

# ALPHABETICAL INDEX

Names of authors and countries are in capitals, subjects in lower-case roman, and localities in *italics*; book reviews are placed at the end.

- ABUMERE, O. E., see WALKER, G., 201  
Actinolite, flexibility in asbestosiform fibres, 327; skarn formation, *Gåsborn area, Sweden*, 613  
Aegirine, potassium content, by TEM, 311  
Ai, Y., and GREEN, D. H., anorthite-K-feldspar system, 337  
Albite, Al/Si ordering in, 25  
ALDERTON, D. H. M., oxygen isotope fractionation, 373  
Alkali-feldspars, ordering rates, phase transformations and behaviour diagrams for igneous rocks, 25  
Alkaline volcanics, magma mixing in, *Massif Central, France*, 43  
ALLAN, J. E. M., COEY, J. M. D., SANDERS, I. S., SCHWERTMANN, U., FRIEDRICH, G., and WIECHOWSKI, A., titanomaghemite in basalt, 299  
Almandine–grossular and –pyrope garnet solid solutions, evidence for equivalent site behaviour, IR spectroscopy, 231  
Alpha magnesium oxalate dihydrate, gluskinskite, *Israel*, 505  
Amphibole, ferri-ferrohornblende, kirwanite, *County Down, Northern Ireland*, 253; fibres, flexibility of, 327; Zr-bearing, *Igaliko Dyke Swarm, South Greenland*, 107  
Analcime–bytownite intergrowth in basalt, *Skye, Scotland*, 382  
ANDERSEN, T., carbonatite-related contact metasomatism, 395  
Ankerite, decomposition of, by Mössbauer spectroscopy, 465  
Anorthite-K-feldspar, phase relations in, and solid solutions, 337  
Anthophyllites, Mössbauer spectra of, 181  
Apatites, analysis using MLDE, 357  
Argentotennantite, *Silvermines, Ireland*, 293  
ARPS, C. E. S., see ZWAAN, P. C., 473  
Arsenopyrite, spectroscopic investigation of altered surfaces, 223  
Asbestos, flexibility, 327  
ASHWORTH, J. R., low-tridymite polymorphs, 89  
Atacamite, synthesis and stability, 557  
ATENCIO, D., BEVINS, R. E., FLEISCHER, M., WILLIAMS, C. T., and WILLIAMS, P. A., lanthanite group, *Sweden and USA*, 639  
Auger electron spectroscopy (AES), arsenopyrite, surface compositions, 223; pentlandite, surface alteration, 213  
AUSTRALIA, *Greenbushes*, holtite crystal structure and chemistry, 457  
Backscatter scanning electron microscopy (BSEM); saddle dolomite, 547; zoning in granitoid accessory minerals, 55  
BALDWIN, J. R., tantalum minerals, *Southern Africa*, 571  
Bannisterite, barian, *Japan*, 85  
Bariandite, 511  
Basaltic lavas, garnet associated with zeolites in, *Beith, Scotland*, 125  
BAYLISS, P., and FREEMAN, K. J., mineral nomenclature: fernandinite, 511; — MAZZI, F., MUNNO, R., and WHITE, T. J., zirconolite, 565  
Bementite, skarn formation, *Gåsborn area, Sweden*, 613  
BENY, J.-M., see TLILI, A., 165  
Bernardite, new mineral, *Yugoslavia*, 531  
BEUKES, G. J., see DE BRUIYN, H., 385  
BEVAN, J., and SAVAGE, S., dissolution of K-feldspar, 415  
BEVINS, R. E., see ATENCIO, D., 639  
Biotite, oxidation and deprotonation by EXAFS and XANES, 591  
Bitumen-thorium mineralization in Silurian sandstones, *Welsh Borderland*, 111  
BOISTELLE, R., see RINAUDO, C., 479  
Botallackite, synthesis and stability, 557  
Bournonite, predicted colours by reflected light microscopy, 71  
BOYER, H., see TLILI, A., 165  
BRAITHWAITE, R. S. W., COOPER, M. P., and HART, A. D., queiteite, *Cumbria*, 508; — PAAR, W. H., and CHISHOLM, J. E., phurcalite, *Dartmoor*, 583  
BRAZIL, *Minas Gerais*, titanomaghemite, 299  
BRIDGES, T. F., see YOUNG, B., 388  
BRISTOW, J. W., see CAUTHORN, R. G., 245  
BROWN, W. L., and PARSONS, I., alkali feldspars, 25  
BURNS, R. G., mineralogy of terrestrial planets, 135  
Bytownite–analcime intergrowth in basalt, *Skye, Scotland*, 382  
CABRI, L. J., see MITCHELL, R. H., 635  
