

SMITHSONIAN MISCELLANEOUS COLLECTIONS

PART OF VOLUME XLVI

INDEX TO THE LITERATURE

OF

INDIUM

1863-1903

PREPARED BY

PHILIP E. BROWNING, PH. D.

of the Kent Chemical Laboratory of Yale University



(No. 1571)

CITY OF WASHINGTON  
PUBLISHED BY THE SMITHSONIAN INSTITUTION

1905

WASHINGTON, D. C.  
PRESS OF JUDD & DETWEILER (INC.)  
1905

## LETTER OF TRANSMITTAL.

WASHINGTON AND LEE UNIVERSITY,  
DEPARTMENT OF CHEMISTRY,  
LEXINGTON, VA., *March 25, 1905.*

The Committee of the American Association for the Advancement of Science having charge of Indexing Chemical Literature has voted to recommend to the Smithsonian Institution for publication the following:

INDEX TO THE LITERATURE OF INDIUM, 1863-1903;

prepared by Philip E. Browning, Ph. D., of the Kent Chemical Laboratory of Yale University.

JAS. LEWIS HOWE,  
*Chairman.*

Mr. S. P. LANGLEY,

*Secretary of the Smithsonian Institution, Washington.*

This publication forms one of the following series:

- Index to the Literature of Uranium, 1785-1885, by Henry Carrington Bolton, 1885.
- Index to the Literature of Columbium, 1801-1887, by Frank W. Traphagen, 1888.
- Index to the Literature of the Spectroscope, by Alfred Tuckerman, 1888, 1902.
- Index to the Literature of Thermodynamics, by Alfred Tuckerman, 1890.
- A Bibliography of the Chemical Influence of Light, by Alfred Tuckerman, 1891.
- A Bibliography of Aceto-Acetic Ester, by Paul H. Seymour, 1894.
- Index to the Literature of Didymium, 1842-1893, by A. C. Langmuir, 1895.
- Indexes to the Literature of Cerium and Lanthanum, by W. H. Magee, 1895.
- A Bibliography of the Metals of the Platinum Group, by Jas. Lewis Howe, 1897.
- Review and Bibliography of the Metallic Carbides, by J. A. Mathews, 1898.
- Index to the Literature of Thallium, 1861-1897, by Miss Martha Doan, 1898.
- Index to the Literature of Zirconium, by A. C. Langmuir and Charles Baskerville, 1899.
- A Bibliography of the Analytical Chemistry of Manganese, 1785-1900, by Henry P. Talbot and John W. Brown, 1902.
- Index to the Literature of Thorium, 1817-1902, by Cavalier H. Joüet, 1903.
- Index to the Literature of Gallium, 1875-1903, by Philip E. Browning, 1904.
- Index to the Literature of Germanium, 1886-1903, by Philip E. Browning, 1904.



# INDEX TO THE LITERATURE OF INDIUM.

(1863-1903.)

PREPARED BY PHILIP E. BROWNING.

1863: (1). REICH and RICHTER. (Discovery.)

J. prakt. Chem., LXXXIX, 441; Jsb. (1863), 236; Chem. Centrbl. (1863), 709; Chem. News, VIII, 123; Amer. J. Sci., (2), XXXVI, 415; Dingl. Pol. J., CLXX, 77; Bull. Soc. Chim. (Paris), v, 604; Phil. Mag., (4), XXVI, 448; Inst. (1864), 136; Ztsch. anal. Chem., II, 371; Vierteljahrsschr. pr. Pharm., XIII, 268; Wag. Jsb., IX, 1; N. Arch. Phys. nat., XIX, 144; Roy. Inst. Proc., IV, 285; VI, 393; Monit. Scient. (1863), 718; Poly. Centrbl. (1863), 1592; Poly. Notizbl. (1863), 302; Tidsskrift, (1), II, 311.

1863: (2). REICH and RICHTER. (Researches.)

J. prakt. Chem., XC, 174; Chem. News, VIII, 280; Amer. J. Sci., (2), XXXVII, 269; XXXVIII, 115; Berg. u. Hüttenmännische Zeit., XXXIII, 142; Jsb. (1863), 236; Chem. Centrbl. (1864), 506; Phil. Mag., (4), XXVII, 199; Instit. (1864), 175; Wag. Jsb., IX, 1; X, 1; Tidsskrift, (1), III, 152; Cosmos, XXIV, 747.

1864: (1). ROSCOE. (Spectrum.)

Chem. News, IX, 303.

1864: (2). NEWLANDS. (Speculations.)

Chem. News, X, 84, 95, 240.

1864: (3). REICH and RICHTER. (Researches.)

