DETAILED SUBJECT INDEX

A

Absorption, of atomic radiation, 2764, 3389
Abstracts, of 1945 literature, 2514
of 1940 to 1945 literature, 2776, 2805
Accuracy (see also Precision)
  contribution of source unit to —, 3568
  effect of microstructure of electrodes on —, 2988
  effect of photographic plate on —, 2784
  factors affecting —, 2950
  improvements in —, 3377, 3378
  in flame photometry, 2920
  in photographic photometry, 2920
  of plate calibration, 3014, 3016
  of steel anal., 2780, 2851, 3341
  statistical fluctuations in anal., 2893
Air, detection of Pb in — by Geiger counter, 3200
  detn. of Be in dust from —, 3513
  detn. of Pb in —, 3079, 3451
Albite, anal. of —, 2998
Alkaline earths, detn. of Li in —, 2420b
Alum, detn. of Ca in —, 3537
  detn. of Mg in —, 3183
Alumina (see also Bauxite)
  anal. of —, 3550
Aluminum alloys (see also Duralumin, Silumin)
  anal. by photoelectric spectrometer, 2621, 3357
  anal. of — with intermittent a-c arc, 3224
  calibration of standard samples of —, 3221
  conditions for anal. of —, 2170c
  control of — by photoelectric method, 2867
  detn. of Al, Fe, Mg, Mn, Si, Zn in —, 3334
  detn. of Be in —, 3161
  detn. of Cr, Cu, Fe, Mg, Mn, Ni, Pb, Si, Sn, Ti, Zn in —, 2824
  detn. of Cr, Cu, Fe, Mg, Mn, Ti, Zn in —, 3238
  detn. of Cu in —, 2534, 2809
  detn. of Cu, Fe, Mg, Mn in —, 2826
  detn. of Cu, Fe, Mg, Mn, Si in —, 3230
  detn. of Cu, Fe, Mg, Mn, Si, Ti, Zn in —, 2216b, 2569
  detn. of Fe, Mg, Mn, Si in — with phototubes, 2896
  detn. of Mg in —, 3572
  detn. of Mg in — by self-reversal, 2769
  detn. of Mg, Zn in —, 3042
  effect of alloying components on spectra of —, 3308
  effect of background on detn. of Cu in —, 3523
  effect of heat treatment in anal. of —, 2570, 3314a
  effect of heat treatment of electrodes on intensities, 3005
  effect of microstructure on anal. of —, 2763
  effect of pre-spark on anal. of —, 2570
  effect of Si content in anal. of Al-Si —, 3536
  effect of microstructure on anal. of —, 2763
  prepn. of standard samples for —, 2782
  sampling of —, 2735
  semiquant. anal. of — scrap, 2731
  study of diffusion in —, 2919
  visual anal. of —, 3047
  visual sorting of —, 2791, 2797
Aluminum and alloys, anal. of —, 3110
British Aluminum Co. methods for anal. of —, 2102a
  detn. of Cr, Cu, Fe, Mg, Mn, Ni, Pb, Si, Sn, Ti, Zn in —, 2813
  detn. of Mg, Si in — by two-line method, 2962
  review of anal. of —, 2756a
BIBLIOGRAPHY ON SPECTROCHEMICAL ANALYSIS

Aluminum electrodes, use of anodically-oxidized —, 3472
Aluminum-iron alloys, anal. of —, 3494
Aluminum oxide (see Bauxite)
American Cast Iron Pipe Co., anal. at —, 3197
American Society for Testing Materials
to address on chemical spectroscopy, 3343
methods for anal. of Pb, Sn, and Zn alloys, 2467, 3315
report on standard samples, 2644, 3365
symposium on rapid identification of metals, 3593
symposium on spectroscopic light sources, 2824a
Americium, wavelengths for —, 3287
Analytical curve, causes of shift in —, 3585
displacement of —, 3387
effect of self-absorption in source on —, 2872
from different spectrographs, 2530
from solid alloy and soln. standards, 3566
pantograph for correction of —, 3025
Animal materials, anal. of charred —, 2246a
elements in human concretions, 2298a, 2736
Animal tissues (see Biological materials, Skin, Tissue)
Antimony, detn. of impurities in —, 2816
Antimony compounds, impurities in —, 2980
Antimony-tin alloys, effect of physical state on anal. of —, 3462
Apparatus (see also Arc, Comparator, Electrode, Flame Photometer, Excitation Source, Grating, Microphotometer, Photomultiplier, Review of Apparatus, Spark, Spectrograph, Spectrometer)
atomizer for flame, 2470
book on —, 3186
burner for flame photometer, 3595
combined spark-arc unit, 2482, 2596
cylinder to replace slit, 2414c, 2494
developments in —, 2728
electrode chamber for radioactive solns., 3384
electronic — of new types, 2551
flame attachment to spectrograph, 3546
flame spectrophotometer, 3395
for automatic exposure, 3461
for control of arc current, 2762
for control of exposure, 2688
for exciting spectra of powders, 2839
for exciting spectra of organic molecules, 3545, 3549
for microspectroscopy, 3459
for semi-quantitative anal., 3255
for simultaneous photography of two spectral regions, 2966
for time-resolved spectra, 3399
fulgurator for anal. of solns., 2571
high-frequency — for excitation, 3439
improvements in — for flame photometry, 3486
induction heater for arc, 3532
interchanging of —, 2852
lens to replace slit, 2555
light-integrating exposure switch, 2490
manufactured by OGPU factory, 2523
modifications of — for high speed anal., 2557
multi-purpose excitation —, 3446
new construction of —, 2925
oscillograph —, 2500
photometric ocular for steeloscope, 3425
photoelectric spectrometer, 3337, 3508
review of —, 2492, 2922, 3078, 3361, 3593
review of modern spectrographs, 2477
spectrum projector, 3427
tests of excitation —, 3341
to modify light intensity, 2531
Applications (see also Review of applications)
in biology, 2506
in chemical industry, 3017
in clinical chemistry, 2506
in geochemistry, 3332
in industrial laboratory, 2775
in industry, 2545
in metallurgy, 3364
in petroleum industry, 2661
in petroleum laboratory, 3007, 3176
in steel production, 2565
to control of converter blow, 2631
to control in light-alloy industry, 2996
to detn. age of sediments, 3436
to diagnosis of plant disease, 2562
to mineralogy, 2758
to soil investigation, 2547
to study of short-life molecules, 2295b
Arc (see also Electrode, Electrode holder, Excitation sources)
a-c — source, 2792
a-c with magnetic extinguishing, 2707
addition method for anal. by —, 3012
anal. by cathode layers of —, 2276b
anal. by intermittent a-c —, 2543
anal. of Al alloys by a-c —, 3334
anal. of ores and slags by a-c —, 2856
anal. of rocks by double —, 3555
anal. of sand and coke by a-c —, 3002
book on d-c — anal., 3310
cause of flare-up of spectra in —, 3148
characteristics of pulsed —, 3272
chamber for — in controlled atmosphere, 2716
combined arc-spark for Mg anal., 2482
control of a-c —, 2128a
controlled a-c —, 2481
current controlled d-c —, 2762, 3385
discharges at low pressures, 2927
Detailed Index

distribution of electrode material in —, 2764
effect of A, CO₂, He, O on carbon —, 3584
effect of Na on temp. of C —, 3529
electronic interrupter for d-c —, 3375
evaporation of electrode material in —,
2765, 2774
excitation in —, 2911, 3529a
excitation in low-pressure —, 3552
for detn. of metalloids, 2702
fractional distillation in d-c —, 2581, 2788,
3388
improved interrupted —, 3440
in furnace for detn. of Rb, 2778
induction heater for —, 3532
low-voltage a-c —, 2626
magnetic d-c —, 2778
magnetic rotation of —, 2741
magnetic stabilizer for d-c —, 2863
mechanism of — discharge, 2532
sensitivity in — discharge, 3275
short-period phenomena in d-c —, 2874
spark ignited a-c and d-c —, 3031
sparks in — method, 2701
sparklike discharges with a-c —, 2819
stabilization of d-c —, 2774
structure of a-c —, 2992
study of a-c —, 2598, 2599, 2622
study of Cu —, 2723
survey of — circuits, 2635
temperature and electron pressure in carbon —, 2912
temperature of low-pressure d-c —, 2777
vaporization of — cathode, 3174
Arcs, spectra of solns. in —, 2217b
Argon, detn. of N in —, 3483
Arsenic, detn. of —, 2573, 2986, 3517
first spectrum of —, 3476
Ashes, anal. of —, 1873a, 2638, 3428
Astronomy, observations on comets, meteors,
and meteorites in —, 2756
Atlas (see also Wavelengths)
for quartz spectrograph, 3435
of iron spark spectrum, 2666, 3243
of persistent lines of 30 elements, 2664
of rare earth spectra, 2368b
of spectra of rare metals and metalloids,
3153
Atomizer, for flame photometer, 2799

Band spectra, CaF and SrF — in carbon arc,
3434
detn. of radicals in flames by —, 3577
detn. of water by OH —, 2298c
excitation by carbon arc flame, 2003a
identification of —, 3511
of textiles, 2969
Bauxite, detn. of Ca in —, 2738
detn. of Ga in Indian —, 2964
detn. of principal constituents of —, 2926
Bauxite, rare earths in —, 2936
Beer, detn. of Al, Sn in —, 2823
Beryllium, detn. of Al, Ca, Cr, Fe, Mg, Mn,
Si in —, 3274
detn. of — in alloys, 3278
Bessemer process (see Converter)
Bibliography, with abstracts of 1945 literature,
2514
with abstracts of 1940 to 1945 literature,
2776, 2805
Billietite, anal. of —, 2795
Biological fluids (see also Blood, Blood
serum, Plasma, Serum, Urine)
anal. by sparking impregnated paper, 2614
flame photometric detn. of Ca, K, Na in —,
2835
flame photometric detn. of K, Na in —,
2777, 2755, 3163
Biological materials (see also Bones, Concre-
tions, Brain, Larvae, Skin, Teeth, Tissue)
anal. of —, 3568
detn. of Al, As, B, Cu, Fe, Fe, Mn, Mo, Zn in —,
2910
detn. of Al, Ca, Cu, Fe, K, Mg, Mn, Na, P,
Pb, Si, Sn, Ti in —, 3476
detn. of Al, Mn in —, 3070
detn. of Be in —, 2805, 3085
detn. of Ca in — by flame method, 3553
detn. of Ca in culture media, 2503
detn. of Co, Mn in —, 3000
detn. of Fe, Mg, Na, Pb in tissues and
fluids, 3262
detn. of Hg in —, 2489
detn. of K in —, 3518
detn. of K, Na in — with flame photome-
ter, 3023
detn. of trace elements in —, 3068
detn. of Zn in — by line widths, 2879
detn. of 15 elements in — by flame method,
3528
elements in —, 3463
elements in shark meal, 2946
flame anal. of —, 3546
Biology, spectral anal. in —, 2506
Biosphere, distribution of K, Rb in —, 2480a
Bismuth, anal. of native —, 2322
Bismuth alloys, detn. of Bi in —, 3347
Blood, Al content of —, 3067
BIBLIOGRAPHY ON SPECTROCHEMICAL ANALYSIS