CANADA, *Ontario*, Coldwater complex, rhenium sulphide, 635; Hemlo gold deposit, vaughanite, new mineral, 79  
CANARY ISLANDS, *Tenerife*, recycling in ocean islands volcano, 519  
Carbonates, luminescence spectroscopy of Mn<sup>2+</sup> in, 201  
Carbonatite-related metasomatism in *Fen complex, Norway*, 395  
Carcinogenesis, dimensional characteristics of fibres, 327

- CARPENTER, M. A., and SALJE, E., time-dependent Landau theory, 483  
 Cassiterite, oxygen isotope fractionation between water and, 373  
 Cathodoluminescence of Mn<sup>2+</sup> centres in rock-forming carbonates, 201  
 CAWTHORN, R. G., BRISTOW, J. W., and GROVES, D. I., magnesian ilmenite, 245  
 Chalcophanite, *Scotland*, 637  
 CHARNOCK, J. M., GARNER, C. D., PATRICK, R. A. D., and VAUGHAN, D. J., Fe-bearing tetrahedrites, 193  
 Chemical stability of mimetite, 363  
 CHISHOLM, J. E., see BRAITHWAITE, R. S. W., 583  
 Chkalovite, structural behaviour, 117  
 CHUNG, J. I., see NAKATA, M., 387  
 Cinnabar, *Pennines*, 388  
 CLAUDE, J. M., see MONTEL, J. M., 120  
 Clinopyroxene, compositions of, in volcanics, *Massif Central, France*, 43; potassium in, a TEM study, 311  
 Conversion electron Mössbauer spectroscopy (CEMS), pentlandite, surface alteration, 213  
 COOPER, M. P., see BRAITHWAITE, R. S. W., 508  
 COWGILL, U. M., glushkinskite, *Israel*, 505  
 CRIDDLE, A. J., see HARRIS, D. C., 79  
 Cristobalite family, chkalovite, structural behaviour, 117; lamellae in polymorphs of tridymite, by TEM, 89  
 Crystal structure, bernardite, new mineral, *Yugoslavia*, 531; mangananoan kilchoanite, 625  
 CO<sub>2</sub> atmosphere, decomposition of ankerite in, 465  
 COEY, J. M. D., see ALLAN, J. E. M., 299  
 Colours, quantitative, of opaque minerals by reflected light microscopy, 71  
 CONDLIFFE, E., see NIXON, P. H., 305  
 Copper (II) chlorides, synthesis and stabilities, 557  
 Corundum, inclusions in, *Sri Lanka*, 539  
 Covellite, predicted colours by reflected light microscopy, 71  
 CUNDARI, A., see MELLINI, M., 311  
 Dahllite, *Amatuku islet, Tuvalu, Funafuti atoll, Pacific Ocean*, 123  
 DAMMAN, A. H., Mn-silicate skarns, *Sweden*, 613  
 DE BRUIYN, H., BEUKES, G. J., VAN DER WESTHUIZEN, W. A., and TORDIFFE, E. A. W., hydrated aluminium phosphate–sulphate minerals, 385  
 Decomposition of Li-sodalite, 380  
 Deerite, *Brittany, France*, 603  
 DE GRAVE, E., see ZWANN, P. C., 473  
 DE MAESSCHALCK, A. A., and OEN, I. S., inclusions in corundum, *Sri Lanka*, 539  
 Deprotonation of biotite, EXAFS and XANES, 591  
 Diagenesis, organic acids, effect of, on dissolution of K-feldspar under conditions relevant to burial, 415  
 Differential thermal analysis (DTA), Li-sodalite, 380  
 Diffusion studies, by ion microprobe analysis, 3  
 Dissolution of K-feldspar, effect of organic acids on, 415  
 Distribution coefficients for pyromorphite–mimetite solid solutions, 363  
 Dolomite, luminescence spectroscopy of Mn<sup>2+</sup> in, 201; saddle, nature and origin, 547  
 DOWNES, H., magma mixing, 43  
 DRUGOVA, G. M., see GREW, E. S., 376  
 DUDEK, K., and KIENAST, J. R., deerite, *France*, 603  
 DUNN, P. J., investigated mineral specimens, 131  
 EAKIN, P., see PARRELL, J., thorium-bitumen mineralization, 111  
 Electronic structure, application of PAX spectroscopy to determine, 153  
 Electron microprobe analysis, fluorine in minerals, 357; Li-micas, compositional relations, *England* and *France*, 427; vaughnite, new mineral, *Hemlo, Canada*, 79  
 Elemental analysis, trace elements, geological applications, 3  