J. prakt. Chem. XCII, 480; Chem. News, X, 219; Jsb. (1864), 240; Bull. Soc. Chim. (Paris), (2), II, 442; Ztschr. anal. Chem., III, 529; Wag. Jsb., X, 1; Vierteljahrsschr. pr. Pharm., XIV, 244; Tidsskrift, (1), III, 322.

1865: (1). WINKLER. (Researches.)

J. prakt. Chem., XCV, 1; XCV, 414; Chem. News, XI, 154, 289; Polyt. Notizbl. (1865), 153; Ausz. Ztschr. Chem. (1865), 226; Ztschr. anal. Chem., IV, 102, 426; Phil. Mag., (4), XXX, 443; Chem. Centrbl. (1865), 381, 991; Bull. Soc. Chim., (2), (Paris), III, 282; Wag. Jsb., XI, 3; N. Arch. Phys. nat., XXXIII, 59; Ztschr. gesamt. Naturwissen., XXV, 446; Dingl. Pol. J., CLXXVII, 327; Berg. u. Hüttenmännische Zeit. (1865), 316.

## 1865: (2). WESELSKY. (Extraction.)

J. prakt. Chem., xciv, 443; Wien. Acad. Anz. (1865), 32; Jsb. (1865), 233; Ztsch. Anal. Chem., iv, 102; Chem. Centrbl. (1865), 573; Instit. (1865), 208; Bull. Soc. Chim., (2), iv, 194; Phil. Mag., (4), xxix, 328; Wien. Acad. Ber., LI, 286; Ztsch. gesammt. Naturwissen., xxvi, 283; Wien. Acad. Bull., VII, 1869; Wag. Jsb., xi, 4; Moniteur. Scientif. (1865), 863; Ztsch. österreich. Apoterker. Verein (1865), 301.

## 1865: (3). SCHRÖTTER. (Spectrum.)

J. prakt. Chem., xcvi, 441; Wien. Acad. Anz. (1865), 139; Jsb. (1865), 235; Ztsch. Chem. (1866), 61; Instit. (1865), 392; Phil. Mag., (4), xxx, 318.

## 1865: (4). STRENG. (Occurrence.)

Berg. u. Hutten. Ztg. (1865), 191; Dingl. Pol. J., CLXXXVII, 329; Wag. Jsb., xi, 3; Deutsche Industrie. Ztg. (1865), 248; Chem. Centrbl. (1865), 800.

## 1865: (5). SCHRÖTTER. (Occurrence and extraction.)

J. prakt. Chem., xcvi, 447; Wien. Acad. Anz. (1865), 192; Instit. (1866), 199; Ztsch. Chem. (1866), 61; Berg. u. Hüttenmännische Ztg. (1866), 323; Jsb. (1865), 230; Wag. Jsb. XII, 10; Bull. Soc. Chim. (1866), 111.

## 1865: (6). MÜLLER. (Spectrum.)

Pogg. Ann., cxxiv, 637; Am. J. Sci., (2), XL, 259; Phil. Mag., (4), xxx, 76; Jsb. (1865), 235; Ztsch. gesammt. Naturwissen., xxv, 519; Ber. u. Verhandl. d. Gesell. z. Beförd. d. Naturwissen. zu Freiberg. in Br.

## 1866: (1). WINKLER. (Weselsky's process of extraction.)

J. prakt. Chem., xcviII, 344; Chem. News, xiv, 157; Ztsch. Chem. (1866), 667; Chem. Centrbl. (1866), 893; Dingl. Pol. J., CLXXXII, 142; Wag. Jsb., XII, 11; Bull. Soc. Chim., [2], vi, 110.

## 1866: (2). BOETGER. (Occurrence in and extraction from flue dust.)

J. prakt. Chem., xcviII, 26; Chem. News, xv, 228; Dingl. Pol. J., CLXXXII, 139; Wag. Jsb., XII, 10; Vierteljahrsschr. pr. Pharm., xvi, 101; Ausz. Ztsch. Chem. (1866), 445; Chem. Centrbl. (1866), 605; Phil. Mag., (4), xxxII, 381; xxx, 443; Bull. Soc. Chim., (2), vi, 452; Jsb. (1866), 222; Ztsch. gesammt. Naturwissen., xxvIII, 50; Jsb. phy. Verein Frankfurt a/M. (1864-1865), 54; Poly. Notizbl. (1866), 177; Deutsch. Industrie. Ztg. (1866), 308; Berg. u. Hutten. Ztg. (1866), 380.