Blood (Continued):

detn. of Al, Mn in —, 3070

detn. of Ca, K, Mg, Na in —, 3515

detn. of Fe, Mg, Na, Pb in —, 3282

detn. of K, Na in —, 3347, 3452

detn. of K, Na, Rb in —, 3324

detn. of Pb in —, 2600, 3178, 3544, 3545

detn. of Rb in —, 3320

detn. of trace elements in —, 3068

Mn content of —, 3069

removal of organic matter from —, 2600

Blood serum (see also Serum)

comparison of normal and hemophilic —, 2837

detn. of Co in —, 3599

detn. of K, Na in — by flame photometer, 3303, 3598

Boiler scale, visual testing of —, 2662

Bones, detn. of Sr in human —, 3417

Book (see also Textbook, Wavelength tables)

manual of spectroscopy, 3129

of tables for identification of molecular spectra, 3511

on anal. of ores and minerals, 3006

on anal. of soils and plants, 2955

on apparatus and excitation, 3186

on applied spectroscopy, 3206

on ASTM methods of anal., 3315

on elements of spectrography, 2960

on instrumental methods, 3065

on physical methods of anal., 3319

on practical spectroscopy, 2900, 3123

on principles and instruments, 3103

on semiquantitative procedures, 2678

on spectral anal., 2282a, 2540, 3510, 3571, 3411, 3498

on Steeloscope, 3043a

Boron, detn. of — in solns., 3496, 3534

Bron (see also Sr in human —, 3417)

Calculation board, principles of different types of —, 2860

slide rule —, 3410

universal —, 3432

Calculations, theory of —, 3431

comparison of five methods for —, 3264

Calibration of plates (see Photographic plate)

Carbon, detn. of —, 2410

detn. of Zn in — by photoelectric method, 3336

Cadmium, detn. of Cu, Pb, Tl, Zn in —

3450b, 3605b

detn. of Zn in — by photoelectric method, 3336

Cadmium alloys, anal. of —, 3053

Calculating board, principles of different types of —, 2860

Carbon arc (see Arc)

Carbon dioxide as atmosphere in detn. of N in steel, 3468

Carbon electrodes (see also Graphite electrodes)

carbon arc (see Arc)

Chemical reactions in —, 3453

purity of —, 2499, 2515, 2578, 2737, 2787, 3057, 3490

purity of —, 3509, 3510

furnace for purification of —, 3111

Carbon flame, in excitation of band spectra, 2003a

Carrier-distillation method, for anal. of uranium, 2581, 3388

Carbon electrodes (see also Graphite electrodes)

carbon arc (see Arc)

Chemical reactions in —, 3453

purity of —, 2499, 2515, 2578, 2737, 2787, 3057, 3490

purity of —, 3509, 3510

furnace for purification of —, 3111

Carbon flame, in excitation of band spectra, 2003a

Carrier-distillation method, for anal. of uranium, 2581, 3388

Cast iron (see Iron)

Catalyst, silica-alumina, detn. of Ca, Cr, Fe, Na, Ni, W in —, 3160

detn. of Cu, Fe, Na, Ni, V in —, 2633

detn. of Na in —, 2945

Catalysts, detn. of K in —, 3333

Cathode coatings, detn. of Al, Cu, Fe, Mg, Mn, Pb in —, 2973

Cathode-ray method, detn. of Be by —, 2966

BIBLIOGRAPHY ON SPECTROCHEMICAL ANALYSIS

198
DETAILED INDEX

detn. of Cs by —, 2129a
in anal. of uranium, 2718
quant. anal. by —, 2276b
Cement, detn. of Al, Fe, K, Mg, Mn, Na, Ti in portland —, 2680, 2902
flame anal. of portland —, 2991
Ceramic materials (see also Glass, Refractories)
anal. of —, 2818
anal. of — by CuO method, 2672, 2683
control anal. of —, 2585
review of methods for —, 3456
Ceramic problems, applications to —, 3273
Chemical industry, applications in —, 3017
Chemical reactions, in carbon electrodes, 3453
Chlorine, hollow cathode source for detn. of —, 2720
visual detn. of —, 2690
Chromatographic columns, detn. of Cd by anal. of —, 3137
Chrysoberyl, detn. of Fe, Mg, Mn, Si, Ti in —, 2749
Clay, anal. of —, 2872
detn. of Na in —, 2906
flame detn. of K, Na in —, 3325
Clays, anal. of —, 3157, 3396, 3397
detn. of B in petroleum-bearing —, 3516
detn. of V in Kansas —, 3524
elements in —, 2894a, 3414
Coal (see also Peat)
anal. of Indian — ash, 2965
classification of —, 2710, 3073
detn. of Al, Ca, Fe, K, Mg, Na, Si, Ti in —, 3422
detn. of Ge in —, 3030, 3455
detn. of Ge in Indian —, 3229
elements in —, 2997, 3484
elements in Austrian —, 2710, 2711, 2939
elements in Indian —, 3491
Coatings (see Metallic coatings, Metals)
Cobalt, detn. of Ni in —, 3355
Cobalt alloy, anal. of Stellite, 3072
anal. of Vitallium, 3271
Cobalt alloys, detn. of Cr, Fe, Mn, Ni, Si, W in —, 3042
Coke, detn. of Al, Ca, Mn, Si, Ti in —, 3002
Columbium (Niobium)
detn. of — by cathode layer, 2564
detn. of — in rocks and minerals, 2994
Columbium-tantalum mixtures, anal. of —, 2905
Combustion studies, with Orthicon spectrograph, 3074
Comets, observations on —, 2576
Concentration of elements, by distillation, 2772
by etching surface of metal, 3053
by extraction from non-ferrous metals, 3021
by ion exchange method, 3019
by organic reagents, 2726, 2957
Computations (see Calculations)
Concretions, elements in human —, 2298a
Converter blow, spectral control of —, 2681
Converter flame, study of Thomas —, 3108
control by anal. of —, 3232
Copper, detn. of —, 3533
detn. of Ag, Al, Ca, Fe, Mg, Mn, Ni, Pb, Si in —, 2781a
detn. of Be in —, 3495
detn. of Bi, Fe, Sb in —, 2923
detn. of Cd in —, 3422a
detn. of Cd, Mg, Mn, P in —, 2846
first spectrum of —, 3024
increased accuracy and sensitivity in anal. of —, 3386a
prepn. and anal. of —, 2923
Copper alloys (see also Brass, Bronze)
anal. of Cu-Be alloys, 3551
cast-pin method for anal. of —, 3242
detn. of Cu in —, 3037
detn. of Ni, Pb, Sn in —, 2892
Copper arc, study of —, 2723
Copper-spark method, 2660, 3388
Copper sulfides, elements in —, 2979
Costs, of steel anal., 3268
Cotton fibers, trace metals in —, 3415
Criminology (see also Poisoning)
applications to —, 3573
French police methods in —, 2605
Crystals, distribution of elements in —, 2002a
Cyano gen bands, chamber for suppression of —, 2716
suppression of —, 3034, 3219, 3502, 3584
suppression of — by oxygen, 3543

D
Densitometer (see Microphotometer)
Deuterium, detn. of —, 2796
detn. of — in H-D mixtures, 2593
Discharge tube, detn. of deuterium in —, 2593
fluctuations in —, 2706
for observing spectra of organic molecules, 3548, 3549
for various line spectra, 3376a
Dissociation constants, of compounds in flames, 2604
Distillation (see Carrier distillation method)
study of — in arc, 2788
Duralumin (see also Aluminum alloys)
detn. of Cu in —, 3500, 3572
effect of heat treatment on anal. of —, 2940
variation of spectral intensities during heat treatment of —, 2941
Dust, anal. of atmospheric —, 3048
detn. of Be in —, 3513
detn. of Ti in —, 3210
Dust (Continued):
   elements in flue —, 3433
   elements in flue — containing Ga, 3192
   elements in flue — containing Ge, 3191
   meteoric matter in atmospheric —, 3237

E

Electrode, boiler — for detn. of metalloids, 2702
   carbon — as filter stick, 2597
   cast from drillings, 3242
   contamination by counter electrode, 3061
   copper — for arc, 3118
   effect of dimensions of — on intensities, 3550
   effect of microstructure of —, 2988
   effect of sparking on steel —, 2885
   for anal. of thin specimens, 2740
   porous cup —, 3145
   prepn. from metal powders, 3244
   reactions of low-carbon steels, 3026
Electrode chamber, for anal. of radioactive solns., 3384
   for arcs in controlled atmosphere, 2716
   welded steel —, 3234
Electrode covering, anal. of welding —, 3377
Electrode cutter, improved —, 3359, 3569
Electrode holder, for microspark, 2972
   for large specimens, 2539
   improved —, 3569
   multiple —, 2532
Electrode material, evaporation in arc and spark, 2765
Electrodes, Ag and C counter — in anal. of steel, 2780
   Al and Mg counter — in anal. of steel, 2650
   anodically oxidized Al —, 3472
   casting of — in molybdenum-insert mold, 4054
   chemical reactions in C —, 3453
   comparison of carbon and graphite —, 2970
   comparison of graphite —, 2717
   rotating — in anal. of bearing alloys, 3132
   series —, 2704
   sparking-off effects in —, 3062
Electrodeless discharge, detn. of metalloids by —, 3391
Electron-multiplier phototubes (see Photomultiplier tubes)
Electron tubes, identification of gases in —, 3306
Energy levels, derived from optical spectra, 2961, 3227
   for Gd, 3538
   for U, 2524
Europe, review of applications in —, 2804
Excitation, as function of arc voltage, 3275
   control of arc and spark —, 2128a
   control of spark —, 2495
   detn. of temperature in spark —, 3106
   effect of anions in — of solns., 2653
   effect of atmospheric pressure on —, 2676
   effect of Ca on Sr in flame —, 2266a
   effect of circuit in spark —, 2170b
   effect of etching of alloy on —, 3288, 3289
   effect of heat treatment on —, 3460
   effect of matrix in —, 2410a
   effect of Na on — in C arc, 3529
   effect of salts on Li —, 2478
   effect of variations in line voltage on —, 3494
   high-frequency — of gases, 3151
   high-frequency — of halogens, 2507
   in arcs and flames, 2911
   in controlled spark, 3307
   in low-pressure arc, 3552
   mutual effects of elements in —, 2146a, 2508, 2516, 2694, 2698, 2885, 2928, 2935, 3083, 3112, 3149, 3149a, 3205, 3449, 3502, 3536
   of band spectra by C arc flame, 2008a
   of Fe and FeS by Tesla spark, 3581, 3583
   of solns. in arcs, 2217b
   process in flame —, 2603, 2604
   radioactive ionization in —, 3261a
   status of —, 3018
   study of controlled spark —, 2882
Excitation energies, of ultraviolet lines, 3487
Excitation source (see also Arc, Spark, etc.)
   air-interrupter spark —, 3141
   combined arc-spark —, 2596
   for observing spectra of organic molecules, 3548, 3549
   general-purpose —, 3088, 3143
   high-frequency —, 3439
   hollow-cathode —, 2720, 2794
   induction heater for arc —, 3532
   low-voltage spark —, 3443
   multi-purpose —, 3446
Excitation sources, comparison of — in anal. of steel, 3477
   new types of —, 2794
   review of —, 3064
   Russian —, 2782, 3442, 3446
   short-period phenomena in —, 2874
   stabilized control gap for spark —, 2881
   statistical comparison of —, 3559
   survey of —, 2635
   symposium on —, 2824a
   tests of —, 3341
Exposure time, automatic control of —, 2668
   effect of — on spectral sensitivity of photographic plate, 2613
Exposures, apparatus for automatic —, 3461
   simultaneous — of electrodes in series, 2704