**ENGLAND**  
 CORNWALL, *Botallack, Whealcock Zawn*, wickmanite, 388; *St Austell granite*, Li-micas, compositional relations with *France*, 427; *Wheal Basset, Redruth*, vochtenite, new mineral, 473; CUMBRIA, *Caldbeck Fells*, queiteite, 508; *Caldbeck Fells, Higher Roughton Gill*, scotlandite, 653; DEVON, *Merrivale Quarry*, phurcavite, 583; NORTH PENNINES, cinnabar, 388  
 Equivalent site behaviour of synthetic almandine–grossular and almandine–pyrope garnet solid solutions, 231  
**EXAFS spectroscopy**  
 Fe-bearing tetrahedrites, 193  
 oxidation and deprotonation of biotite, 591  
 Fayalite, Mn-, alteration of, *Strzegom pegmatites, Poland*, 315  
 Feldspars, two-, assemblages at  $P(\text{H}_2\text{O}) = 5 \text{ kbar}$ , 347  
 Fernandinite, mineral nomenclature, 511  
 Ferrocarbonatite, contact metasomatism, *Fen complex, Norway*, 395  
 Ferrontantalite replacing manganotantalite, *South Africa and Namibia*, 571  
 FLEISCHER, M., see ATENCIO, D., 639  
 Flexibility of asbestos, 327  
 Fluid inclusions, corundum, *Sri Lanka*, 539; lithium pegmatites, *SE Ireland*, 271  
 Fluorine in minerals by electron microprobe analysis, 357  
 FRANCE, BRITTANY, *Ile de Groix*, deerite, 603; CENTRAL PYRENEES, *Haute-Garonne*, composition of black shales – erratum, 131; MASSIF CENTRAL, Li-micas, compositional relations with SW *England*, 427; *Cantal*, magma mixing in alkaline volcanics, 43  
 FRANCHINI-ANGELA, M., see RINAUDO, C., 479  
 FREEMAN, K. J., see BAYLISS, P., 511  
 Freibergite, *Silvermines, Ireland*, 293  
 FRIEDRICH, G., see ALLAN, J. E. M., 299  
 Frohbergite, *Sapporo, Japan*, 387  
 Gahnite–quartz–sillimanite assemblages, *South Africa*, 63  
 Galena, *Silvermines, Ireland*, 293  
 GARNER, C. D., see CHARNOCK, J. M., 193  
 Garnet, equivalent site behaviour, evidence for, IR spectroscopy, 231; skarn formation, *Gåsborn area, Sweden*, 613; zeolites, associated with, *Beith, Scotland*, 125  
 Gedrites, Mössbauer spectra of, 181

- GEIGER, C. A., WINKLER, B., and LANGER, K., synthetic garnets, 231  
 Geochemistry, *Kærven* syenite complex, *Greenland*, 642, 647  
 Geochronological investigations, ZCI studies used to target grains in, 55  
 Geocromite in Zn–Pb–Ag ores, *Silvermines, Ireland*, 293  
 GERMINE, M., and PUFFER, J. H., flexibility in asbestos-form fibres, 327  
 Gersdorffite causing Ni enrichment in ores, *Silvermines, Ireland*, 293  
 Glushkinskite, *Israel*, 505  
 GOODMAN, B. A., see MIŁODOWSKI, A. E., 465  
 GREEN, D. H., see AI, Y., 337  
 GREEN, D. I., scotlandite, *Cumbria*, 653  
 Greenalite, Mn-, magnetite rim on fayalite, pegmatites, *Poland*, 315  
 GREENLAND, *Igaliko Dyke Swarm*, Zr-bearing amphiboles, 107; *KANGERDLUGSSUAQ*, *Kærven* syenite complex, 642, 647  
 GREW, E. S., DRUGOVA, G. M., and LESKOVA, N. V., högbomite, 376  
 Groutite, *Scotland*, 637  
 GROVES, D. I., see CAWTHORN, R. G., 245  
 Grunerite, Mn-, magnetite–quartz aggregates in fayalite, pegmatites, *Poland*, 315  
 GÜTTLER, B., NIEMANN, W., and REDFERN, S. A. T., oxidation and deprostanation of biotite, 591  
 Gypsum, crystal curvature induced by growth, 479  
 HARRIS, D. C., ROBERTS, A. C., and CRIDDLE, A. J., vaughanite, new mineral, 79  
 HART, A. D., see BRAITHWAITE, R. S. W., 508  
 Hawthorneite, association with yimengite, 305  
 Hedenbergite, skarn formation, *Gåsborn area, Sweden*, 613  
 HENDERSON, C. M. B., and TAYLOR, D., chkalovite, 117; — MARTIN, J. S., and MASON, R. A., Li-micas, 427  
 HERD, D. A., see PATERSON, B. A., 55  
 HOGARTH, D. D., and HORNE, J. E. T., pyrochlore from *Uganda*, 257  
 Högbomite, *Aldan Shield, USSR*, 376; zincian, *South Africa*, as an exploration guide to metamorphosed massive sulphide deposits, 263  