## 1866: (3). GERLACH. (Sale of indium.)

J. prakt. Chem., xcviII, 384.

- 1866: (4). BUNSEN. (Flame reactions.)  
 Ann. Chem. Pharm., cxxxviii, 257; Jsb. (1866), 780; Phil. Mag., (4), xxxii, 81, 96; Ztsch. anal. Chem., v, 351; Anz. N. Arch. Ph. Nat., xxvii, 25.
- 1866: (5). KÜCHLER. (Preparation and occurrence.)  
 J. prakt. Chem., xcvi, 447; Ztsch. gesammt. Naturwissen., xxvii, 338; Wag. Jsb., xii, 10.
- 1866: (6). THALEN. (Spectroscopic research.)  
 Universitets Arsskrift (Upsala), 1866; Nova Acta. Reg. Soc. Sc. (Upsala), [3], vi; Ann. Chim. Phys., [4], xviii, 244.
- 1867: (1). HOPPE SEYLER. (Occurrence in wolframite.)  
 J. prakt. Chem., c, 381; Jsb. (1866), 222; Ann. Chem. Pharm., cxi, 247; Ztsch. Chem. (1867), 27; Ztsch. anal. Chem., v, 401; Bull. Soc. Chim., (2), vii, 395; Ztsch. gesammt. Naturwissen., xxix, 53; Phil. Mag., xxxiv, 33; Wag. Jsb., xiii, 10.
- 1867: (2). FREMY. (Exhibit.)  
 Amer. J. Sci., (2), xliv, 110; Monit. scientif. (1867), 357; Wag. Jsb., xiii, 10; Dingl. Pol. J., clxxx, 456; Chem. News, xv, 202; Tidsskrift, (1), vi, 72; Chem. Centrbl. (1867), 463.
- 1867: (3). SCHRÖTTER. (Extraction.)  
 Wien. Acad. Anz. (1867), 261.
- 1867: (4). WINKLER. (Researches.)  
 J. prakt. Chem., cii, 273; Chem. News, xviii, 19; Ann. Chem. Phys., (4), xiii, 490; Anz. Ztsch. Chem. (1868), 207; Bull. Soc. Chim., (2), ix, 207; Jsb. (1867), 260; Wag. Jsb., xiv, 8; Ztsch. gesammt. Naturwissen., xxxi, 240; Monit. scientif. (1868), 452; Chem. Centrbl. (1868), 561.
- 1868: (1). RICHTER. (Extraction.)  
 Chem. News, xvii, 8; C. R., lxiv, 827; Bull. Soc. Chim., (2), viii, 170; Phil. Mag., xxxiv, 33; Chem. Centrbl. (1868), 95; Tidsskrift, (1), vi, 205.
- 1868: (2). BOETGER. (Preparation.)  
 J. prakt. Chem., cvii, 39; Jsb. d. Phys. Verein zu Frankfurt a/M. (1867-1868), 59; N. Repert. Pharm., xviii, 428; Ztsch. Chem. (1869), 468; Jsb. (1868), 240; Bull. Soc. Chim., (2), xii, 450; Polytech. Notizbl. (1869), 161; Wag. Jsb., xv, 2.
- 1868: (3). MEYER. (Extraction.)  
 Chem. News, xix, 298; Ann. Chem. Pharm. Az. Cl., 137; Jsb. (1868), 241; Ztsch. Chem. (1868), 15, 150, 429; Bull. Soc. Chim., (2), x, 18, 260; Wag. Jsb., xiv, 8; Ztsch. anal. Chem., vii, 252; Ann. Chim. Phys., [4], xviii, 421.