200
simultaneous — in two spectral regions, 3493

F

Fats, detn. of Al, Cu, Fe, Mn, Ni, Sn, Zn in —, 2745
Ferrochrome, detn. of Cr in —, 2931, 3202a
Ferrosilicon, anal. of —, 2646, 3293a
detn. of Si in —, 3202a
Filters, description of —, 2531
for flame test, 3403
Flame, atomizer for —, 2470
coloration of — by metallic vapors, 2833
detn. of radicals in —, 3577
excitation in —, 2603, 2604, 2911
radiation of basic converter —, 3232
Flame attachment, for spectrophotometer, 2657
Flame method, carbon — for exciting band spectra, 2003a
detn. of Ca, K, Mg, Na in plants by —, 3344
detn. of Ca, Mg, Na in soils by —, 2555
detn. of K in minerals by —, 1901a
detn. of K in soils by —, 2995b, 2312a, 2511
effect of Ca on Sr in —, 2266a
for anal. of refractory materials, 3325
for anal. of rocks, 3465
for anal. of soils, 3226
for detn. of alkalis in minerals, 3001
for detn. of Ca, Cu, Fe, K, Mn, Na, Sr in plant materials, 2567
for detn. of Ca, K in soils, 2771
for detn. of Ca, K, Mg, Mn, Na in soils, 2513
for detn. of 15 elements in biol. materials, 3528
improvement in sensitivity of —, 3185
in anal. of plant materials, 3293
in presence of Na, 3403
mutual effects of elements in —, 2516
relative to standard lamp, 2252a
technique of Lundegårdh —, 2150a
with Bunsen flame, 3394
Flame methods, comparison of —, 2312a, 2786
Flame photometer, atomizer for —, 2799
atomizer-burner for —, 3300
design of —, 3000, 3135, 3395
for detn. of Ca, K, Li, Na, 2832
use of Se cell in —, 2936, 2981
Flame photometry, application of —, 3558
burner for —, 3358
comparison of K, Na detns. by chem. and —, 2677
detn. of Ca, K in plasma by —, 3563
detn. of Ca, K, Na by —, 3000
detn. of Ca, Na, Sr by filter —, 2252b
detn. of K in soils by —, 2767
detn. of K, Na in biol. fluids by —, 2755
detn. of K, Na in soils by —, 2606
improvements in apparatus for —, 3486
improvements in detn. of K by —, 3376
in anal. of portland cement, 2991, 3142
in clinical laboratory, 3447, 3499
in detn. of alkalis in soils, 3404
in detn. of Ba, Ca, K, La in oils, 3363
in detn. of Ca, K, Na in biological fluids, 2835
in detn. of K, Na, 3522, 3567
in detn. of K, Na in plants and soils, 2742
increasing accuracy of —, 3101, 3374
interference filter for —, 3247
stopcock for soln. intake in —, 2552
review of —, 2938, 3454, 3482
Flames, observations on pyrotechnic —, 3096
Flame test, for Au, Bi, Sn, 3218
Fluorides, arc spectra of CaF and SrF, 3434
Fluorine, hollow cathode source for detn. of —, 2720
Fluorites, elements in —, 2341a, 2779
earth rare in —, 2104b
Food (see also Beer, Fats, Grapes, Peas, Meat, Milk, Wheat, Wine, Yeast)
detn. of As, Cu, Fe, Pb, Sn in canned sea —, 3369
detn. of K, Na in —, 3102
elements in Spanish —, 2391a, 2497, 2498, 2535, 2574, 3463
Fractional distillation method (see also Carrier-distillation method)
detn. of K in catalysts by —, 3383
Fruit (see Grapes)
Fruit research, applications to —, 3284

G

Gadolinium, arc and spark spectra of —, 3538
Gall stones, elements in —, 2736
Gas discharge (see also Excitation)
properties of —, 2947
short-period phenomena in —, 2706, 2874
Gases (see also Fluorine, Oxygen, etc.)
anal. by reabsorption of light, 3389
anal. of mixtures of CO2 and N2, 3596
detn. of — by hollow cathode discharge, 3531
detn. of dust content of blast-furnace —, 3121
detn. of N in argon, 3433
detn. of water in —, 2298c
effect of — on carbon arc spectra, 3584, 3589
high-frequency excitation of —, 3151
identification of — in electron tubes, 3306
toxicity of — around excitation sources, 3906
Gasoline, detn. of tetraethyl lead in —, 2483
Geiger-Müller counter, in detn. of P in steel, 2853, 2897, 3407, 3408
in detection of Pb in air, 3200
in detn. of Pb in air, 3451
Geochemistry (see also Minerals)
aplications in —, 2146b, 2293a
of Nevada ore deposits, 2315a
of Ta in pegmatite, 3485
Geologic age, detn. of Rb for —, 2602
Geologic prospecting, spectrograph for —, 2815
Glass, anal. of natural —, 2486
detn. of B in —, 1786a, 1786c
detn. of Fe in —, 2566
detn. of Na in —, 3521
detn. of Pb in —, 1786b
flame detn. of K, Na in —, 3325
Glass industry, applications in —, 3273
Gold, anal. of ingot —, 2729
detn. of Ag, Ca, Cu, Fe in —, 2924
Grapes, detn. of K, Na, Rb in —, 3096
detn. of Rb in —, 3097, 3098
Graphite electrodes (see also Carbon electrodes)
comparison of commercial —, 2717, 2948
Grass, detn. of Rb in —, 2841
distribution of K, Rb in —, 2480a
Grating, design of echelle —, 3167
Grating spectrograph, description of small —, 2542
design of echelle —, 2906
with plane mirror, 3421
Great Britain, review of anal. in —, 2781

H

Hafnium, detn. of Hf-Zr ratios, 3147, 3382
Halogens (see also individual halogens)
detn. of —, 2411a, 3444
detn. of — by high-frequency excitation, 2507, 3391
Heat treatment, effects of — on Al alloys, 2570, 2940, 2941, 3005, 3314a
effect of — on bronze, 3401a, 3460
effects of — on Al alloys, 3314a
effects of — on steel, 2420a, 3348, 3460
Heterogeneity, examn. of — in metals, 2972
High-frequency, discharge unit for, 3499
excitation, detn. of halogens by —, 2507
History, of spectroscopy, 3262
Hollow-cathode tube, anal. by —, 2794, 3531, 3545
for detn. of F, Cl, and S, 2720
Hydrogen, detn. of N in —, 3036a
Hydrogen lamp, in meas. of absolute intensities, 3467
Iconoscope, in spectral anal., 2551
Igneous rocks, anal. of —, 3312, 3318
Index to the literature, on spectral anal., 2776
Insects, rare elements in —, 3104a
Intensities, dependence of — on concn. in flame, 3465
direct meas. of —, 3046
effect of alloy matrix on —, 2928
effect of heat treatment of Al electrodes on —, 3005
effect of K and Na salts on — of Li, Rb, Ti, V, 2843
effect of oxides on —, 2541
effect of sparking and matrix on —, 2865
effect of thickness of liquid on —, 2880
errors in direct meas. of —, 3573
influence of extraneous elements on —, 3112
meas. of —, 3561
meas. of absolute —, 3457
meas. of — in iron arc, 3367
meas. of — with phototube, 2501
rapid visual meas. of —, 3309
variation of — with concn., 3205
Intensity ratios, effect of alloying elements on — in Al, 3308
effect of atmospheric pressure on —, 3544
effect of electrode dimensions on —, 3550
effect of heat treatment on —, 2940
effect of sample matrix on —, 2935
influence of spark energy on —, 3114
influence of third element on —, 3149
of iron arc lines, 3367
variation of — during heat treatment, 2941
Iridium, detn. of Rh in —, 2609
Iron, anal. of —, 2527
anal. of — by line-width method, 3164
anal. of cast —, 2517, 3530
anal. of — cannon ball, 3180
atlas of spark spectrum of —, 2666, 3243
detn. of C in —, 2411a, 2447a, 3333
detn. of C in cast —, 3043
detn. of C, Si in wrought —, 3308a
detn. of Ce, Mg in ductile cast —, 3260
detn. of Cr, Cu, Mn in — by oscillograph, 2500
detn. of Cr, Cu, Mn, Mo, Ni, Si, Sn, V in —, 3527
detn. of Cu in cast —, 2846
detn. of K in — catalysts, 3333
detn. of Mg in —, 3316, 3420, 3450, 3507
detn. of Mg in nodular —, 3115
detn. of Mn in — by line-width method, 1990a, 1990b, 2491
detn. of Mn in cast —, 2607
detn. of Mn, Si in cast —, 3405
detn. of P in cast —, 3077
detn. of Si in —, 3193