 Hollandite group, solid solution in, *South Africa*, 451  
 HOLM, P. M., and PRÆGEL, N.-O., reply to comments ‘The Tertiary *Kærven* syenite complex, *Greenland* ...’, 647  
 Holtite, crystal structure and chemistry, 457  
 HONMA, H., see NAKATA, M., 387  
 Hornblende, transfere from inclusions to host, *Massif Central, France*, 43  
 HORNE, J. E. T., see HOGARTH, D. D., 257  
 HOSKINS, B. F., MUMME, W. G., and PRYCE, M. W., holtite crystal structure, 457  
 Hotsonite, unit cell dimensions of, 385  
 HUBBARD, N., wickmanite, 388  
 Hydrothermal synthesis of monazite, 120  
 Ilmenite, magnesian, *Karoo Province, South Africa*, 245  
 Impurity absorption, gypsum, curvature affected by, 479  
 INEBENEBO, A. I., THOMAS, J. H., and WILLIAMS, P. A., pyromorphite–mimetite solid solutions, 363  
 INESON, P. R., see YOUNG, B., 388  
 Infrared spectroscopy (IR), kirwanite, *Northern Ireland*, 253; queite, *Cumbria*, 508; synthetic almandine–grossular and almandine–pyrope garnet solid solutions, 231  
 Ion microprobe analysis, Li-micas, compositional relations, *England and France*, 427; review of geological applications, 3  
 IRELAND, *Leinster granite*, fluid inclusions in Li-pegmatites, 271; zoned muscovite, 633; COUNTY TIPPERARY, *Silvermines*, freibergite–argentotennantite series, 293  
 Iron sulphide, precipitation reactions, 527  
 Isobaric cooling of *Leinster granite, SE Ireland*, 271  
 Isotopic analysis, methods, account of, 3  
 ISRAEL, *Lake Huleh Preserve*, glushkinskite, 505  
 Jacobsite in skarn, *Sweden*, 613  
 JANECZEK, J., manganoan fayalite, 315  
 JAPAN, HOKKAIDO, *Sapporo, Kobetsuzawa mine*, frohbergite, 387; MIE PREFECTURE, *Toba City, Kamo mine*, barian bannisterite, 85; Nōgō-Hakusan area, sadana-gaite and subsilicic ferroan pargasite, 99  
 JONES, R. H., ternary feldspars, 347  
 KAMALUDDIN, B., see WALKER, G., 201  
 KATO, A., see MATSUBARA, S., 85  
 K-feldspar, –anorthite, phase, relations in, and solid solutions, 337; dissolution, effect of organic acids on, 415  
 KIENST, J. R., see DUDEK, K., 603  
 Kilchoanite, manganoan, crystal structure, 625  
 KIMATA, M., manganoan kilchoanite, 625  
 Kimberlite, Nb–Ba–K–V titanites in, *South Africa*, 451  
 Kimberlitic rocks, yimengite in, *Venezuela*, 305  
 Kirwanite from *County Down, Northern Ireland*, 253  
 Kribergite, unit cell dimensions of, 385  
 LAFLAMME, J. H. G., see MITCHELL, R. H., 635  
 Lamproites, priderites from, 451  
 Landau theory, 483  
 LANGER, K., see GEIGER, C. A., 231  
 Lanthanite group minerals, *Sweden and USA*, 639  
 LAW, A. D., anthophyllite and gedrite, 181  
 Lead isotopes in *Tenerife* pumices, evidence of recycling, 519  
 LESKOVA, N. V., see GREW, E. S., 376  
 LHOTE, F., see MONTEL, J. M., 120  
 Light elements (H–F), elemental analysis, geological applications, 3  
 Lithium (Li)–micas, compositional relations in, *SW England and France*, 427; pegmatites, fluid inclusions in, *SE Ireland*, 271; –sodalite, thermal decomposition of, 380  
 LIVINGSTONE, A., calcian analcime–bytownite intergrowth, 382; — hydrothermal garnet, 125  
 Luminescence spectroscopy of Mn<sup>2+</sup> centres in rock-forming carbonates, 201  
 Magma mixing in undersaturated alkaline volcanics, *Massif Central, France*, 43

- Magnetite, skarn, *Sweden*, 613; transfere from inclusions to host, *Massif Central, France*, 43
- MALAWI, *Little Michiru complex*, petrology and geo-thermometry, 285
- Manganese (Mn)-fayalite, alteration of, *Strzegom pegmatites, Poland*, 315; luminescence spectroscopy of, centres in carbonates, 201; oxides from *Scotland*, 637; silicate skarns, central *Sweden*, 613
