxvi]+669.

—— La magie naturelle: qui est, les secrets & miracles de Nature, mise en quatre livres, par Iean Baptiste Porta Neapolitain. Nouvellement traduite de Latin François. Rouen 1606. 8o. ff. [vii]+278+[xvii].

—— Magia naturalis, oder Haus-Kunst- und Wunder-Buch. Zu erst von dem selben Lateinisch beschrieben; hernach von Ihm selbst

vermehret; nunmehr aber allen Liebhabern der natürlichen Wissenschafften zum besten, nicht nach dem alten Druck, der Frantzösischen und Teutschen Edition, darinnen nur vier Bücher; sondern durch alle zwantzig Bücher gantz aufs neu in die Hochteutsche Sprache übersetzet; von allen Fehlern, so in dem Lateinischen Druck, mit grossem Hauffen übrig geblieben, und aufs neue eingeschlichen, aufs fleissigste gereiniget; in gewisse mit Zahlen unterschiedene Absätze abgetheilet; mit deutlichen Teutschen Kunst-reimen gezieret; an Figuren gebessert, mit schönen Kupfern geschmücket; mit nothwendigen Anmerckungen und Auflösungen der darinn enthaltenen Rätzel, wie auch vielen neuen ungemeinen guten Chymischen und andern Stücken vermehret, auch mit guten Registern versehen, und in zweyen Theilen, deren das erste, die ersten sieben; das andre die letzten dreyzehen Bücher in sich enthält, heraus gegeben durch Christian Peganium, sonst Rautner genannt. Nürnberg, in Verlegung Johann Ziegers Buchhändlers. Gedruckt zu Sultzbach durch Abraham Liechtenthaler, 1680. Erste Buch. 8o. pp. [x] + 990 + [cxiv] [pp. 1–2 and 15–16 missing; the latter are supplied in manuscript]. Zweite Buch. pp. [i] + 876 + [xxxvi] [pp. 847–848 omitted in pagination].

Rebentrost, *David.* *See* **Trium Virorum.**

[**Reibehand,** *Christoph.*] Filum Ariadnes das ist: Neuer chymischer Discurs von den grausamen und verführischen Irrwegen der Alchymisten, dadurch sie selbst und viel Leute neben ihnen verleitet werden, und dann, was doch endlich der rechte uhralte einige Weg zu dem allerhöchsten Secreto sey, wie darinnen zu procediren, und welcher gestalt auch particularia zur Hand gebracht werden können. Alles durch selbst-eigene Experientz erkläret und an Tag gegeben durch Heinr. von Butsdorff, Hermundurum. Denen sind noch beygefüget LXXIX. grosse und sonderbahre Wunder. So bey einem Special angegebenen Subjecto theils von der Natur, theils aber in der geführten Arbeit sich befunden haben. Gotha, Verlegts Jacob Mevius, 1718. 8o. pp. [xvi] + 136. [The *Grosse und sonderbahre Wunder* . . . 1725, has a separate title-page and pagination.] pp. 71.

Bound with **Valentinus,** *B.*, Chymische Schriften, 1740.

Ripley, *George.* Chymische Schrifften des hochgelehrten, fürtrefflichen und weitberhümten Philosophi Georgii Riplæi, Canonici Angli. Darinnen vom gebenedeyeten Stein der Weisen und desselben kunstreicher præparation gründlich gelehret wird, Zuvor durch den Hochgelahrten Herrn Nicolaum Barnaudum Chymicum zu Lateinischer Sprache publiciret, Jetzo aber allen Filiis doctrinæ zum besten durch einen Liebhaber der Kunst in Deutsche Sprache gebracht, und in Druck gegeben Anno 1624. Gedruckt In verlegung Johann

Birckners, Buchhändlers in Erffurt. 8o. pp. [i] + 113 [should be 111, pagination irregular].