202
DETAILED INDEX

detn. of Si in cast — with stelescope, 2827
distribution of elements between phases of —, 3288, 3289
effect of etching on sample surface in anal. of —, 3289
spectral control of — converter blow, 2861
standard samples of —, 2314a
Iron alloys (see also Ferrochrome, Ferrosilicon, Steel)
anal. of complex —, 2667
anal. of magnetic —, 3481
detn. of Al, Fe, Mo, Ti in —, 3009
detn. of Cr, Si in —, 3202a
Iron arc, photoelectric intensity meas. in —, 3367
Iron-chromium alloys, anal. of —, 2693
Iron implements, anal. of —, 3455a
Iron-nickel alloys, anal. of —, 2845
Iron-nickel-aluminum alloys, anal. of —, 2954
Iron ores, detn. of Al, Ca, Fe, Mg, Mn, Si in —, 3451a
minor elements in —, 3490
Isotope shift, in U spectra, 3116, 3216
Isotopes, anal. of — of Pb, Rb, Sr, Ti, U, 3590

J

Jewel stones, anal. of —, 2822, 2999

K

Klus factory, anal. in —, 2854

L

Lactate extracts, detn. of K in — of soils, 2415a
Larvae, trace element metabolism in —, 3128
Lead, anal. of —, 2590, 3075
control of purity of —, 3562
detn. of Ag, As, Bi, Cd, Cu, Sb, Sn in —, 2768
detn. of As, Bi, Cu in —, 3605
detn. of As, Bi, Cu, Sb, Sn in —, 2734
detn. of As, Ni, Sb, Zn in —, 3071
detn. of impurities in —, 2816
detn. of Sb in —, 3076
isotopic anal. of —, 3590
standard samples of —, 2314a
Lead alloys (see also Solder)
anal. by ASTM method, 2467
anal. by nitrate salt, 2323b
anal. of —, 3119
anal. of — with rotating electrodes, 3132
detn. of Bi in —, 3347
detn. of Cd in —, 2328b
detn. of Sb, Sn in —, 2502
detn. of high percentages of Sb in —, 3179
effect of melting on detn. of Cu in —, 2829

Lead minerals, anal. of antimony —, 2748
Lead oxides, anal. of —, 2590
detn. of As in —, 3540
Leaf materials (see also Tobacco)
Al in oak —, 3196
detn. of Al, B, Ca, Cu, Fe, K, Mg, Mn in —, 2553
detn. of Ba, Cr, Cu, Sr, Zn in cinchona —, 3214
detn. of Ca, Mg in —, 2850
Light source (see Arc, Excitation source, Flame, Spark)
Limestone, elements in —, 2583, 3400
Sr in —, 3479
Line width, effect of K, Na, Zn on Li —, 2647
Line-width method, anal. of iron, steel, zinc by —, 3164
compared to line-blackening method, 3256
description of —, 1990a, 1990b, 2491
detn. of Zn by —, 2879
Literature on spectral anal., abstracts of 1945 —, 2514
abstracts of 1940 to 1945 —, 2776, 2805
Lithium, detn. of — by flame photometry, 3597
effect of K, Na, Zn on — line width, 2647
Lithium-bearing ores, anal. of —, 2752
Lithium carbonate, as flux, 3299

M

Magnesium, detn. of Fe in —, 3259a
Magnesium alloys, anal. by stelescope, 3047
combined arc-spark source for anal. of —, 2482
detn. of Al in —, 3572
detn. of Al, Ce, Mn, Ni in —, 3571
detn. of Be in —, 2484
detn. of Ca in —, 2739
detn. of Cs in —, 3328

detn. of Ce, Ni in —, 3601a
detn. of Zr in —, 2958
photoelectric anal. of —, 2632
photoelectric detn. of Al, Be, Ca, Cu, Mn, Si, Zn in —, 2575
visual sorting of —, 2797
Magnetic control, in extinguishing arc, 2707
for rotating arc, 2741
Magnitogorsk Metallurgical Combine, anal. at —, 3029
Manganese dioxide, detn. of U in —, 2349a
Manhattan District project, anal. work in —, 2888
Matrix (see also individual alloys)
effect of — on detn. of Be, Cd, Co, Mn, Sb, Sn, V in mixtures, 3083
Meat, flame detn. of K, Na in —, 2800
Metallic alloys (see also individual metal alloys)
BIBLIOGRAPHY ON SPECTROCHEMICAL ANALYSIS

Metallic alloys (Continued):
anal. of — in petroleum laboratory, 3176
anal. of light — by photoelectric method, 2633
anal. of magnetic —, 3481
anal. of salt mixtures and —, 3119, 3253
detn. of Al, Fe, Mo, Ti in various —, 3009
detn. of Be in solns. of —, 3278
detn. of Cb, Ta in —, 2905
detn. of physico-chemical state of —, 3582
effect of matrix on spark anal. of —, 2410a
graphical method for anal. of ternary —, 3437
prepn. of standard samples for —, 2732
review of anal. of —, 2761
Metallic coatings, anal. of —, 3235
detn. of thickness of —, 1875a, 3574
Metallic oxides, anal. of — by spark, 2951
Metallic plating solns., anal. of —, 2963
Metalloids (see also Halogens, Sulfur)
detn. of —, 3391
detn. of — in hot arc, 2702
detn. of — in minerals and ores, 3330
detn. of — in ores and minerals, 3104
detn. of — in steel, 2790, 3336
spectrochemistry of —, 2891
Metallurgy, research applications in —, 3364
recent advances in physical —, 2858a
review of methods in —, 2705
Metals, anal. of etched surfaces of —, 3053
anal. of thin specimens of —, 2740
control of — in refining, 3562
detn. of trace —, 3392
microspectrometric method in anal. of —, 2631
photoelectric detn. of traces in —, 3360
rapid identification of —, 3301
study of inhomogeneity of —, 2972
Metals and alloys, review of anal. of —, 2311a
Meteoric matter, in atmospheric dust, 3237
Meteorites, observations on —, 2756
Meteors, elements in —, 3225
Methane-HCl mixtures, detn. of deuterium in —, 2796
Method (see also Reviews of methods)
absolute —, 2769
absorption of atomic radiation —, 2764, 3390
anal. by meas. intensity of wing of line, 2754
anal. of total energy —, 2323a, 3004
arc in furnace — for detn. of Rb, 2471
by examin. of chromatographic columns, 3197
carrier-distillation —, 2581, 2627, 3398
cathode-layer and log sector —, 2564
common-matrix —, 3299
copper-spark —, 2600, 3338
double-arc — for anal. of rocks, 3555
detn. by flame and standard lamp, 2252a
detn. of cements and other mineral products, 2902
detn. of high-purity materials, 2584
detn. of organic materials, 3503
detn. of powders, 3155
detn. of small quantities of solns., 2504, 3512
for anal. of solns., 2211a
for anal. of thin specimens, 2740
for arc detn. of metallicoids, 2702
for calcns. in anal. of stainless steel, 2684
for concn. of impurities from Zn, 1793a
for detecting and detng. metallicoids, 2891
detn. of isotopic composition, 3500
detn. of physico-chemical state, 3582
detn. of plating thickness, 1875a
detn. of water by OH bands, 2298c
for direct comparison of standard and sample, 2414c, 2494
for local anal., 3423, 3424
for observation of time-resolved spectra, 3399
for photographic evaluation of minor constituents, 2825
for prospecting, 1887a
for rapid identification of methyls, 3593
for simultaneous observation of series electrodes, 2704
for study of short-life molecules, 2296b
for study of textiles by band spectra, 2969
general quant. —, 2820
graphical — for anal. of ternary alloys, 3437
high-frequency excitation —, 2507
homologous line-pair —, 3190
instantaneous-scanning —, 2752, 2753
line-width photometric —, 1900a, 1900b, 2491, 3164
microspectrometric —, 2631, 3199
of sparking impregnated paper, 2614, 3004
oscillograph —, 2623
porous-cup electrode —, 3145, 3604
pellet — for anal. of cement, 2680
powder —, 2951
principles and choice of —, 3353, 3429
rapid —, 2869
rotating-disk —, 2411a
self-reversal —, 2769
semiquantitative —, 2678, 2731, 3255
sensitivity and reproducibility of paper pellet —, 2834
single-standard —, 2826
spark-in-arc —, 2701
spark-in-flame —, 3542
spark-transference —, 3044
spectrum-dilution —, 2975
spectral-filter —, 3150

204
DETAILED INDEX

three-line —, 2468, 3401
two-line —, 2462, 3010

Methods, in Klus factory, 2854

Mica, detn. of In, Sn in —, 3313

Microphotometer, application of oscilloscope to —, 3368, 3390
design of photoelectric —, 2889
effect of scattered light in —, 3505
optical and electrical alterations to —, 3159
photomultiplier in —, 2487
recording —, 2306