- Manganotantalite replacement, *South Africa and Namibia*, 571
- MARTIN, J. S., see HENDERSON, C. M. B., 427
- MASON, R. A., see HENDERSON, C. M. B., 427
- MATSUBARA, S., and KATO, A., barian bannisterite, 85
- MAZZI, F., see BAYLISS, P., 565
- MELLINI, M., and CUNDARI, A., clinopyroxene from K-rich lavas, 311
- Metamorphism, deerite, stability fields, *Brittany, France*, 603
- Metasomatism, carbonatite-related, in *Fen complex, Norway*, 395
- Meteorites, isotope anomalies in, by ion microprobe analysis, 3
- MEYER, H. O. A., see MITCHELL, R. H., 451
- Micas, natural, a Roman microprobe study, 165
- Microcline, Al/Si ordering in, occurrence from *P-T* diagrams, 25
- Microlite replacing manganotantalite, *South Africa and Namibia*, 571
- Microprobe standards, monazite as, 120
- MIŁODOWSKI, A. E., GOODMAN, B. A., and MORGAN, D. J., decomposition of ankerite, 465
- Mimetite, stability of, 363
- Mineral, chemistry, *Kærven syenite complex, Greenland*, 642, 647; specimens, protocols for deposition of investigated, 131
- Minnesotaite, Mn-, mantling fayalite, pegmatites, *Poland*, 315
- MITCHELL, R. H., and MEYER, H. O. A., niobian K-Ba-V titanates, 451; — LAFLAMME, J. H. G., and CABRI, L. J., rhenium sulphide, *Coldwell complex, Canada*, 635
- Monazite end members and solid solutions, 120
- MONTEL, J. M., LHOTE, F., and CLAUDE, J. M., monazite synthesis, 120
- MOORE, J. M., and REID, A. M., zincian staurolite, 63
- MOREL, S. W., the *Little Michiru complex, Malawi*, 285
- MORGAN, D. J., see MIŁODOWSKI, A. E., 465
- Mössbauer spectroscopy, ankerite, decomposition of, 465; anthophyllites and gedrites, 181; Fe-bearing tetrahedrites, 193; pentlandite, surface alteration of, 213; titanomaghemitite formula, 299
- Multilayer dispersion element (MLDE) in determination of fluorine in minerals, 357
- MUMME, W. G., see HOSKINS, B. F., 457
- MUNNO, R., see BAYLISS, P., 565
- Muscovite, zoned, *SE Ireland*, 633
- $\text{Na}_2\text{BeSi}_2\text{O}_6$ , chkalovite, structural behaviour, 117
- NAKATA, M., HONMA, H., CHUNG, J. I., and SAKURAI, K., frohbergite, 387
- NAMIBIA, *Karibib, Tantalite Valley*, tantalum minerals, replacement phenomena in, 571
- NAWAZ, R., and RYBACK, G., kirwanite, 253
- Neodyminium (Nd) isotopes to indicate contamination of mixed magmas, 43
- New minerals, bernardite, *Yugoslavia*, 531; vaughnite, *Hemlo, Canada*, 79; vochtenite, *Cornwall*, 473
- NICHOLSON, K., manganese oxides, *Scotland*, 637
- NIELSEN, T. F. D., comments on 'The Tertiary *Kærven* syenite complex, *East Greenland* . . .', 642
- NIEMANN, W., see GÜTTLER, B., 591
- Nisaite, *Portugal*, 583
- NIXON, P. H., and CONDLIFFE, E., yimengite, 305
- NORTHERN IRELAND, *County Down, Dunmore Head*, kirwanite, 253
- NORWAY, *Fen Complex, Telemark*, carbonatite-related metasomatism, 395
- OEN, I. S., see DE MAESSCHALCK, A. A., 539
- Olivine, transfer from inclusions to host, *Massif Central, France*, 43
- Opaque minerals, quantitative colours of, by reflected light microscopy, 71
- Order/disorder processes, time-dependent Landau theory, 483
- Ordering rates of alkali feldspars, 25
- Organic acids, effect of, on dissolution of K-feldspar, 415
- Orthoamphiboles, Mössbauer spectra of anthophyllites and gedrites, 181
- Orthoclase, occurrence from *P-T* diagrams, 25
- Oxygen isotope fractionation between cassiterite and water, 373
- PAAR, W. H., see BRAITHWAITE, R. S. W., 583
- PACIFIC OCEAN, *Amatuku islet, Tuvalu, Funafuti*, dahlite and whitlockite, 123
- PALACZ, Z. A., see WOLFF, J. A., 519
- Paratacamite, synthesis and stability, 557
- Pargasite, subsilicic ferroan, from thermally metamorphosed rocks in central *Japan*, 99