- 1869: (1). FIZEAU. (Heat expansion.)  
Pogg. Ann., cxxxviii, 31; C. R., lxxviii, 1125; Jsb. (1869), 86.
- 1869: (2). RÖSZLER and WOLF. (Preparation.)  
Chem. News, xx, 227; Dingl. Pol. J., cxviii, 487; Wag. Jsb., xv, 2.
- 1870: (1). BUNSEN. (Specific heat.)  
Pogg. Ann., cxli, 27; Jsb. (1870), 83; Ann. Chim. Phys., (4), xxii, 50;  
J. Chem. Soc. (Lond.), xxiv, 180; Archives de Geneve, xl, 25.
- 1870: (2). STOLBA. (Extraction.)  
Chem. News, xxii, 312; Dingl. Pol. J., cxviii, 223; Chem. Centrbl.  
(1870), 758; Jsb. (1870), 349; Wag. Jsb., xvi, 5; Chem. Notizen  
(Prag.) (1870), 344.
- 1870: (3). MEYER. (Atomic weight and valence.)  
Ann. Chem. Pharm. Suppl., vii, 354; Jsb. (1870), 14.
- 1871: (1). MENDELEEFF. (Atomic weight.)  
N. Petersb. Acad. Bull., xvi, 45; Jsb. (1871), 312.
- 1871: (2). DITTE. (Heat of oxidation.)  
Compt. rend., lxxii, 762, 858; lxxiii, 108; N. Arch. Ph. Nat., xli,  
344, 432; J. Chem. Soc. (Lond.), xxiv, 793; Ausz. Chem. Centrbl.  
(1871), 529; Jsb. (1871), 73; Bull. Soc. Chim., (2), xvi, 610; Ztsch.  
Chem., xiv, 340.
- 1871: (3). BAYER. (Preparation.)  
Ann. Chem. Pharm., clviii, 372; Ztsch. Chem. (1871), 391; Jsb. (1871),  
313; Bull. Soc. Chim., (2), xvi, 88; Ann. Chim. Phys., (4), xxvi, 133;  
Wag. Jsb., xviii, 6; J. Chem. Soc. (Lond.), xxiv, 664.
- 1872: (1). ODLING. (Properties.)  
Chem. News, xxv, 247, 253, 266; Am. Chemist, ii, 424; iii, 44; Proc.  
Roy. Inst., vi, 386; Wag. Jsb., xviii, 6.
- 1872: (2). PHILLIPS. (Atomic weight.)  
Chem. News, xxvi, 2.
- 1873: (1). CORNWALL. (Occurrence in American blends.)  
Chem. News, xxviii, 28; Am. Chemist (1873), iii, 242; J. Chem. Soc.  
(Lond.), xxvii, 34; Jsb. (1873), 275.
- 1873: (2). ROESSLER. (Reactions.)  
J. prakt. Chem. (N. F.), vii, 14; Chem. News, xxviii, 227; Jsb. (1873),  
275; Bull. Soc. Chim., xx, 170; J. Chem. Soc. (Lond.), xxvii, 846;  
Tidsskrift, [1], xii, 175; N. Arch. Ph. Nat., xlvi, 238.
- 1874: (1). SCHNEIDER. (Double sulphides.)  
Pogg. Ann. (Jubel) (1874), 158, 163; Bull. Soc. Chim., xxii, 158;  
J. prakt. Chem., ix, 209.



- 1874: (2). TANNER. (Occurrence.)  
Chem. News, xxx, 141; Jsb. (1874), 1227; J. Chem. Soc. (Lond.), xxvii, 1144; Chem. Centrbl. (1874), 647.
- 1875: (1). NILSON. (Valence.)  
Ber., viii, 658; ix, 1059.
- 1875: (2). NILSON. (Selenite.)  
Bull. Soc. Chim., xxiii, 497.
- 1875: (3). ——— (Value.)  
Min. and Scient. Press; Berg. u. Hütten. Ztg., xxxiv, 244; Chem. Centrbl. (1875), 544.
- 1876: (1). NILSON. (Platinum salts.)  
Ber., ix, 1727, 1056, 1142; Jsb. (1876), 293; Bull. Soc. Chim., xxvii, 209, 246.
- 1876: (2). CLAYDEN and HEYCOCK. (Spectrum.)  
Phil. Mag., (5) ii, 387; Amer. J. Sci., (3) xiii, 57; Jsb. (1876), 144; (1877), 1034; Ztsch. anal. Chem. (1877), 95; Chem. Centrbl. (1877), 2, 689.
- 1876: (3). LECOQ DE BOISBAUDRAN. (Reactions.)  
Ber., ix, 1807.
- 1876: (4). DELACHANEL and MERMET. (Occurrence in zinc.)  
Bull. Soc. Chim. (Paris), N. F., xxv, 197; Chem. Centrbl. (1876), 339.
- 1877: (1). ACWORTH and ARMSTRONG. (Action of nitric acid.)  
J. Chem. Soc. (Lond.), xxxii, 84.
- 1877: (2). LECOQ DE BOISBAUDRAN. (Non-volatility.)  
Ber., x, 92.
- 1877: (3). FLIGHT. (Occurrence at Durham.)  
Ber., x, 2054.
- 1877: (4). ——— (Value.)  
Berg. u. Hütten. Ztg., xxxv, 410; Chem. Centrbl. (1877), 160.
- 1878: (1). CORNWALL. (Occurrence in American blends.)  
Amer. Chemist, vii, 339; Jsb. (1878), 253.
- 1878: (2). LIVEING and DEWAR. (Spectrum.)  
Proc. Roy. Soc. (Lond.), xxvii, 132, 350, 494; Jsb. (1878), 182.
- 1878: (3). DE NEGRI. (Occurrence in calamine.)  
Gazz. Chim. Ital., viii, 120; Ber., xi, 1249; Jsb. (1878), 284; Wag. Jsb., xxiv, 11; J. Chem. Soc. (Lond.), xxxiv, 708.