Microspectroscopy, 3459
in anal. of metals, 2631, 3199

Microstructure, effect of — on anal. of Al alloys, 2763

Milk, detn. of Ca, K, Na in — by flame photometry, 3438

Mineral products, anal. of —, 2818

Mineral waters (see also Water)
detn. of Ag in —, 2025a

Minerals (see also Carbonates, Clay, Geochemistry, Meteorites, Ores, Rocks, Sand, Silts, Soils)
anal. of —, 2624, 2902, 2913, 3258
anal. of albite —, 2998
anal. of Aragon —, 1744a
anal. of bauxite —, 2738, 2926
anal. of Belgian clay —, 2595
anal. of Bi from pegmatites, 2522
anal. of billee —, 2795
anal. of copper —, 1744a
anal. of Florence —, 3050
anal. of iron —, 1744a
anal. of Pb-Sb —, 2748
anal. of rubies and sapphires, 2822
anal. of silicate —, 1744a
anal. of spessartite —, 2526
anal. of sphalerite —, 2526, 3546a
anal. of Swedish —, 2537, 3504
anal. of zircon —, 2099
book on anal. of —, 3006
color of tourmaline, 2486
detn. of Ag, Cu, Fe in galena —, 2624
detn. of Au in pyrite —, 2724
detn. of B in silicate —, 3093
detn. of Be in pegmatite —, 2811
detn. of Be in phosphate —, 3520
detn. of Ca in brucite and magnesite —, 3488
detn. of Cb in —, 2558, 2994
detn. of Co, Cr, Ni, Zn in Swedish —, 3207
detn. of Co, Mn, Ni in sulfide —, 2665
detn. of Cr, Nd, Pr, V in wulfenite, 3402
detn. of Cs, K, Li, Na, Rb in — by flame, 3001
detn. of Cs, Li, Rb in —, 3332
detn. of Fe, Mg, Mn, Sn, Ti in chrysoberyl —, 2749
detn. of Fe, Mo, Pb in —, 2323a
detn. of Ga, K, Li, Rb, Ti in pollucite —, 2601
detn. of halogens, S, Se in —, 3330
detn. of Hg in celestite and strontianate, 3351
detn. of In, Sn in mica —, 2313
detn. of K by flame, 1901a
detn. of K in rock salt, 2004
detn. of major elements in —, 2700
detn. of Mo in molybdenite —, 2624
detn. of Pb in galenite —, 2624
detn. of Rb in — for geologic age, 2602
detn. of S, Se, and halogens in —, 3104
detn. of Sn in cassiterite —, 2624
detn. of Ta in —, 2933a
detn. of Ta in pegmatite —, 3485
detn. of Ti in Japanese —, 3492
detn. of Ti in silicate —, 2744
detn. of U in —, 3220
detn. of V in titanium magnetite —, 3554
detn. of W in scheelite —, 2624
detn. of Zn in Finnish —, 2353a
discussion of detn. of trace elements in —, 2798
distribution of elements in calcite and galena —, 2002a
effect of K and Na salts on intensities of Li, Rb, Ti, V in —, 2843
elements in cinnabar —, 2822b
elements in copper sulfide —, 2979
elements in epithermal —, 3445
elements in fluorite —, 2779
elements in rhodochrosite —, 3250
elements in silver sulfide —, 3317
elements in Swedish sphalerites, 2367a
elements in Swedish svanbergites, 2460a
elements in thorite —, 3329
elements in tourmaline —, 2636
elements in vitrain —, 3419
Ga in micas and schists, 2890
indium in greenockite —, 2520
method for prospecting for —, 1887a
origin of As, Cr, Mo, V in wulfenite —, 3171
qual. anal. of — with arcs, 2465
rare earths in bazzite —, 2836
rare earths in fluorite —, 2104b, 2341a
review of anal. of —, 2758, 3003
Sr in CaCO₃ —, 3479
visual testing of —, 2662

Mobile laboratory, for sorting steel, 2801

Molecular spectra (see Band spectra)

Museum specimens, anal. of Fe —, 3455a

N

Neodymium, detn. of Sm in —, 2884
Neptunium, wavelengths for —, 3387
BIBLIOGRAPHY ON SPECTROCHEMICAL ANALYSIS

Nickel, anal. of — wire and foil, 3249
detn. of Co, Cu, Fe, Si in —, 3587
detn. of Ni in electrolytic —, 2847
Nickel alloys (see also Permalloy)
anal. of —, 2967
detn. of Al, Cr, Fe, Mn, Si, Ti in —, 3042, 3284a
detn. of Al, Fe, Mo, Ti in —, 3009
detn. of Al, Mn, Ti in —, 3571
detn. of B, Cu, Fe, Mg, Mn, Pb, Si, Ti, Zn in —, 2682
detn. of Pb, Sb in —, 3348
effect of heat treatment in anal. of —, 3314a
sorting — with steeloscope, 2533, 2546
Nickel dimethylglyoxime, elements pptd. with —, 2675
Nickel-plating solns., detn. of K, Na in —, 3022
Niobium (see Columbium)
Nitrogen, method for detn. of — in steel, 3468
detn. of H in —, 3036a
Nomenclature, report on — in photographic photometry, 3342
Noble metals, detn. of Fe in Pd and Pt, 3081
prepn. of standard samples of — from metal powders, 3244
Non-ferrous metals, anal. for traces in —, 3021
general-purpose excitation source for —, 3088
visual anal. of —, 3080
visual detn. of Al in —, 3090
Nonmetallic samples, anal. of —, 2543

Oil additives, detn. of Ba, Ca, K, Li in —, 3363
detn. of Ba, Ca, P, Pb, Zn in —, 2483
Oil laboratory, anal. in —, 3007, 3176
Oils (see also Gasoline)
anal. of —, 2661, 3331, 3428
detn. of Al, Cr, Cu, Fe, Na, Ni, Si, V in —, 3350
detn. of Al, Cu, Fe, Mn, Ni, Sn, Zn in —, 2745
detn. of Ba, Ca, P, Zn in lubricating —, 3152
Oils and greases, anal. of —, 2971
Ores (see also Minerals, Rocks)
anal. of — by CuO method, 2683
anal. of — in a-c arc, 2856
anal. of iron, 2934
anal. of iron and manganese —, 2914
anal. of lithium-bearing —, 2752
anal. of Norwegian —, 3257
anal. of sulfide concentrates from —, 2321a
anal. of Swiss Cu —, 3178
anal. of Vesuvius —, 2952

book on anal. of —, 3006
detn. of Ag in —, 2944
detn. of Ag, Bi, Sn in Nevada —, 2315a
detn. of Al, Bi, Fe, Mg, Mn, Si in iron —, 3451a
detn. of Be, Cd, In, Zn in —, 2943
detn. of Co, Ni in —, 2754
detn. of Fe in ZnS —, 3259
detn. of Ge in Italian zinc —, 3366a
detn. of Ge, Mo in —, 2849
detn. of Ge, Pb, Sn in —, 2541
detn. of halogens, S, Se in —, 3330
detn. of Pb, Zn in —, 3267
detn. of Re in Mo —, 2476
detn. of S, Se, and halogens in —, 3104
detn. of Ti in —, 3210
detn. of U in —, 3570
detn. of W in low-grade —, 3195
elements in Caucasian —, 2479
elements in Cu —, 2038a
elements in cassiterite —, 2519
indium in cassiterite —, 2518
minor elements in iron —, 3480
Organic materials (see also Plastics, Rubber, Textiles, Varnish)
anal. of —, 3503
detn. of As in —, 3517
detn. of Ca, Li, K, Na in —, 3546
detn. of K in —, 3518
Organic reagents, chem. conc. by —, 2957
elements pptd. with nickel dimethylglyoxime, 2675
Organisms, distribution of K, Rb in —, 2480a
Orthicon, in spectral anal. —, 2551, 3074, 3089
Oscilloscope, anal. by —, 2501, 2628
application to microphotometer, 3368, 339c
Oxide coatings, detn. of Al, Cu, Fe, Mg, Mn, Pb in —, 2973
Ozone, toxic conc. of around arc, 3606

P

Palladium, detn. of Ir, Pt, Rh in —, 3441
detn. of Pt in —, 2609
Paper, anal. of —, 3428
detn. of Ca, Na in — pulp, 3525
differentiation of — by means of spark spectra, 2838
Paper pellets, in anal. of solns., 2612
Peas, detn. of Mo in —, 3594
elements in —, 3394
Peat, elements in —, 3541
Pegmatites, anal. of Bi from —, 2522
Be in —, 2811
detn. of Ta in —, 2293a
Permalloy (see also Iron-nickel alloys)
sorting of — with steeloscope, 2546
Petroleum (see also Oils)
correlation of — by trace elements, 3194
Petroleum industry, applications in —, 2661
Pharmaceutical products, anal. of — by steelescope, 3879
Phosphate minerals, detn. of Be in —, 3520
Phosphate rock, elements in —, 2747
Photocell (see also Photomultiplier tube)
control of exposure by —, 2490
Photoelectric direct method, anal. of Al alloys by —, 2621
anal. of Al scrap by —, 3357
anal. of brass by —, 3406
anal. of light alloys by —, 2623
anal. of Mg alloys by —, 2575, 2632
anal. of steel by —, 2512, 2803, 2871, 3166, 3168, 3169, 3170, 3290, 3291
anal. of Zn by —, 3166
apparatus for —, 3471
application of — in steel industry, 2625
cathode-ray tube in —, 2959
economic significance of —, 2679
errors in —, 3578
for detn. of C, P in steel, 3335
for detn. of Cr, Mn in steel, 2715
for detn. of P in steel, 3109, 3407
for direct meas. of intensities, 3046
for instantaneous scanning, 2752, 2753
review of —, 2750, 3235
spectrograph for —, 2896
with orthicon spectrograph, 2551, 3074, 3089
Photoelectric spectrometer, description of —, 2637, 2651, 2810, 2903, 2974, 3049, 3107, 3120, 3241, 3357
for detn. of traces, 3360
optical anal. of —, 3016
with photographic recording, 3125, 3126
Photographic emulsion, detn. of Ag in —, 2993
calibration of —, 2075a, 2529
calibration of — by new transmittance scale, 3177
sensitivity of —, 2075a
study of sensitive —, 3478, 3588
Photographic photometry, accuracy in —, 2920
background correction in —, 2548, 2746, 3505, 3535
calibration in —, 2314b, 2505, 2985
comparison of line-blackening and line-width methods in —, 3256
effect of background in —, 2340a, 2921
effect of photographic plate on accuracy of —, 2784
errors from slit cover, 2587
errors in —, 3056, 3470
filters, step sectors, step slits, and wedges in —, 2531
meas. of intensity of wing of line in —, 2754
method of photographic evaluation in —, 2825
nomenclature in —, 3342
rapid meas. of intensities in —, 3309
Seidel function in —, 3147
slide rule for —, 3410
step sector in —, 2579
study of Berekspot calculator in —, 3263
three-line method of —, 3401
with heterochromous lines, 2529
Photographic plate (see also Photographic emulsion)
accuracy of calibration of —, 3014, 3016
calibration of — by filters and sectors, 2985
calibration of — by iron lines, 2860
calibration of — by step sector, 2314b, 3015, 3156
calibration of — in two-line-pair method, 3010
calibration of — in two-line method, 3013, 3015, 3016
effects of —, 2784, 3131
rapid processing of —, 2869
review of four methods of calibrating —, 3165
spectra sensitivity of — as a function of exposure, 2613
variations in calibration of —, 3175
Photography, simultaneous — of two spectral regions, 2966
Photometer (see Microphotometer)
Photomultiplier tubes (see also Photoelectric direct method)
anal. by —, 2500, 3040, 3124
applications of —, 2495, 2551, 3398, 3579
application of — to low light levels, 2655
detn. of alkalis with —, 3184
for spectral anal., 2932
in detn. of Cr, Mn in steel, 2715
densitometer, 2487
in study of gas discharges, 2706
intensity meas. with —, 2501, 2687
methods of using — for anal., 2492
review of —, 3084, 3235
with slitless spectrograph, 2645
Plants (see also Grapes, Leaves, Peas, Seeds, Tobacco, Wheat)
anal. of —, 2956, 2956
anal. of Lens esculenta, 2648
concentration of impurities from —, 2726
Cs and Rb in —, 2618
detn. of B in —, 3035
detn. of Ba, Ca, Cu, Fe, Mg, Mn, Na, Si in —, 3381
detn. of Ba, Ca, K, Li, Na, Rb in —, 3602
detn. of Ca, K, Mg, Na in —, 3344, 3564
detn. of Ca, K, Na in — with flame photometer, 3051
BIBLIOGRAPHY ON SPECTROCHEMICAL ANALYSIS