Rixner, *Thaddä Anselm*, and **Siber,** *Thaddä.* Leben und Lehrmeinungen berühmter Physiker am Ende des XVI und am Anfange des XVII Jahrhunderts, als Beyträge zur Geschichte der Physiologie in enigerer und weiterer Bedeutung. Heft VII. Joh. Bapt. v. Helmont. Sulzbach, 1826. 8o. pp. viii + 245 + [iii].

Robison, *Johann. See* **Black,** *Joseph.*

Rosencreutz, *Christian.* Chymische Hochzeit: Christiani Rosencreütz. Anno 1459. Arcana publicata vilescunt; & gratiam prophanata amittunt. Ergo: ne Margaritas objice porcis, seu Asino substerne rosas. Strassburg, In Verlägung, Lazari Zetzners. 1616. *Colophon*: Strassburg, Gedruckt bey Conrad Scher, Im Jahr MDCXVI. 8o. pp. 146 + [ii].

Roth-Scholtz, *Friederich.* Deutsches Theatrum Chemicum, auf welchem der berühmtesten Philosophen und Alchymisten Schrifften, die von dem Stein der Weisen, von Verwandlung der schlechten Metalle in bessere, von Kräutern, von Thieren, von Gesund- und Sauer-Brunnen, von warmen Bädern, von herrlichen Artzneyen und von andern grossen Geheimnüssen der Natur handeln, welche bisshero entweder niemahls gedruckt, oder doch sonsten sehr rar worden sind. Nürnberg, bey Adam Jonathan Felsseckern 1728–1732. 3 vols., 8o. [ii] + 26 + [ii] + 680 + 32 + 350; 22 + 935; 46 + 960.

A full list of the contents of this work is given in **Bolton,** *H. C.*, Bibliography of Chemistry, pp. 1035–1040, and **Ferguson,** *J.*, Bibliotheca Chemica, Vol. II, pp. 298–299.

—— Bibliotheca Chemica. H. E. Collectio Auctorum fere omnium, qui de naturae arcanis, re metallica et minerali, item de melioratione corporum artificiali etc., Hermetice scripserunt. Recensentur etiam diversae librorum editiones aliaque huius generis manuscripta hactenus inedita. Fasciculus primus editio secunda. Norimbergae et Altdorfii apud Haeredes Joh. Dan. Tauberi. 1735. 8o. pp. 238.

—— *See* **Becher,** *Johann Joachim.*

[**Schaubert,** *Johann.*] Auszug aus des Joannis von Padua consumata Sapientia oder Praxis von dem Mineralischen Stein. Franckfurt Anno 1681 in Duodez. Item daselbst aus d. Epistl Joannis Trithemii, item daselbst aus d. Epistl Joannis Teutz Schescheni, etc. [Manuscript.] 8o. pp. [ii] + 126.

The above consists of manuscript extracts from **Schaubert,** *Johann* Consummata Sapientia, seu Philosophia Sacra, Praxis der Lapide Minerali, Johannis de Padua, Epistola Johannis Trithemii, Von den dreyen Anfangen aller natürlichen Kunst der Philosophiæ. Epistola Johann Teutzschescheni, De Lapide Philosophorum . . . Francofurti, 1681. 12o. pp. 282.

Scheele, *Carl Wilhelm.* Sämmtliche physische und chemische Werke, nach dem Tode des Verfassers gesammlet, und in deutscher Sprache herausgegeben von Sigismund Friedrich Hermbstädt. Berlin, 1793. 2 vols., 8o. pp. xxxii + 264, 446.

[**Schmid,** *Johann Georg.*] Der von Mose u. denen Propheten übel urtheilende Alchymist, wird fürgestellet in einer Schrifft-gemässen Erweisung, dass Moses und einige Propheten, wie auch David, Salomon, Hiob, Esra und dergleichen, keine Adepti Lapidis Philosophorum gewesen sind; Ingleichen dass die Lehre und alchymistisch Vorgeben, von Verwandlung der geringen Metalle in Gold, eine lautere Phantasie und schädliche Einbildung sey; Von einem Liebhaber der Wahrheit, der sich tröstet, dass der Allmächtige sein Gold sey, Hiob XX. v. 25. und nichts Jm Golde Sucht. Chemnitz, bey Conrad Stösseln, 1706. 8o. pp. [xiv] + 144.