- 1878: (4). LOCKYER. (Occurrence in the sun.)  
Proc. Roy. Soc. (Lond.), xxvii, 279; C. R., lxxxvi, 317; Jsb. (1878), 185.
- 1879: (1). MEYER. (Density of the chloride.)  
Ber., xii, 611; Amer. Chem. J., i, 213; J. Chem. Soc. (Lond.), xxxvi, 379; Amer. J. Sci., (3), xviii, 71; Bull. Soc. Chim., xxxiii, 113; Tidsskrift, (1), xviii, 260.
- 1879: (2). LOCKYER. (Heating of the metal in vacuo.)  
Chem. News, xi, 101; C. R., lxxxix, 514; Jsb. (1879), 176.
- 1879: (3). JUNGFLAISCH. (Separation from blends.)  
Bull. Soc. Chim., xxxi, 50; Chem. Centrbl. (1879), 234.
- 1880: (1). NILSON and PETTERSSON. (Physical constants of oxide and sulphate.)  
Ber., xiii, 1459; Jsb. (1880), 237; C. R., xci, 232.
- 1880: (2). SCHUCHT. (Electrolysis of salts.)  
Chem. Ztg. (1880), 292; Berg. u. Hütten. Ztg., xxxix, 121; Jsb. (1880), 174, 1143; Chem. Centrbl. (1880), 374; Wag. Jsb., xxvi, 412.
- 1880: (3). SCHÖNN. (Spectrum.)  
Ann. Phys., (2), ix, 483; x, 143; Jsb. (1880), 212.
- 1881: (1). WLEÜGEL. (Spectroscopic detection.)  
Chem. News, xlv, 82; xlii, 85.
- 1881: (2). ERHARDT. (Electrical properties.)  
Pogg. Ann., N. F., xiv, 504; Jsb. (1881), 95; J. Chem. Soc. (Lond.), xlii, 262; Chem. Ztg. (1881), 916.
- 1881: (3). CLARKE. (Atomic weight.)  
Amer. Chem. J., iii, 263; Phil. Mag., (5), xii, 101; Jsb. (1881), 7.
- 1882: (1). LECOQ DE BOISBAUDRAN. (Separation from Ga.)  
C. R., xcv, 410; Chem. News, xlvi, 152; Bull. Soc. Chim., xxxix, 548.
- 1883: (1). SCHUCHT. (Electrolytic behavior.)  
Chem. News, xlvii, 209; Jsb. (1883), 222.
- 1883: (2). DONATH and MAYRHOFER. (Atomic volumes.)  
Ber. (1883), 1588; Jsb. (1883), 24.
- 1884: (1). CARNELLY. (Relation of color to atomic weight.)  
Phil. Mag., (5), xviii, 130; Ber. (1884), 2151; Chem. News, i, 193; Jsb. (1884), 43.
- 1884: (2). CLARKE. (Atomic weight.)  
Chem. Ztg. (1884), 1038; Chem. News, xlix, 273, 282; i, 7, 22.

- 1885: (1). LECOQ DE BOISBAUDRAN. (Compounds and alloys.)  
C. R., c, 701; Chem. News, 11, 165; Ber., xviii, 319r; Jsb. (1885), 496; Chem. Centrbl. (1885), 297.
- 1885: (2). GLADSTONE. (Refraction equivalent.)  
Phil. Mag., (5), xx, 162; Jsb. (1885), 310.
- 1886: (1). WILLGEROOT. (As halogen transferer.)  
J. pk. Chem., xxxv, 142, 391; Chem. News, 1v, 176; Jsb. (1887), 618;  
Bull. Soc. Chim., xlviii, 346; J. Chem. Soc. (Lond.), 111, 326;  
Chem. Centrbl. (1887), 507; Chem. Ztg. Rep. (1887), 43.
- 1887: (1). KRÜSS. (Atomic weight.)  
Ber., xx, 360r.
- 1888: (1). ROBERTS-AUSTEN. (Tensile strength.)  
Proc. Roy. Soc. (Lond.), xliii, 425; Chem. News, 1vii, 133; Jsb. (1888), 7.
- 1888: (2). WINSSINGER. (Colloidal state of sulphide.)  
Bull. Acad. roy. de Belgique, Feb., 1888; Bull. Soc. Chim. (Paris), xlix, 452; J. Chem. Soc. (Lond.), liv, 911.
- 1888: (3). NILSON and PETERSSON. (Valence.)  
Ber., xxi, 691r; Chem., News, 1vii, 183, 292; Bull. Soc. Chim., (3), 1, 43, 724; J. Chem. Soc. (Lond.), liii, 814.
- 1888: (4). CARNELLY and WALKER. (Dehydration of hydroxide.)  
J. Chem. Soc. (Lond.), liii, 74, 88.
- 1888: (5). BLITZ. (Density of the chloride.)  
Ber., xxi, 2770.
- 1888: (6). NILSON and PETERSSON. (Chloride.)  
C. R., cvii, 500; Chem. Ztg. Rep. (1887), 254.
- 1889: (1). BARTLETT. (Occurrence.)  
Eng. and Min. J., xlviii, 342; Chem. Soc. Ind. J., viii, 896; Jsb. (1889), 341.
- 1889: (2). NERNST. (Review of molecular weight determinations.)  
Chem. Centrbl. (1889), ii, 273.
- 1890: (1). WINKLER. (Reduction of the oxide by Magnesium.)  
Ber., xxiii, 772; J. Chem. Soc. (Lond.), lviii, 693.
- 1890: (2). HEYCOCK and NEVILLE. (Atomic depression.)  
J. Chem. Soc. (Lond.), lvii, 385.
- 1891: (1). CLARKE. (Atomic weight.)  
C. R., cx, 1131; J. Anal. and Appl. Chem., iv, 334.