- PARNELL, J., and EAKIN, P., thorium-bitumen mineralization, 111
- PARSONS, I., see BROWN, W. L., 25
- PAŠAVA, J., PERTLIK, F., STUMPFEL, E. F., and ZEMANN, J., bernardite, new mineral, *Yugoslavia*, 531
- PATERSON, B. A., STEPHENS, W. E., and HERD, D. A., zoning in granitoid accessory minerals, 55
- PATTRICK, R. A. D., see CHARNOCK, J. M., 193
- PEARCE, N. J. G., Zr-bearing amphiboles, 107
- PECKETT, A., colours of opaque minerals, 71
- Pegmatite, fluid inclusions in, *SE Ireland*, 271; Mn-fayalite in, *Strzegom, Poland*, 315; rare-metal, tantalum minerals, *South Africa and Namibia*, 571
- Pentlandite, surface alteration and secondary violarite formation, spectroscopic evidence, 213
- PERTLIK, F., see PAŠAVA, J., 531
- PETERSEN, E. U., see SPRY, P. G., 263
- Phase relations of anorthite-K-feldspar, 337; transformations of alkali feldspars, 25
- Phurcalite, *Dartmoor*, 583
- Phyllosilicates, a Raman microprobe study of natural micas, 165
- Planets, spectral mineralogy of, 135
- POLAND, *Strzegom, Lower Silesia*, Mn-fayalite in pegmatites, 315

- POLLARD, A. M., THOMAS, R. G., and WILLIAMS, P.  
 A., basic copper chlorides, 557
- Polymignite, mineral nomenclature, 565
- PORTUGAL, *Nisa*, nisiaite, 583
- Potassium (K), in clinopyroxene, TEM study, 311; feldspar, Al/Si ordering in, 25
- POTTS, P. J., and TINDLE, A. G., fluorine determination, 357
- PRÆGEL, N.-O., see HOLM, P. M., 647
- Precipitation reactions, apparatus to study, 527
- Priderite series, *South Africa*, 451
- Proustite-pyrrhotite, from Zn-Pb-Ag ores, *Silver-mines, Ireland*, 293
- PRYCE, M. W., see HOSKINS, B. F., 457
- PUFFER, J. H., see GERMINÉ, M., 327
- Pumice, isotope and trace element variation in, evidence for recycling, *Tenerife*, 519
- PURTON, J., and URCH, D. S., high-resolution Si-K $\beta$  spectra, 239
- Pyrochlore from tuff, *Ndale, Uganda*, 257
- Pyromorphite-mimetite solid solutions, distribution coefficients of, 363
- Pyroxene, sōvite, alkali metasomatism, *Fen complex, Norway*, 395; syenite, petrology and geothermometry, *Little Michiru complex, Malawi*, 285
- Pyroxenite, petrology and geothermometry, *Little Michiru complex, Malawi*, 285
- Quantitative elemental analysis, methods, account of, 3
- Quartz-gahnite-sillimanite assemblages, a zincian staurolite imprint on, *South Africa*, 63
- Queiteite, *Cumbria*, mineral new to England, 508
- Quenselite, *Scotland*, 637
- Raman spectroscopy of natural micas, 165
- Ramsdellite, *Scotland*, 637
- RANKIN, A. H., see WHITWORTH, M. P., 271
- Rare-earth elements (REE), minerals, *Sweden* and *USA*, 639; zoning in titanites, 55
- Reaction kinetics, apparatus to study, 527
- Recycling, evidence for, in *Tenerife* volcano, 519
- REDFERN, S. A. T., see GÜTTLER, W., 591
- REED, S. J. B., ion microprobe analysis, 3
- Reflectance, data, vaughnrite, new mineral, *Hemlo, Canada*, 79; spectroscopy of terrestrial planets, 135
- Reflected light microscopy of opaque minerals, 71
- REID, A. M., see MOORE, J. M., 63
- Replacement phenomena in tantalum minerals, *South Africa* and *Namibia*, 571
- Rhenium sulphide, *Coldwell* complex, *Canada*, 635
- RICHARDSON, S., and VAUGHAN, D. J., surface alteration of arsenopyrite, 223; ——, surface alteration of pentlandite, 213
- RICKARD, D., fast precipitation reactions, 527
- RINAUDO, C., FRANCHINI-ANGELA, M., and BOISTELLE, R., curvature of gypsum crystals, 479
- ROBERTS, A. C., see HARRIS, D. C., 79
- RODGERS, K. A., dahlilite and whitlockite, 123
- ROUCROFT, P. D., zoned muscovite, *SE Ireland*, 633
- RUSSIA, *Aldan Shield, Siberia*, högbomite, 376