Shaw, *Peter.* *See* **Boerhaave,** *Hermann.*

Siber, *Thaddä.* *See* **Rixner,** *Thaddä Anselm.*

Stahl, *Georg Ernst.* Zufällige Gedancken und nützliche Bedencken über den Streit, von dem so genannten Sulphure, und zwar sowol dem gemeinen, verbrennlichen, oder flüchtigen, als unverbrennlichen, oder fixen. Halle, In Verlegung des Wäysenhauses, 1718. 8o. pp. [viii] + 373.

—— Zymotechnia fundamentalis, oder allgemeine Grund-Erkänntniss der Gährungs-Kunst, vermittelst welcher die Ursachen und Würckungen dieser alleredelsten Kunst, welche den nutzbahrsten und subtilesten Theil der gantzen Chymie ausmacht. Aus den wesentlichen mechanisch-physischen Haupt-Gründen überhaupt mit höchstem Fleiss ans Licht gestellet, und mit einem neuen chymischen Experiment, wie ein wahrer Schwefel durch Kunst zum Vorschein zu bringen; wie auch mit andern nützlichen Erfahrungs-Proben und Anmerckungen dem Publico mitgetheilet werden. Wegen ihres unbeschreiblichen Nutzens aus dem Lateinischen ins Teutsche übersetzet. Franckfurth und Leipzig. Verlegts Johann Leopold Montag [in Regenspurg, 1734]. [Title-page cut down.] 8o. pp. [xxii] + 304.

—— Fundamenta chymiae dogmaticae et experimentalis, et quidem tum communioris physicae mechanicae pharmaceuticae ac medicae tum sublimioris sic dictae hermeticae atque alchymicae. Olim in privatos auditorum usus posita, jam vero indultu autoris publicae luci exposita. Annexus est ad coronidis confirmationem tractatus Isaaci Hollandi De Salibus et Oleis Metallorum. Editio secunda, emendatior et auctior. Norimbergae, impensis B. Guolfg. Maur. Endteri Consortii et Vid. B. Iul. Arnold Engelbrechti. 1746–7. 3 vols., 4o. pp. [viii] + 255 + [xxiii], [viii] + 76 + 199 + [31], [viii] + 508 + [xviii].

—— *See* **Becher,** *Johann Joachim.*

Sternhals, *Johann.* Ritter-Krieg das ist: Ein Philosophisch-Ge-

schicht, in Form eines gerichtlichen Processes, wie zwey Metallen, nemblich Sol und Mars, durch Klag, Antwort und Beweiss, jegliches Natur uñ Eigenschaft von ihrem näturlichen Gott und Richter ☿rio gehöret, und endlich durch ein wol-gegründetes Urtheil, mit ewig-wahrender Freundschafft einig zusammen verbunden werden. Länger denn vor 200. Jahren durch den Ehr-Würdigen Herrn Johann Sternhals, damahls Catholischen Priester des Bischöfflichen Stiffts Bamberg, als einem wahren Chymico und Philosopho laut seiner eigenen Vorrede gestellet. Jtzo wieder auffs neu ubersehen und zum Druck heraussgegeben. Hamburg, In Verlegung George Wolff, Buchhändl. in S. Johañes-Kirchen, 1680. 8o. pp. [xii] + 96.

Bound with **Suchten**, *Alexander von*, Chymische Schrifften.