- 1892: (1). KAYSER and RUNGE. (Spectrum.)  
Ann. Phy. Chem., (2), XLVIII, 126; J. Chem. Soc. (Lond.), LXIV, 313.
- 1892: (2). LINDER and PICTON. (Constitution of the hydrosulphide.)  
J. Chem. Soc. (Lond.), LXI, 134.
- 1893: (1). GLADSTONE. (Molecular refraction and dispersion.)  
Ber., XXVI, 357R.
- 1893: (2). KIRKLAND. (Occurrence.)  
Anstralian Assoc. Adv. Sci. (1893), 266; J. Chem. Soc. (Lond.), LXX, 183.
- 1893: (3). WILDE. (Spectrum.)  
Ztsch. anorg. Chem., v, 399; Proc. Roy. Soc. (Lond.), LIII, 369.
- 1894: (1). READ. (Behavior of the oxide at high temperature.)  
J. Chem. Soc. (Lond.), LXV, 313.
- 1897: (1). HARTLEY and RAMAGE. (Occurrence.)  
J. Chem. Soc. (Lond.), LXXI, 533; LXXII, 318; Proc. Roy. Soc. (Lond.), LX, 399; Chem. Centrbl. (1897), I, 455.
- 1898: (1). LANDOLT, OSTWALD, and SEUBERT. (Atomic weight.)  
Ber., XXXI, 2763.
- 1898: (2). ATKINSON. (Occurrence in tungsten minerals.)  
J. Amer. Chem. Soc., XX, 797; J. Chem. Soc. (Lond.), LXXVI, 600; Chem. Centrbl. (1898), II, 1219.
- 1899: (1). MEYER. (Magnetic properties.)  
Monatsh. f. Chem., XX, 380, 807.
- 1900: (1). FORMANEK. (Absorption spectrum.)  
Ztsch. f. anal. Chem., XXXIX, 680.
- 1900: (2). HUYSSSE. (Microscopic reactions.)  
Nederl. Tijdschr. Pharm., XI, 355; Ztsch. anal. Chem., XXXIX, 9; Ztsch. anorg. Chem., XXIV, 150; Bull. Soc. Chim., (3), XXVI, 365; J. Soc. Chem. Indust., XIX, 930; Chem. Zeit. Rep., XXIV, 39; J. Chem. Soc. (Lond.), LXXXVIII, 205; Chem. Centrbl. (1900), I, 317, 515; Ztsch. anal. Chem., XXXIX, 9.
- 1901: (1). CHABRIE and RENGADE. (Relation to the other elements.)  
C. R., CXXXI, 1800; CXXXII, 472; Bull. Soc. Chim., (3), XXV, 566; Ztsch. physik. Chem., XLII, 126; J. Chem. Soc. (Lond.), LXXX, 102, 242; J. phy. Chem., v, 412; Ztschr. anorg. Chem., XXVII, 318; Chem. Centrbl. (1901), I, 249, 774; II, 90; Chem. Ztg. (1901), 48, 225.
- 1901: (2). RENZ. (Estimation and salts.)  
Ber., XXXIV, 2763; J. Soc. Chem. Indust., XX, 1145; J. Chem. Soc. (Lond.), LXXX, 657; Chem. Centrbl. (1901), II, 971; Chem. Ztg. Rep. (1901), 314.