- Rutile, fibre diameter/flexibility relationships, 327
- RYBACK, G., see NAWAZ, R., 253
- Sadanagaite from thermally metamorphosed rocks in central *Japan*, 99
- Saddle dolomite, nature and origin, 547
- SAKURAI, K., see NAKATA, M., 387
- SALJE, E., see CARPENTER, M. A., 483
- SANDERS, I. S., see ALLAN, J. E. M., 299
- Sanidine, Al/Si ordering in, 25
- Sanjuante, unit cell dimensions, 385
- SAUPÉ, F., and VEGAS, G., black-shales from the *Pyrenees*, erratum, 131
- SAVAGE, D., see BEVAN, J., 415
- SAWAKI, T., sadanagaite and pargasite, 99
- Scanning surfaces of terrestrial planets, 135
- SCOTLAND, manganese oxides, 637; *AYRSHIRE, Beith*, garnet associated with zeolites, 125; *SKYE*, analcime-bytownite intergrowth in basalt, 382
- Scotlandite, *Cumbria*, 653
- SCHWERTMANN, U., see ALLAN, J. E. M., 299
- SEARL, A., saddle dolomite, 547
- Shales, compositions of, central *Pyrenees, France*, erratum, 131
- Silicon K $\beta$  X-ray and crystal structure, 239
- Sillimanite-gahnite-quartz assemblages, *South Africa*, 63
- Site-preference for substitution of Mn for Ca, kilchoanite, 625
- Skarn, Mn-silicate, central *Sweden*, 613
- SMITH, D. C., see TLILI, A., 165
- SMITH, M. E., see YOUNG, B., 388
- SOUTH AFRICA, AGGENEYS, *Broken Hill and Black Mountain* deposits, zincian högbomite, 263; KRAAIFONTEIN, *Namaqualand* metamorphic complex, quartz-gahnite-sillimanite assemblages, 63; LEBOMBO region, *Karoo Province*, magnesian ilmenite in picritic basalts, 245; NAMAQUALAND, tantalum minerals, replacement phenomena in, 571; ORANGE FREE STATE, *Star Mine*, K-Ba-V titanates from micaceous kimberlite, 451
- Sōvite, contact metasomatism, *Fen complex, Norway*, 395
- Spectral reflectance measurements, arsenopyrite, surface compositions, 223
- Spectroscopy, arsenopyrite, surface compositions, 223; pentlandite, surface alteration, 213
- SPRY, P. G., and PETERSEN, E. U., zincian högbomite, 263
- SRI LANKA, inclusions in corundum, 539
- Stability of basic copper chlorides, 557
- Stable isotope studies, by ion microprobe analysis, 3
- Stannite, predicted colours by reflected light microscopy, 71
- Staurolite, zinc, imprint on *Namaqua* quartz-gahnite-sillimanite assemblages, *South Africa*, 63
- STEPHENS, W. E., see PATERSON, B. A., 55
- Stokesite, *Whealcock Zawn, Cornwall*, 388
- Strontium (Sr) isotopes to indicate contamination of mixed magmas, 43
- STUMPFL, E. F., see PAŠAVA, J., 531
- SWEDEN, *Bastnäs*, lanthanite group minerals, 639; *West Bergslagen, Gåsborn area*, Mn-silicate skarns, 613
- Synthesis of basic copper chlorides, 557

- Tantalum (Ta), minerals, replacement phenomena in, *South Africa* and *Namibia*, 571; tuff, *Ndale, Uganda*, 257
- TAYLOR, D., decomposition of  $\text{Li}_8(\text{Al}_6\text{Si}_6\text{O}_{24})\text{Cl}_2$ , 380; — see also HENDERSON, C. M. B., 117
- Tennantite, EXAFS and Mössbauer spectroscopic study of, 193
- Terrestrial planets, spectral mineralogy of, 135
- Tetrahedrite, Fe-bearing, EXAFS and Mössbauer spectroscopic study of, 193; group mineral, from Zn–Pb–Ag ores, *Silvermines, Ireland*, 293
- Thallium, (Tl) mercury antimony sulphide, vaughnite, new mineral, *Hemlo, Canada*, 79; sulpharsenite, bernardite, new mineral, *Yugoslavia*, 531
- Thermal expansion data for cristobalite hettotypes, 117
- Thermogravimetry of Li-sodalite, 380
- THOMAS, J. H., see INGBENEBOUR, A. I., 363
- THOMAS, R. G., see POLLARD, A. M., 557
- Thorianite inclusions containing thorium, Silurian sandstones, *Wales*, 111
- Thorite inclusions containing thorium, Silurian sandstones, *Wales*, 111
- Thorium-bitumen mineralization in Silurian sandstones, *Wales*, 111