Suchten, *Alexander von.* Chymische Schrifften alle, so viel deren vorhanden, zum ersten mahl zusammen gedruckt, mit sonderbahrem Fleiss von vielen Druckfehlern gesäubert, vermehret, und in zwey Theile, als die Teutschen Lateinischen verfasset. Franckfurt am Mayn, In Verlegung Georg Wolffs, Buchh. in Hamburg, Druckts Johann Görlin. 1680. 8o. pp. [xiv] + 486 + [ix].

Teutzscheschen, *Johann.* *See* **Schaubert**, *Johann.*

Theatrum Chemicum, præcipuos selectorum auctorum tractatus de chemiæ et lapidis philosophici antiquitate, veritate, jure, præstantia, & operationibus, continens: In gratiam veræ chemiæ, & medicinæ chemicæ studiosorum (ut qui uberrimam inde optimorum remediorum messem facere poterunt) congestum, & in sex partes seu volumina digestum; Singulis voluminibus, suo auctorum et librorum catalogo primis pagellis: rerum verò & verborum indice postremis annexo. Argentorati, sumptibus Heredum Eberh. Zetzneri 1659–61. 6 vols., 8o. Vol. I, pp. 794 + [xxx]; Vol. II, 549 + [vii]; Vol. III, 859 + [xiii]; Vol. IV, [viii] + 1014 + [xxxiii]; Vol. V, [viii] + 912 + [xxix]. *Vol. VI has the following title*: Theatri Chemici volumen sextum, theologis, medicis, et tam vulgaribus quam hermeticæ, chemiæ studiosis utilissimum, præcipuos selectorum auctorum huius seculi tractatus de chemia & lapidis philosophici antiquitate, veritate jure præstantia & operationibus continens, ex Germanica & Gallica lingua in Latinam translatum per Johannem Jacobum Heilmannum, Argentorati, sumptib. Hæredum Eberhardi Zetzneri, 1661. pp. [xviii] + 772 + [xxv].

A full list of the contents of this work is given in **Bolton**, *H. C.*, Bibliography of Chemistry, pp. 1050–1058, and **Ferguson**, *J.*, Bibliotheca Chemica, Vol. II, pp. 436–439.

Thomson, *Thomas.* A system of chemistry. In four volumes. The second edition. Edinburgh. 1804. 8o. pp. xvi + 605, viii + 596, vii + 629, viii + 808.

—— An attempt to establish the first principles of chemistry by

experiment. In two volumes. London 1825. 8o. pp. xxiii + 478, vii + 532.

Thomson, *Thomas.* A system of chemistry of inorganic bodies. In two volumes. Seventh edition. London and Edinburgh, 1831. 8o. pp. ix + 944, viii + 742.

Thurneisser, *Leonhart.* Pison. Das erst Theil. Von Kalten, Warmen, Minerischen und Metallischen Wassern, sampt der vergleichunge der Plantarum und Erdgewech-en 10 Bücher: Durch Leonhart Thurneisser zum Thurn, mit grosser mühe und arbeit, gemeinem nutz zu gut an tag geben. Mit Röm. Kay. May. freyheit auff 10 Jar. 1572. Gedruckt zu Franckfurt an der Oder, durch Johan Eichorn. Folio. pp. [xx] + ccccxx + [liii].

—— : מְלִיצָת KA'I 'EPMHNE'IA. Das ist ein Onomasticum und Interpretatio oder aussführliche Erklerung, Uber Etliche frembde uñ (bey vielen hochgelarten, die der Lateinischen und Griechischen Sprach erfahren) umbekante Nomina, Verba, Proverbia, Dicta, Sylben, Caracter, und sonst Reden. Deren nicht allein in des theuren Philosophi und Medici Aurelij, Theophrasti, Paracelsi von Hohenheim, Sondern auch in anderer Authorum Schrifften, hin und wider weitleufftig gedacht, welche hie zusammen, nach dem Alphabet verzeichnet. Das Ander theil. In welchem fast jedes Wort, mit seiner eigenen schrifft, nach der Völcker Etymologia oder eigenen art und weis zureden, beschrieben worden ist. Gedruckt zu Berlin durch Nicolaum Voltzen 1583. Folio. pp. [xii] + 188.