- 1901: (3). KLEY. (Microscopic reactions.)  
Chem. Ztg., xxv, 563; J. Soc. Chem. Indust., xx, 934; J. Chem. Soc. (Lond.), LXXX, 626.
- 1901: (4). LOCKE. (Properties of alum.)  
Amer. Chem. J., xxvi, 173; Bull. Soc. Chim., xxvi, 1026.
- 1901: (5). BENOIST. (Atomic weight.)  
C. R., cxxxii, 772; J. Chem. Soc. (Lond.), LXXX, 308.
- 1901: (6). WELLS. (Double halides.)  
Amer. Chem. J., xxvi, 396.
- 1901: (7). HARTLEY and RAMAGE. (Occurrence.)  
Roy. Soc. Proc. (Lond.), LXVIII, 99.
- 1903: (1). RENZ. (Oxide.)  
Ber., xxxvi, 1847; Chem. Ztg. Rep. (1903), 171; Chem. Centrbl., 1903, II, 187.
- 1903: (2). RENZ. (Chloride with organic bases.)  
Ztsch. anorg. Chem., xxxvi, 100; Chem. Centrbl., 1903, II, 578.
- 1903: (3). RENZ. (Solubility of the hydroxide in ammonia.)  
Ber., xxxvi, 2751; Chem. Centrbl. (1903), II, 823.
- 1904: (1). RENZ. (Molybdate.)  
Ber., xxxvi, 4394; Chem. Centrbl. (1904), I, 430.
- 1904: (2). SACHS. (Crystalline form and position in the periodic system.)  
Ztsch. f. Kristall., xxxviii, 495; Chem. Centrbl., 1904, I, 570.
- 1904: (3). THIEL. (Researches.)  
Ber., xxxvii, 175; Chem. Centrbl., 1904, I, 570.
- 1904: (4). DENNIS and GEER. (Atomic weights and compounds.)  
J. Amer. Chem. Soc., xxvi, 437; Ber., xxxvii, 961; Chem. Centrbl. (1904), I, 1193.
- 1904: (5). RIMATORI. (Occurrence in Sardinian blends.)  
Atti. R. Accad. dei Lincei Roma, (5), 13; I, 277; Chem. Centrbl. (1904), I, 1370.
- 1904: (6). RENZ. (Researches.)  
Ber., xxxvii, 2110; Chem. Centrbl., 1904, II, 179.
- 1904: (7). THIEL. (Researches.)  
Ztsch. anorg. Chem., xl, 280; Chem. Centrbl., 1904, II, 407.

## INDEX OF AUTHORS.

- Acworth and Armstrong, 1877, (1).  
 Armstrong. *See* Acworth.  
 Atkinson, 1898, (2).  
 Bartlett, 1889, (1).  
 Bayer, 1871, (3).  
 Benoist, 1901, (5).  
 Biltz, 1888, (5).  
 Boettger, 1866, (2); 1868, (2).  
 de Boisbaudran, 1876, (3); 1877, (2); 1882, (1); 1885, (1).  
 Bunsen, 1866, (4); 1870, (1).  
 Carnelly, 1884, (1).  
 Carnelly and Walker, 1888, (4).  
 Chabrie and Rengade. 1901, (1).  
 Clarke, 1881, (3); 1884, (2); 1891, (1).  
 Clayden and Heycock, 1876, (2).  
 Cornwall, 1873 (1); 1878, (1).  
 Delachanel and Mermet, 1876, (4).  
 De Negri, 1878, (3).  
 Dennis and Geer, 1904, (4).  
 Dewar. *See* Liveing.  
 Ditte, 1871, (2).  
 Donath and Mayrhofer, 1883, (2).  
 Erhardt, 1881, (2).  
 Fizeau, 1869, (1).  
 Flight, 1877, (3).  
 Formanek, 1900, (1).  
 Fremy, 1867, (2).  
 Geer. *See* Dennis.  
 Gerlach, 1866, (3).  
 Gladstone, 1885, (2); 1893, (1).  
 Hartley and Ramage, 1897, (1); 1901, (7).  
 Heycock and Neville, 1890, (2).  
 Heycock. *See* Clayden.  
 Hoppe Seyler, 1867, (1).  
 Huysse, 1900, (2).  
 Jungfleisch, 1879, (3).  
 Kayser and Runge, 1892, (1).  
 Kirtland, 1893, (2).  
 Kley, 1901, (3).  
 Krüss, 1887, (1).  
 Kuchler, 1866, (5).  
 Landolt, Ostwald, and Seubert, 1898, (1).  
 Linder and Pieton, 1892, (3).  
 Liveing and Dewar, 1878, (2).  
 Locke, 1901, (4).  
 Lockyer, 1878, (4); 1879, (2).  
 Mayrhofer. *See* Donath.  
 Mendeleeff, 1871, (1).  
 Mermet. *See* Delachanel.  
 Meyer, 1868, (3); 1870, (3); 1879, (1); 1899, (1).  
 Müller, 1865, (6).  
 Nernst, 1889, (2).  
 Neville. *See* Heycock.  
 Newlands, 1864, (2).  
 Nilson, 1875, (1), (2); 1876, (1).  
 Nilson and Pettersson, 1880, (1); 1888, (3), (6).  
 Odling, 1872, (1).  
 Ostwald. *See* Landolt.  
 Pettersson. *See* Nilson.  
 Phillips, 1872, (2).  
 Pieton. *See* Linder.  
 Ramage. *See* Hartley.  
 Read, 1894, (1).  
 Reich and Richter, 1863, (1), (2); 1864, (3).  
 Rengade. *See* Chabrie..  
 Renz, 1901, (2); 1903, (1), (2), (3); 1904, (1).  
 Richter, 1868, (1). *See also* Reich.  
 Rimatori, 1904, (5).  
 Roberts Austen, 1888, (1).  
 Roessler, 1873, (2).  
 Roscoe, 1864, (1).  
 Rösler, 1869, (2).  
 Runge. *See* Kayser.  
 Sachs, 1904, (2).  
 Schneider, 1874, (1).  
 Schönn, 1880, (3).  
 Schrötter, 1865, (3), (5); 1867, (3).  
 Schucht, 1883, (1); 1880, (2).  
 Seubert. *See* Landolt.  
 Stolba, 1870, (2).  
 Streng, 1865, (4).  
 Tanner, 1874, (2).  
 Thalen, 1866, (6).  
 Thiel, 1904, (3).  
 Walker. *See* Carnelly.  
 Wells, 1901, (6).  
 Weselsky, 1865, (2).  
 Wilde, 1893, (3).  
 Willgerodt, 1886, (1).  
 Winkler, 1865, (1); 1866, (1); 1867, (4); 1890, (1).  
 Winssinger, 1888, (2).  
 Wleügel, 1881, (1).  
 Wolf. *See* Rösler.