Plants (Continued):
- detn. of Cs in —, 3099
- detn. of Cu, Mn, Rb in — by flame method, 3293
- detn. of Cu, Mo in —, 3506
- detn. of K, Na in —, 2742
- detn. of K, Na, Rb in —, 3323
- detn. of Mo in —, 2289a
- detn. of Ni in —, 2953
- detn. of P in —, 2536
- detn. of Rb in —, 2472, 2473, 2615, 2616, 2617, 2841, 3321, 3322
- detn. of trace elements in —, 2562
- detn. of Zn in —, 2592
- distribution of Li in —, 3095
- elements in —, 2323
- elements in coffee —, 2592
- flame method for anal. of —, 2567
- of five computation methods, 3264
- statistical methods for study of —, 3158, 3265
- comparison of two types of —, 2530
- design of —, 2766

Plasma, detn. of Ca, Fe, K, Mg, Na in —,
- 3105, 3563
- detn. of K, Na in —, 3135, 3228

Plastics, anal. of —, 3428

Plate calibration (see Photographic plate)

Plated metals (see Metals, Metallic coatings)

Plating soln., detn. of K, Na in Ni —, 3022

Platinum, detn. of Au, Pd in —, 2140a
- detn. of Ir, Rh in — prepns., 2608
- detn. of Rh in —, 2609
- purity of —, 2688

Platinum metals (see Noble metals)

Platinum-rhodium alloys, sensitive lines for anal. of —, 3448

Plutonium, wavelengths for —, 3287

Pobedites, sorting of — with steeloscope, 3134

Police methods (see Criminology)

Pollucite, detn. of Ga, K, Li, Rb, Tl in —,
- 2601

Porous-cup method, for anal. of solns., 3145, 3604

Potassium-sodium soln., anal. of —, 2576

Powders, anal. of —, 3155
- anal. of — by flame, 2252a
- anal. of non-conducting —, 3040
- prepd. by mixing with dextrin glue, 3251

Praseodymium, detn. of La in — metal, 3279

Precipitates, study of organic —, 2675

Precision (see also Accuracy)
- comparison of — with various sources, 3559
- in anal. of steel, 3182
- in metallurgical anal., 3586
- of five computation methods, 3264

Prism spectrograph, atlas for —, 3435
- discussion of —, 2591
- high-dispersion —, 1784a
- increasing the dispersion of —, 3467
- multi-prism —, 2890
- of high light intensity, 3362
- resolution of —, 1784a
- simultaneous photography of two regions by —, 3493

Production problems, applications to —,
- 2050a

Projector, for spectra, 3427

Promethium, search for —, 2447b
- wavelengths for —, 3286
- wavelengths of seven lines of —, 3146

Prospecting, method for —, 1887a

Protactinium, wavelengths for —, 3287

Pulp mill, detn. of Ca, Na in — control, 3525

Pure materials, testing of —, 2584

Pyrite, detn. of Au in —, 2724

Q

Qualitative analysis, by solid electrodes, 2729
- limit of detection in —, 2654
- wavelength tables for —, 3154

R

Radioactive ionization, in, spec. anal., 3261a

Rare earths, anal. of —, 2884, 3034, 3302
- atlas of — spectra, 2368b
- detn. of —, 3215, 3473
- detn. of Gd, Y in mixtures of —, 3144
- in fluorite, 2104b
- persistent lines of —, 3277

Refractory samples (see also Silica brick,
- Silica refractories)
- detn. of CaO in —, 3416
- flame detn. of K, Na in —, 3325

Republic Steel Corp., methods and costs in anal. at —, 3298

Review of apparatus, 2761, 2855, 2922, 2925,
- 3078, 3087

for excitation, 3064

Review of applications, 2669, 2670, 2937, 3262
- during 1939-1942 in Germany, 2368a
- during 1939-1946 in Germany, 3254

in Europe, 2804
- in Great Britain, 2781
- in metal industry, 2206b, 2545
- in metallurgy, 2588, 2676
- in post World War II, 2317
- in U.S.S.R., 2436a, 3036, 3201
- to anal. of ashes, 1873a
- to anal. of inorganic substances, 3020
- to anal. of metals, 3246
- to anal. of metals and alloys, 2311a
- to anal. of soils and plants, 2956
- to biology, 2506
- to chemical industries, 2572

208
DETAILED INDEX

to clinical chemistry, 2506
to industrial laboratory, 2775
to mineralogy and geochemistry, 3003
to production problems, 2050a
to quality control, 3045
Review of methods, 2152a, 2697, 2703, 2728, 2789, 2868, 2908, 2913, 2918, 2922, 2937, 2968, 3173, 3310, 3343, 3353, 3474, 3489, 3556, 3557
developed at University of Ghent, 2672
for anal. of ceramics, 3456
for anal. of high-purity materials, 3034
for anal. of metals, 2705
for anal. of metals in America, 2870
for anal. of minerals, 2758
for anal. of plants and soils, 2725
for anal. of rocks, 3465
for dtn. of trace metals, 3392
for instrumental anal., 3103
in flame photometry, 3482
in industry, 3276
of excitation, 3018
photoelectric, 2750
photoelectric and photographic, 2577
Review of spectroscopy, 2544
Rhenium, dtn. of — in Mo ores, 2476
wavelengths for —, 2692
Rivets, anal. of steel — with steeloscope, 3059
Rocks (see also Minerals)
abundance of Zn in —, 2942
anal. of —, 2643
anal. of — by magnetic d-c arc, 2778
anal. of chlorite, 2594
anal. of igneous —, 3312, 3318
anal. of iron-bearing —, 2934
anal. of limestone, 2583, 3400
anal. of New Hampshire —, 2620, 2642
anal. of silicate, 3311
anal. of Silurian —, 3117
anal. of South African —, 3297
anal. of Swedish —, 2537, 3464
anal. of volcanic —, 2181a, 2722
dtn. of B in —, 2387a
dtn. of B, Co, Cr, Ni, V in Swedish —, 2713
dtn. of Cb in —, 2994
dtn. of Co, Cr, Cu, Ni, V in —, 3063
dtn. of Cr, Ni in Italian —, 2560, 2561
dtn. of Cu in Italian —, 2559
dtn. of Cu in sedimentary —, 2104a
dtn. of Cu, Pb in sedimentary —, 3526
dtn. of In, Pb, Sn, Ti, Zn in —, 2772
dtn. of major elements in —, 2700
dtn. of Mo in granite and quartzite —, 2668, 2659
discussion of dtn. of trace elements in —, 2798
double-arc method for anal. of —, 3555

effect of molecular combination in anal. of —, 2643
elements in clay, 1743a
elements in Cr segregates in —, 2186a
elements in limestone —, 1743a
elements in marl, 1743a
elements in phosphate —, 2747
elements in shale, 1743a
minor elements in Tuscan-Emilian Appenines, 1743a
review of methods for anal. of —, 3465
qual. anal. of — with arcs, 2465
trace elements in German —, 2266
trace elements in sedimentary —, 2894a
Rhodium, dtn. of Ir, Pd, Pt, in —, 2823
Rubber, anal. of —, 3428
Cu, Fe, Mn in —, 2719
Rubidium, dtn. of geologic age by —, 2602
isotopic anal. of —, 3590
Rubies, anal. of —, 2822
Russian excitation sources, review of —, 2782
Rutile, anal. of —, 2594

S

Samarium, dtn. of Eu in —, 2884
Sapphires, anal. of —, 2822
Samples, prepared with dextrin glue, 3251
Sampling, by dentists' drill, 2735
of Al alloys, 2733
Sand (see also Silica)
dtn. of Al, Ca, Fe, Mg, Ti in quartz —, 3002
dtn. of Mo, Ti, V, W, Zr in iron-bearing —, 3280
trace elements in glass —, 3113
Sandstone, dtn. of V in cupriferous —, 3270
Sediments, anal. of Tyrrenian Sea —, 2982
dtn. of Sr in study of age of —, 3436
distribution of elements in —, 2933
trace elements in —, 2894a
Seeds, distribution of Li in —, 3095
Segregates, anal. of — in steel, 3008, 3423
variations within —, 3364
Self-reversal, absolute method by —, 2769
Sensitive lines (see also wavelengths)
for anal. of Pt-Rh alloys, 3448
of rare earths, 3277
Sensitivity, calcn. of detection —, 2685
in arc discharge, 3275
of detection of the elements, 2654
of paper pellet method, 2834
of spectrographic and radiotracer methods, 3066
Serum, dtn. of K, Na in — with flame photometer, 3091
Shark meal, elements in —, 2946
Silica (see also Sand)
dtn. of Bi, Co, Cr, Fe, In, Mo, Mn, Ni, Pb, Sn in —, 3181
BIBLIOGRAPHY ON SPECTROCHEMICAL ANALYSIS