Bound with **Thurneisser**, *L.*, Vel Magna Alchymia.

—— ΜΕΓΑΛΗ ΧΥΜΙΑ, Vel Magna Alchymia. Das ist ein Lehr und unterweisung von den offenbaren und verborgenlichen Naturen, Arten und Eigenschafften, allerhandt wunderlicher Erdtgewechssen, als Ertzen, Metallen, Mineren, Erdsäfften, Schwefeln, Mercurien, Saltzen und Gesteinen. Und was der dingen zum theil hoch in den Lüfften, zum theil in der Tieffe der Erden, und zum theil in den Wassern, welche aus dem Chaos oder der Confusion, und vermischung Elementischer Substanzen, als Geistlicher, uñ doch subtiler, noch unbestendiger weis verursacht, empfangen und radicirt, Aber von Himelischer zuneigung der Influentischen impression, oder Eintruckung, Seelischer und Fixer oder bestendiger weise, zu einer wesentlichen materia digerirt, coagulirt, oder præparirt, Und durch die natürliche Vermögligkeit, Krafft und forthtreibung, jedes in seiner gestalt, Als ein greiffelichs, eintzigs, wesentlichs ding, Corporalischer, volkommener weise, von seiner Radice abgelöset, an tag aussgestossen, und in gestalt einer sichtigen Massæ geboren: Und wie, oder welcher gestalt, oder auff was weiss uñ wege, deren ein jedes, mit zusatz des andern, durch Menschlichen Handgriff, oder den Usum (dieser sehr

alten Kunst) eintweders in ein Liquorem, Oehl, Saltz, Stein, Wasser, Schwefel, Mercurium oder andere Mineren und Metall verwandelt, oder sonst zum nutz, gebrauch und wolstandt, Menschlichs zeitlichs Lebens zugericht und bereitet wird. Gedruckt zu Berlin durch Nicolaum Voltzen. 1583. Folio. pp. [xii] + 144 + [xii].

Tiffereau, *C. Théod.* Die Golderzeugung auf künstlichem Wege ist thatsächlich erwiesen. Die Metalle sind keine einfachen, sondern zusammengesetzte Körper. Aus dem Französischen. Berlin, 1855. 8vo. pp. 29.

[**Trissmosin,** *Salomon.*] Aureum Vellus Oder Guldin Schatz und Kunstkammer: Darrinen der aller fürnemisten, fürtreffenlichsten, ausserlesenesten, herrlichisten und bewehrtestē Auctorum Schrifften und Bücher, auss dem gar vraltē Schatz der uberblibnen, verborgnen, hinderhaltenen Reliquien und Monumenten der Aegyptiorum, Arabum, Chaldæorum & Assyriorum Königen und Weysen. Von dem Edlen, Hocherleuchten, Fürtreffenlichen, bewertē Philosopho Salomone Trissmosino (so dess grossen Philosophi und Medici Theophrasti Paracelsi Præceptor gewesen) in sonderbare underschiedliche Tractätlein disponiert, und in das Teutsch gebracht. Sampt anderen Philosophischen alter unnd newer Scribenten sonderbaren Tractätlein, alles zuuor niemalen weder erhört noch gesehen, wie der Catalogus zuverstehen gibt. Durch einen der Kunst liebhabern mit grossem Rosten, Mühe, Arbeyt und Gefahr, die Originalia und Handschrifften zusammen gebracht, unnd auffs trewlichest und fleissigst an Tag geben. Getruckt zu Rorschach am Bodensee. 1598. 4o. Tract I, pp. [viii] + 117. Tract II, pp. [ii] + 102. Tract III, pp. 248 (Gg *is wrongly imposed*). [Hand-coloured woodcuts.]

A detailed list of contents is given in **Ferguson,** *J.*, Bibliotheca Chemica, Vol. II, p. 469.