## INDEX OF SUBJECTS.

- Action of nitric acid, 1877, (1).
- Alloys, 1885, (1).
- Atomic depression, 1890, (2).  
volumes, 1883, (2).  
weight, 1870, (3); 1871, (1);  
1872, (2); 1881, (3); 1884, (2);  
1887, (1); 1891, (1); 1898, (1);  
1901, (5); 1904, (4).  
weight, Relation of color to,  
1884, (1).
- Compounds. 1885, (1); 1904, (4).
- Alums, Properties of, 1901, (4).
- Chloride, Density of, 1888, (5);  
1879, (1).
- Chloride, 1888, (6).  
with organic bases, 1903, (2).
- Double halide, 1901, (6).  
sulphides, 1874, (1).
- Hydrosulphide, Constitution of,  
1892, (2).
- Hydroxide, Dehydration of, 1888,  
(4).  
Solubility in ammonia,  
1903, (3).
- Molybdate, 1904, (1).
- Oxide, Behavior at high tempera-  
ture, 1894, (1).  
Physical constants of, 1880,  
(1).  
Reduction of, by magnesium,  
1890, (1).
- Oxide, 1903, (1).
- Platinum salts, 1876, (1).
- Salts, Electrolysis of, 1880, (2).
- Salts, 1901, (2).
- Selenite, 1875, (2).
- Sulphate, Physical constants of,  
1880, (1).
- Sulphide, Colloidal state of, 1888, (2).
- Crystalline form, 1904, (2).
- Discovery, 1863, (1).
- Electrolytic behavior, 1883, (1).
- Estimation, 1901, (2).
- Exhibit, 1867, (2).
- Extraction, 1865, (2), (5); 1866, (1), (2);  
1867, (3); 1868, (1), (3); 1870, (2);  
1879, (3).
- Flame reactions, 1866, (4).
- Halogen transferer, 1886, (1).
- Heating of metal in vacuo, 1879, (2).
- Heat of oxidation, 1871, (2).
- Heat expansion, 1869, (1).
- Molecular refraction and dispersion,  
1893, (1).
- Molecular weight, Review of, determi-  
nations, 1889, (2).
- Non-volatility, 1877, (2).
- Occurrence, 1865, (4), (5); 1866, (2), (5);  
1867, (1); 1873, (1); 1874, (2); 1876,  
(4); 1877, (3); 1878, (1), (3), (4);  
1889, (1); 1893, (2); 1897, (1); 1898,  
(2); 1901, (7); 1904, (5).
- Position in the periodic system, 1904, (2).
- Preparation, (1866), (5); 1868, (2); 1869,  
(2); 1871, (3).
- Properties, 1872, (1).  
Electrical, 1881, (2).  
Magnetic, 1899, (1).
- Reactions, 1873, (2); 1876, (3).  
Microscopic, 1900, (2); 1901,  
(3).
- Refraction equivalent, 1885, (2).
- Relation to other elements, 1901, (1).
- Researches, 1863, (2); 1864, (3); 1865,  
(1); 1867, (4); 1904, (3), (6).
- Sale, 1866, (3).
- Separation from gallium, 1882, (1).
- Specific heat, 1870, (1).
- Spectrum, 1864, (1); 1865, (3), (6);  
1866, (6); 1876, (2); 1878, (2); 1880,  
(3); 1881, (1); 1892, (1); 1893, (3);  
1900, (1).
- Speculations, 1864, (2).
- Tensile strength, 1888, (1).
- Valence, 1870, (3); 1875, (1); 1888, (3).
- Value, 1875, (3); 1877, (4).