Silica brick, anal. of —, 2915, 3004, 3283
Silica refractories, anal. of —, 3172
Silicate minerals, detn. of B in —, 3093
detn. of Tl in —, 2744
Silicate rocks, anal. of —, 3311
Silumin, anal. of —, 2808
detn. of Fe, Si in —, 2875
detn. of Mg in —, 2309a
Silts, detn. of B in sea —, 2896
Silver, detn. of Bi, Pb, Sb, Sn in —, 2734
detn. of impurities in —, 2924
detn. of Pd, Pt in —, 3082
semi-quant. detn. of —, 2887
Silver sulfide, elements in —, 3317
Skin, qual. anal. of — lesions, 3212
Slag, anal. by addn. of CuO, 2242a
anal. of —, 2699, 2807, 2857, 3139
anal. of basic open-hearth —, 3236
anal. of — in a-c arc, 2856
detn. of Al, Ca, Cr, Fe, Mg, Mn, Ni, P, Si, Ti in —, 2773
detn. of Al, Ca, Fe, Mg, Mn, Si in —, 3349
detn. of Al, Cr, Fe, Mg, Mn, Si in —, 2242a
detn. of basicity of —, 3027
detn. of lime-silica ratios in —, 2814, 3041, 3497
detn. of major elements in —, 2700
detn. of W in —, 2848
Slit, cleaning of —, 2406a
lens to replace —, 2525
replacement by glass cylinder, 2414c, 2494
replacement by steel needle, 2565
Soil extracts, detn. of K in — by flame, 2415a
detn. of K, Na in — by flame, 2606
detn. of Mg in — by flame, 3038
Soils, abundance of Zn in —, 2942
anal. of —, 2955, 2956
concentration of impurities from —, 2726
Cr and V in Soviet —, 3295
detn. of alkalis in — by flame, 3404
detn. of As, Mo, V in Argentine —, 3580
detn. of B in —, 2563
detn. of Ca, K in —, 2771
detn. of Ca, K in — by flame photometer, 3281
detn. of Ca, K, Mg, Mn, Na in — by flame, 2513
detn. of Ca, Mg, K, Na in —, 2555, 3564
detn. of Co in —, 3352
detn. of Cs in arable —, 3100
detn. of Cs, Li, Rb in —, 3603
detn. of K in —, 2295b, 2312a, 2415a, 2511, 2767, 2981
detn. of K, Na in —, 2742
detn. of Li in —, 2420b, 2844
detn. of Mo in —, 2280a
detn. of Rb in —, 2474
detn. of Rb in arable —, 2840
detn. of trace elements in —, 2562, 2580, 2562
detn. of Zn in —, 2770
detn. of 23 trace elements in —, 2547
effect of salts on detn. of Li in —, 2478
elements in Australian —, 2292a
extraction of — sample, 3356
flame anal. of —, 3326
photoelectric detn. of alkalis in —, 3184
review of anal. of —, 2725
Solder, anal. of tin-lead —, 3033
detn. of Cu, Pb, Sb, Sn in — 2873
Solution method (see also Flame)
anal. of steel by —, 2340b, 2671
effect of thickness of liquid in —, 2880
Solutions, anal. of —, 3339
anal. of — by copper-spark method, 2660
anal. of — by filter paper pellets, 2612
anal. of — by porous cup electrode, 3145, 3604
anal. of radioactive —, 3384
anal. of small quantities of —, 2504
detn. of Be in —, 3161
detn. of Hg, Pb, Ti, Zn in —, 3472
detn. of K in —, 2649
detn. of trace elements in —, 2652
effect of anions in anal. of —, 2653
electrode support as reference in anal. of —, 2949
excitation of —, 2211a
spark anal. of —, 2808, 3331
stopcock for — in flame photometry, 2552
Sorting, of Al alloys, 2791
of Al and Mg alloys, 2797
of alloys, 2629
of nickel alloys with steeloscope, 2533, 2546
of pobedite ceramets, 3134
of steel by mobile laboratory, 2501
of steel wire with steeloscope, 3104b
Spark, anal. by copper —, 2660
anal. of impregnated paper by —, 2614, 3094, 3133
anal. of powders by —, 2839
anal. of solns., 3331
apparatus, 2203a
auxiliary ionization for — by radioactive substances or flame, 3261
combined arc — unit, 2596
combined arc — unit for Mg anal., 2482
control of —, 2128a, 2495
detn. of temperature in —, 3106
distribution of electrode material in —, 2764
effect of circuit constants on —, 2599
effect of oxidizing and reducing atmospheres on steel —, 3149a
effect of oxygen and nitrogen on —, 3589
effect of circuit conditions on —, 2170b
DETAILED INDEX

effect of atmospheric pressure on —, 3544
evaporation of electrode material in —, 2765
excitation of Fe and FeS by Tesla —, 3581, 3583
excitation of solutions by —, 2211a
influence of — energy on intensity ratios, 3114
low-voltage —, 3443
matrix effects in —, 2410a
method for transferring sample by —, 2793
micro — for study of inhomogeneity, 2972
pre-exposure time in anal. of Al, 2216b, 2570
short-period phenomena in —, 2874
spark-off effect in —, 1990c
stabilized control gap for —, 2881
study of — conditions and spectra, 3430
study of controlled —, 2882, 3307
study of low-tension —, 3223
survey of — circuits, 2635
time-dependence of spectra lines in —, 3122
to minimize effect of inhomogeneity, 2972
transport of material in —, 2793, 3044, 3575
Spark generator, air-interrupter —, 3141
air-interrupter attachment for —, 3187
anal. by Durr —, 2638
controlled —, 2481
experiments on —, 2878
principles of — circuits, 2830
synchronous switches for —, 2831
Spark-in-arc method, 2701
Spark-in-flame method, sensitivity of detns. by —, 3185
Spectra (see Atlas, Wavelengths, Band spectra)
Spectral analysis (see also Review of methods)
ASTM methods of —, 3315
book on —, 2382a, 2540, 2550, 2600, 3065, 3206, 3310, 3371, 3411, 3498
book on semi-quantitative —, 2678
comparison of American and German —, 2730
economy of — in steel industry, 3592
high-speed routine —, 2557
history and applications of —, 2669
in U.S.S.R., 2493a
laboratory for —, 2676
manual on —, 3129
methods of —, 3319
principles of —, 2721, 2728
review of —, 2544, 2670, 3489, 3556
review of 1939–42 German papers, 2368a
ten steps in —, 3188
textbook for —, 3269
trends in —, 2703
Spectral exposure, light-integrating switch for —, 2490
Spectrochemical analysis (see Spectral analysis)
Spectrograph (see also Grating spectrograph, Prism spectrograph)
cathode-ray —, 2959
cinema — for rapid spectral sequences, 2907
comparison of grating and prism —, 2651
effect of speed of — on analytical curves, 2530
for geological prospecting, 2815
interference by slit cover in —, 2587
slitless —, 2565, 2645
small — for steel anal., 2509
Spectrometer (see Photoelectric spectrometer)
Spectroscope (see also Steeloscope)
direct-reading —, 3060
Spectroscopy, book on —, 2900, 3123
book on applied —, 3206
review of —, 2544
Speed, in anal., 2699
Standard samples, ASTM report on available —, 2644, 3365
calibration of Al —, 3221
for anal. of clays, 3396
of aluminum with Cu, Fe, Mg, Mn, Si, Zn, 2314a
of boron in steel, 2493
of iron with Cr, Cu, Mn, Mo, Ni, Si, V, 2314a
of iron with Cr, Cu, Mn, Si, 2314a
of lead with As, Bi, Sb, Sn, 2314a
of solid alloys and solns, 3566
of zinc with Al, Bi, Cd, Fe, Mg, Mn, P, Sn, Ti, 2314a
prepn. of — for anal. of oils, 3350
prepn. of — from metal powders, 3203a, 3244
prepn. of German —, 2314a
prepn. of light metal —, 2732
reliability of chem. anal. of —, 3265
use of — with pure counter electrode at lower conc. range, 2975
Steel, low-alloy (see also Converter; Iron; Iron alloys; Steel, high alloy)
accuracy in anal. of —, 2851
anal. at Ford Motor Co., 3234
anal. by line-width method, 3164
anal. by photoelectric method, 2512
anal. by small spectrograph, 2509
anal. by solid and soln. standards, 3566
anal. by three-line method, 2466
anal. of —, 2527, 2672, 2855, 3197
anal. of rivets with steeloscope, 3059
anal. of segregates in —, 3008
anal. of small samples of —, 3234, 3305
comparison of excitation sources for anal. of —, 3477