Tritheim, *Johann.* *See* **Schaubert,** *Johann.*

Trium Virorum Chymicorum clarissimorum, nehmlich Amadei Friedlibii, Davidus Rebentrosts und Doctor George Keilings Collectanea curiosa de Bismutho, Das ist Etliche rare, biss anhero noch nie bekannt, sondern sehr geheim gehalten gewesene chymische Processe, Wovon auch bey denen Autoribus Chymicis nicht die allergeringste Meldung zu finden, Welche vorietzo allen Liebhabern der edlen Chymie als besondere Arcana und in der Praxi niemahls fallibel befundene Processe, durch den Druck communiciret worden. Dressden und Leipzig, bey Gottfried Leschen, 1718. 8o. pp. 88.

Bound with **Hellwig,** *Johann Otto*, Arcana maiora.

Trommsdorff, *Johann Bartholomäus.* Taschenbuch für Aerzte, Chemiker u. Pharmazeutiker auf das Jahr 1803. Erfurt. 8o. pp. [xxiv] + iv + 176.

Uhr-alter Ritter-Krieg, das ist, Ein Alchymistisch kürtzliches Gespräch unsers Steins, des Goldes und des Mercurij, von der wahren Materij, daraus der Stein der Weisen von den Naturkündigern durch gebührliche Handgriffe mit Hülffe des Lunischen Vulcani bereitet wird von einem alten wohlerfahrnen Philosopho beschrieben. Hamburg, In Verlegung Georg Wolffs, Buchändl. in S. Johañis-Kirchen, 1680. 8o. pp. 16.

Bound with **Suchten**, *Alexander von*, Chymische Schrifften, 1680.

Usufur womit ein vornehmer Italiänischer Fürst von einem vermeinten Chymico listiger Weise betrogen worden. Vor einigen Jahren Welsch, nun aber Teutsch publicirt. So als ein Anhang zum Fegefeuer der Chymisten dienen kan. Franckfurt und Leipzig, zu finden im Taubrischen Buchladen, 1717. 8o. pp. [24].

Bound with **Hellwig**, *Johann Otto*, Arcana maiora.

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—— Chymische Schriften, aus einigen alten MSten aufs fleissigste verbessert, mit vielen Tractaten, auch etlichen Figuren vermehret, und nebst einem vollständigen Register in drey Theile verfasset: Samt einer neuen Vorrede, von Beurtheilung der alchymistischen Schriften und dem Leben des Basilii begleitet von Bened. Nic. Petræo. Fünfte Edition. Hamburg, bey Gottfried Richter. 1740. 8o. pp. [clvii] + 1133 + [clvii].

Vigani, *John Francis*. Medulla chymiæ, variis experimentis aucta, multisq; Figuris illustrata. Londini, Impensis Henrici Faithorne, & Joannis Kersey ad insigne Rosæ in Cæmeterio D. Pauli, 1683. 8o. [16] + 71.

Wiegleb, *Johann Christian*. Historisch-kritische Untersuchung der Alchemie, oder der eingebildeten Goldmacherkunst; von ihrem Ursprunge sowohl als Fortgange, und was nun von ihr zu halten sey. Weimar, bey Carl Ludolf Hoffmann, 1777. 8o. pp. [xxii] + 437 + [iii].

—— *See* **Boerhaave**, *Hermann*.

Wilson, *George*. A compleat course of chymistry, containing near three hundred operations; several of which have not been publish'd before. Also, the structure of several furnaces, with near three hundred characters, which are dispers'd in chymical authors; and such instruments and vessels as are necessary in a compleat elaboratory. London: printed, and sold at the Author's house in Well-Yard, near

St. Bartholomew's Hospital; and by Walter Kettilby at the Bishop's Head in St. Paul's Church Yard, 1699. 8o. pp. [xvi] + 358.

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R. CLAY AND SONS, LTD., BREAD ST. HILL, E.C., AND BUNGAY, SUFFOLK.