- Time-dependent Landau theory, 483
- TINDLE, A. G., see PORTS, P. J., 357
- Titanates, niobian–Ba–K–V titanites, in kimberlite, *South Africa*, 451
- Titanite, sector zoning in, by ZCI studies, 55
- Titanium (Ti) in tuff, *Ndale, Uganda*, 257
- Titanomaghemit in basalt, *Minas Gerais, Brazil*, 299
- TLILI, A., SMITH, D. C., BENY, J.-M., and BOYER, H., Raman microprobe study, 165
- TORDIFFE, E. A. W., see DE BRUIYN, H., 385
- Trace elements, elemental analysis of, geological applications, 3; modelling of REE in granitoid petrogenesis, consequences of ZCI studies, 55; variation in *Tenerife* pumices, evidence for recycling, 519
- Tremolite, flexibility in asbestosiform fibres, 327
- Transmission electron microscopy (TEM), coexisting low-tridymite polymorphs, 89; study of potassium in clinopyroxene, 311
- Tridymite, TEM of polymorphs, 89
- Todorokite, *Scotland*, 637
- UGANDA, Ndale, Fort Portal**, non-metamict uranoan pyrochlore and uranpyrochlore, 257
- Unit cell dimensions of sanjuanite, kribergite and hotsonite, 385
- Uranium (U)–Pb dating, ion microprobe analysis, 3
- Uranpyrochlore, from tuff, *Ndale, Uganda*, 257
- Uranyl phosphate group, vochtenite, new mineral, *Cornwall*, 473
- URCH, D. S., bonding in minerals, 153; — see also PURTON, J., 239
- USA, PENNSYLVANIA, *Bethlehem*, lanthanite group minerals, 639
- VAN DER WESTHUIZEN, W. A., see DE BRUIYN, H., 385
- VAUGHAN, D. J., see CHARNOCK, J. M., 193; —, see also RICHARDSON, S., 213, 223
- Vaughnite, new mineral, *Hemlo, Ontario, Canada*, 79
- VEGAS, G., see SAUPÉ, F., 131
- VENEZUELA, *Guaniamo District of Bolivar Province*, yimengite, 305
- Violarite, secondary, in pentlandite, spectroscopic evidence, 213
- Vochtenite, new mineral, *Cornwall*, 473
- WALES, *Llandovery Folly Sandstone, near Presteigne, Powys*, thorium-bitumen mineralization, 111
- WALKER, G., ABUMERE, O. E., and KAMALUDDIN, B., Mn<sup>2+</sup> centres in carbonates, 201
- WHITE, T. J., see BAYLISS, P., 565
- Whitlockite, *Amatuku islet, Tuvalu, Funafuti atoll, Pacific Ocean*, 123
- WHITWORTH, M. P., and RANKIN, A. H., fluid phases from lithium pegmatites, 271
- Wickmanite, *Whealcock Zawn, Cornwall*, 388
- WIECHOWSKI, A., see ALLAN, J. E. M., 299
- WILLIAMS, C. T., see ATENCIO, D., 639
- WILLIAMS, P. A., see ATENCIO, D., 639; —, see also INGBENEBOUR, A. I., 363; —, see also POLLARD, A. M., 557
- WINKLER, B., see GEIGER, C. A., 231
- WOLFF, J. A., and PALACZ, Z. A., recycling in *Tenerife* volcano, 519
- Woodruffite, *Scotland*, 637
- XANES spectroscopy, oxidation and deprotonation of biotite, 591 X-ray, data, vaughnite, new mineral, *Hemlo, Canada*, 79; diffraction (XRD) feldspar compositions, 347; — emission spectroscopy (XES), crystal structure, 239; electronic structure, bonding in minerals, 153; — photoelectron spectroscopy (XPS), arsenopyrite, surface composition, 223; electronic structure, bonding in minerals, 153; pentlandite, surface alteration, 213; silicates, bonding in, 239; — powder data, barian bannisterite, *Japan*, 85
- Yimengite in kimberlitic rocks, *Venezuela*, 305
- YOUNG, B., INESON, P. R., BRIDGES, T. F., and SMITH, M. E., cinnabar, 388
- YUGOSLAVIA, *Macedonia, Allchar*, bernardite, new mineral, 531
- ZAKRZEWSKI, M. A., freibergite–argentotennantite series, 293
- ZEMANN, J., see PAŠAVA, J., 531
- Zeolites associated with garnet, *Beith, Scotland*, 125
- Zirconium-bearing amphiboles, *Igaliko Dyke Swarm, South Greenland*, 107
- Zirconolite, mineral nomenclature, 565
- Zirkelite, mineral nomenclature, 565
- Zoning in granitoid accessory minerals, 55
- ZWANN, P. C., ARPS, C. E. S., and DE GRAVE, E., vochtenite, new mineral, 473