211
Steel, low alloy (Continued):
comparison of three methods for anal. of
—, 3429
control anal. of —, 2568
counter electrodes of Ag and C in anal. of
—, 2780
counter electrodes of Al and Cu in anal. of —, 2630
detn. of Al in —, 2488, 3451b
detn. of Al, As, Pb, Sn, Ti, Zn in — by soln. method, 2671
detn. of Al, B, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sn, Ti, Zn in — by briquetted samples, 3001
detn. of Al, B, Cr, Cu, Mn, Mo, Ni, Pb, Si, Sn, Ti, V, W in — at Copperweld Co., 3162
detn. of Al, B, Ti, V in — by visual examn. of plate, 2634
detn. of Al, Cr, Cu, Mn, Mo, Ni, Si, Sn in — by photoelectric method, 2637
detn. of Al, Cr, Cu, Mn, Mo, Ni, Si, Sn, V, W in — by photoelectric method, 3291
detn. of Al, Cr, Cu, Mn, Mo, Ni, Si, Ti, W in — at Ugine laboratories, 2639
detn. of Al, Cr, Cu, Mn, Ni, Si, V, W in —, 3226
detn. of alumina and oxygen in —, 2640, 2862
detn. of alumina in —, 3127
detn. of Al, Ti in —, 3203
detn. of As in —, 2743
detn. of B in —, 2411b, 2493, 2538, 2984, 2990
detn. of B, Cr, Cu, Mn, Mo, Ni, Si, Sn, V in —, 3405
detn. of C in —, 2663, 3043, 3209, 3213, 3229
detn. of C, Co, Cr, Cu, Mn, Mo, Ni, Si, W with various heat-treated —, 3346
detn. of C, P in —, 2790
detn. of C, P in — by photoelectric method, 3335
detn. of Ca in — by solution method, 2859
detn. ofCb, Ta, W in — in Ugine laboratory, 2639
detn. ofCb, Ti in — with Cu electrode, 2558
detn. of Co, Cr, Cu, Mn, Mo, Ni, Sn, Ti, V in — by soln. method, 2340b
detn. of Cr, Cu, Mn in — by oscillograph, 2500
detn. of Cr, Cu, Mn, Mo, Ni, Si, Sn in —, 2420a
detn. of Cr, Cu, Mn, Mo, Ni, Si, Sn in —, 2871
detn. of Cr, Cu, Mn, Mo, Ni, Si, Sn residuals in — by intermittent arc, 3211
detn. of Cr, Cu, Mn, Mo, Ni, Si, Sn, V in — by photographic and photoelectric methods, 2651
detn. of Cr, Cu, Mn, Mo, Ni, Si, V in — by point-to-plane method, 2319a
detn. of Cr, Cu, Mn, Mo, Ni, Si, V, W in — by photoelectric method, 2803, 3290
detn. of Cr, Mn, Mo in — at Magnitogorsk Metallurgical Combine, 3029
detn. of Cr, Mn, Mo, Ni, Si in — by three methods, 3429
detn. of Cr, Mn, Mo, Ni, Si, V in — with different types of apparatus, 3852
detn. of Cr, Mn, Mo, Ni, V, W in — with steeoscope, 2694
detn. of Cr, Mn, Mo, Ni, Si, W in — in ferrous metallurgy, 3409
detn. of Cr, Mn, Mo, P, Si in open hearth —, 2469
detn. of Cr, Mn, Ni in — by single standard method, 2826
detn. of Cr, Mn, Ni, Si in — at Ukrainian Institute of Metals, 3502
detn. of Cr, Mn, P, Si in — by photoelectric method, 3166
detn. of Cu in —, 2641, 2686
detn. of Cu in — by soln. method, 2760
detn. of Cu in — with steeoscope, 2695
detn. of Mn in — with steeoscope, 2610
detn. of Mn, P in — by photoelectric method, 3336
detn. of Mo in —, 3366
detn. of N in —, 3468
detn. of Ni in — with Al and Mg electrodes, 2650
detn. of Ni in — with steeoscope, 2659, 3560
detn. of P in — by Geiger counter, 2853, 2897
detn. of P in — by photoelectric method, 3107, 3109, 3407, 3408
detn. of Si in — with steeoscope, 2792, 2827, 2989
economic significance of photoelectric method in anal. of —, 2679, 3291
economy of photographic anal. in — industry, 3592
effect of heat treatment on anal. of —, 2420a, 3346, 3460
effect of matrix on anal. of —, 2146a, 2508, 2694, 2885, 2923
effect of oxidizing and reducing atmospheres on — spark, 3149a
effect of pre-sparking on Cr detn. in —, 2420a
effect of size of sample on anal. of —, 2829, 2930
effect of sparking on anal. of —, 2885
electrode reactions in —, 3026
errors in anal. of —, 3341
Steel, high alloy (see also Iron; Iron alloys; Steel, low alloy)
anal. of — by photoelectric method, 3168, 3169
anal. of high-speed —, 2630
anal. of special —, 3304
anal. of stainless — by photoelectric method, 3170
corrections in anal. of stainless —, 3413
detn. of Al in special —, 2488
detn. of Al, Cb, Cr, Mn, Mo, Ni, Si, Ti, W in stainless —, 2684
detn. of Al, Cr, Cu, Mn, Si, V, W in —, 3226
detn. of B in —, 3450a
detn. of Cb in stainless — with steeloscope, 2842
detn. of Cb, Cr, Cu, Mn, Mo, Ni, Ti in stainless — by soin. method, 3138
detn. of Cb, Cr, Mn, Mo, Ni, Si, Ti, W in stainless — by photoelectric method, 3142
detn. of Cr, Cu, Mn, Mo, Ni, Si, Ti in stainless —, 2639
detn. of Cr, Mn, Mo, Ni, Si, Ti, V in —, 3481a
detn. of Cr, Mn, Mo, Ni, Si, Ti, V, W in —, 3571
detn. of O in special —, 2640
detn. of V in tool —, 2619
effect of matrix on anal. of —, 3449
methods and costs in anal. of —, 3298, 3304
molybdenum-insert molds in anal. of —, 3054
photoelectric anal. of —, 2637, 2803, 2810, 3166, 3169, 3290, 3291
precision in anal of —, 3182
reproducibility of spark anal. of —, 2619
review of anal. of —, 2588, 3240
sorting of — by mobile laboratory, 2801
sorting of scrap —, 3301
sorting of — with steeloscope, 2521
variation in spectral intensities during heat treatment of —, 2941
Steel industry, anal. by photoelectric spectrometer in —, 2625
comparison of anal. in American and German —, 2730
control of production —, 2555
Steeloscope (see also Visual method)
book on —, 3043a
converted to spectrograph, 2629
photographic attachment for —, 3245a
photometric ocular for —, 3425
portable —, 2639, 2714
Stallite, anal. of —, 3072
Step filter, calibration of —, 3189
Step sector, description of —, 2531
derm. calibration by —, 2314b
for astigmatic spectrograph, 3576
use of — with intermittent source, 2579
Step slits, description of —, 2531
Step wedge, description of —, 2531
Storage battery industry, anal. of Cd and Pb in —, 3605
Strontium, effect of other elements on detn. of —, 2656
isotopic anal. of —, 3590
Sulfur, detn. of —, 2411a, 3444
hollow-cathode source for detn. of —, 2720
visual detn. of —, 2691
Sun (see also Astronomy)
anal. of eruptive prominence of —, 2802
correction to anal. of —, 3055
Tantalum, detn. of Cb, Ti in —, 3458
detn. of — in minerals, 2293a
Technetium, arc and spark spectra of —, 3475
wavelengths for —, 3286
Teeth, elements in human —, 3386
variations of Mn, Sr in —, 3245
Temperature, meas. of spark —, 1990c
Textbook, for spectral analysis, 3269, 3498
Textiles, study of treated —, 2969
Thallium, detection of —, 3519
isotopic anal. of —, 3590
Theory of calculations, in spectral analysis, 3431
Ticonal alloy, anal. of —, 2667
Tin, anal. of —, 2629
Tin alloys (see also Babbitt, Solder)
anal. of —, 3033
anal. of — by ASTM method, 2467
anal. of — with rotating electrodes, 3132
detn. of major elements and impurities in —, 2673
detn. of solubility of Cd in —, 3052
Tissue, detn. of Ag, Al, Ba, Bi, Cr, Cu, Fe, Mn, Ni, Pb, Sn, Sr in —, 2480
detn. of alkalies and alkaline earths in —, 3454
detn. of Ti in —, 2812, 3140, 3426, 3501
BIBLIOGRAPHY ON SPECTROCHEMICAL ANALYSIS

Titanium, detn. of Fe, Mg, Mn in —, 3514
Tobacco, detn. of Ba, Cs, K, Li, Na, Rb in —, 3602
Toxicity, of gases around excitation sources, 3606
Trace elements, detn. of —, 3392
Tungstic oxide, detn. of Si in —, 2759, 2983

U
Ugine Steel Laboratory, anal. of steel in —, 2639
Ukrainian Institute of Metals, spectral anal. at —, 3502
Ultimate lines (see Sensitive lines)
University of Ghent, research at —, 2672
University of Liège, techniques at —, 3087
Ural Aluminum Works, anal. in —, 2877
Uranium, anal. of —, 2888, 3388
anal. of — by carrier-distillation method, 2581, 2627
anal. of — by cathode-layer method, 2718
detn. of —, 3039, 3220
detn. of — in solns., 3130
detn. of Cu, Fe, Mn, Ni, Si in —, 3591
detn. of traces of —, 2349a, 3570
isotope shifts in — spectra, 3116, 3216
isotopic anal. of —, 3590
wavelengths for —, 2524
Uranium compounds, detn. of rare earths in —, 2909, 3023
Uranium oxide, anal. of — by carrier-distillation method, 2581, 2627
Urine, detn. of Be in —, 3085
detn. of Ca, Fe, K, Mg, Na in —, 3105
detn. of K, Na in —, 3135, 3228, 3447, 3452, 3598
detn. of K, Na in — by flame photometer, 3303
U.S.S.R., anal. in —, 3036
anal. during 1948 in —, 3201

V
Varnish, anal. of — used by Stradivarius, 3222
Visual method (see also Steeloscope)
comparison spectrum in —, 3248
for anal. of steel, 2995, 2917
for detn. of Br, Cl, 2690
for detn. of Cb in stainless steel, 2842
for detn. of Cu in steel, 2695
for detn. of Mn in steel, 2610
for detn. of Ni in steel, 2589, 3560
for detn. of S, 2691
for detn. of Si in steel, 2792
for flame detn. of Ca, Na, Sr, 2252b
for sorting Al alloys, 2791
for sorting Ni alloys, 2533
for sorting steel, 2521

V
W
Water, detection of traces of —, 3011
detn. of — in gas, 2298c
detn. of Al, Cu, Fe, Mg, Mn in natural —, 3133
detn. of Ca, K, Na in —, 3594
detn. of Cs in sea, 2129a, 2129b
detn. of K, Na in public — supplies, 3102
detn. of Pb in —, 3545
detn. of Sr in oil field —, 2656
distribution of elements in subterranean —, 3058
distribution of K, Rb in —, 2480a
elements in Spanish medicinal —, 2709
elements in warm spring — from Transvaal, 3198
methods for anal. of —, 2611
presence of K, Mg in rain —, 2864
Wavelength tables, for identification of molecular spectra, 3511
for qual. anal., 3154
of rare earth spectra, 2308b
of spectra of the elements, 3418, 3204
of technetium spectra, 3475
of ultraviolet multiplets, 3487
Wavelengths, for Am, 3287
for As, 3476
for Cu, 3024
for Gd, 3538
for Np, 3287
for Pa, 3287
for persistent lines of 30 elements, 2684
for persistent lines of rare earths, 3277
for Pm, 3146, 3286
for rare earths and metalloids, 3153
for Re, 2692
for Tc, 3286
for U, 2524

Wedges, description of optical —, 2531
Wheat kernel, distribution of elements in —, 2735
Wines, anal. of —, 2757
detn. of Rb in —, 3096, 3097, 3098
Wiring arrangement, for spectral anal., 2144b
Wulfenite, origin of As, Cr, Mo, V in —, 3171
trace elements in —, 3402

Y
Yeast, detn. of P in —, 3370

214
Z

Zinc, abundance of — in rocks and soils, 2942
anal. of —, 2898
anal. of — by line-width method, 3164
anal. of high-purity —, 2475, 2485
concn. of impurities from —, 1793a
detn. of Al, Cd, Fe, Pb, Sb, Sn in —, 3601
detn. of Bi, Cd, Pb, Sn, Ti in —, 1793a
detn. of Cd, Cu, Fe, Pb, Sb in —, 3342a
detn. of Cd, Cu, Pb in —, 2734
detn. of Cd, Cu, Pb, Sn in —, 3405
detn. of Fe, Pb in — by photoelectric method, 3166
detn. of Pb in high-purity —, 2510
detn. of Sb in — by photoelectric method, 3336
prepn. of — electrodes, 2729

standard samples of —, 2314a
Zinc alloys, anal. by ASTM method, 2467
anal. of —, 3053
anal. of — by pulsed arc, 3272
detn. of Al, Cd, Cu, Fe, Mg, Pb, Sn in —, 2414b, 2528, 2783
detn. of Al, Cd, Fe, Pb, Sb, Sn in —, 3601
detn. of Cd, Cu, Pb in —, 3314
detn. of Cd, Pb, Sn in —, 2496
sorting of — with steelescope, 2821
Zinc and alloys, anal. of —, 3110
Zinc blende, detn. of Fe in —, 3259
Zinc ores, detn. of Ge in Italian —, 3366a
Zinc oxide, anal. of —, 2485
Zinc smelting residues, elements in —, 2144a
Zircon, anal. of —, 2999
Zirconium, detn. of Hf-Zr ratios, 3147, 3382