

SUBJECT INDEX

- Activities, ion pair, 290
- Adsorption
 - chemical, 473
 - energy of, 479
 - forces of, 473
 - isotherms, 479
 - monolayer, 480
 - physical, 474
- Agriculture, applications to, 467
- Allophane, 443, 448
- Aluminum ion, exchangeable, 284, 405
- Anion exchange, 402
- Antigorite, 94, 101
- Argillation
 - diabase, 414
 - granite, 415
 - tuff, 416
- Attapulgitic
 - dehydroxylation, D.T.A., 67
 - electron microscopy, 8, 443, 448
 - structure, 96, 99
- Atterberg limits, 186, 188, 190, 199
- Backbone reflection of clay, 242
- Basal diffraction
 - interstratification by heating, 333
 - loss of, 324
- Base exchange, 554
- Base exchange capacity, 459
- Base saturation, 386
- Beaumont formation, 35
- Beidellite, 403
- Bentone, 457, 469
- Bentonite
 - electron microscopy, 443, 449
 - ion exchange, 147, 290, 418
 - swelling, 217
 - X-ray analysis, 416, 449
- Bentonite films, 467
- Bentonite suspensions, 290
- Bingham plastic system, 305
- Boehmite, 389
 - oolites, 395
 - permeability, 39
 - porosity, 390
- Capacity, exchange, of clays, 242
- Capillarity, 559, 561
- Capillary condensation, 481
- Capillary flow, 563
- Carbon replicas, 3
- Catalysis, 466, 481
 - ester hydrolysis, 286
 - sucrose inversion, 288
- Cation exchange, 387
 - treatment of montmorillonite, 148
- Cation exchange capacity
 - effect of acid treatment, 404
 - effect of heat treatment, 410
 - relation with swelling, 213
 - vermiculite clays, 84
- Cations, exchangeable, 386
- Ceramics, application to, 465
- Ceramics, application to, 549
- Cesium, replacement by, 240
- Chemical analysis
 - bentonite, 147
 - hydrous micas, 338, 345, 350
 - Illinois soil, 368
 - illitic clay, 270
 - kaolinic clay, 270
 - lower Mississippi Delta soils, 386
 - montmorillonite, 188, 270
 - silicate rocks, 414
 - vermiculite, 83
- Chemical bonding agents, 317
- Chemical composition, vermiculite-type
 - clay minerals, 83, 84
- Chemisorption, 474
- Cheto-Chambers clay, tuff, 418
- Chlorite
 - D.T.A. analysis, 66, 123, 130
 - Illinois soil, 356, 370
 - ion exchange, 138
 - North Carolina Recent marine sedi-
ments, 434
 - optical, 121
 - Texas soil, 380
 - Wisconsin soil, 322
 - X-ray analysis, 126, 324, 360, 370,
380, 434
- Chlorites
 - cation exchange capacity, 138
 - differential thermal analysis, 123, 130,
139
 - ethylene glycol retention, 138
 - in Recent sediments off North Caro-
lina Coast, 434
 - X-ray diffraction data, 127, 134
- Chromatographic analysis, 241, 243
- Chrysotile, 94
- Clay minerals,
 - formation of, 454
 - Permian sediments, 234
 - ultra- and electron microscopy, 442
- Clay properties
 - chemical, 387
 - X-ray, 387
- Clay, swelling of, 174, 205, 482
 - in petroleum reservoir rocks, 221, 233
 - water sensitivity, 221, 232
- Clays, 31, 117, 221, 356, 430
 - acid type, 282, 284
 - cation exchange capacity, 239
 - compacted, 483
 - diaspore, 389
 - electron microscopy of surfaces, 1
 - electron micrographic studies, 31
 - extruded, in chromatographic column,
243
 - hydrogen-ion catalysis, 282
 - reversible dehydroxylation, 66

- Clays, Texas soils, 373
 Coacervation, 262, 263
 Colloform structures, 389
 Colloid chemistry, 442
 Colloid science, 442
 Colloidal clays
 composition and structure, 449
 industrial uses of, 465
 Colloidal electrolytes, clays, 208
 Column, chromatographic, 244
 Compaction tests, 484
- Dehydration of montmorillonite clay, 149
 Dehydroxylation of montmorillonite clay, 149
 Density, dry, 483
 Devitrification, 72
 Diabase, Medford, 414
 Diagenesis of Recent sediments off North Carolina Coast, 440
 Diaspore clay
 leaching of alumina, 398
 oolites, 395
 origin, 399
 permeability, 391
 pipe, 392
 porosity, 390
 replacement structures, 395
 veins, 396
 Dickite, 209, 446
 Differential thermal analysis, see thermal analysis
 Dilatancy, 457
 Dipole moment, 475
 Dispersing agents, 270, 277
 Dispersion, electrolytic, 264, 275, 277, 279
 Drilling fluids, 468
- Edelman-Favajee structure of montmorillonite, 156, 159, 162, 163, 171
 Electron diffraction, 27, 34, 65, 74
 fiber patterns, 35
 halloysite and halloysite-glycerol complex, 27, 29
 vermiculite-type clay minerals, 82, 83
 Electron microscopy
 API standard clays, 31, 32
 attapulgitic, 8
 clays, 1, 31, 75, 82, 332, 442
 dickite, 6
 feldspar, 8
 flint clay, 6
 halloysite, 7
 kaolinite, 5, 32
 montmorillonite, 7, 33
 quartz, 34
 Electrophoresis, 462
 Electrooptical-effect, 457
 Endellite, 26
 Energy
 adsorption, 479
 interaction, 478
 Esterification, 282
- Ethylene glycol, 88
 Ethylene glycol solvation, 89, 90, 375
 Exchange, F-OH, 402
- Feldspar weathering, 8
 Filtration, 314
 Flint clay, 389
 oolites, 395
 permeability, 391
 porosity, 390
 Flocculation, 260, 265
 electrolytic, 263, 264, 273, 279
 values, 271, 273, 274, 279
 Forces
 adsorption, 473
 chemical, 474
 dispersion, 477
 physical, 474
 surface, 478
 van der Waals, 473
 Free iron oxides, 375
- Gamma ray, scattering, 519
 Geiger counter, 523
 Gel structure, theories of, 454
 Gelation, 463
 theories of, 454
 Georgia kaolins,
 electron micrographs, 251, 259
 occurrence, 246
 uses, 246
 Gibbsite, 443
 Glycerol, 88
 Granite, British Guiana, 415
- Halloysite
 electron diffraction, 33, 65
 electron microscopy, 7, 33, 445
 X-ray analysis, 27
 Halloysite-glycerol complex, 27
 Hectorite, 465
 Hofmann-Endell-Wilm structure of montmorillonite, 155, 159, 171
 Hydration and swelling, theories as to cause of, 206
 Hydrogen ion, 284, 285
 activity, 405, 408
 exchangeable, 288
 Hydrolysis, silicate rocks, 415, 419
 Hydromuscovite, 338
 Hydrothermal technique, 87
 Hysteresis, 481
- Identification of swelling clays, 482
 Illite
 dehydroxylation, D.T.A., 67
 Illinois soil, 356, 370
 peptization, 260, 269, 272, 278
 Recent sediments, 434
 Texas soils, 375, 383
 Wisconsin soil, 322
 Wyoming oil-reservoir sands, 509, 510

- Illitic clay materials, 260
 analyses of, 270, 276
 peptization of, 269, 272, 278
 Infra-red spectroscopy, 449
 absorption spectra, 461
 measurements, 402
 Interstratification
 illite-montmorin, 329
 illite-vermiculite, 329
 in soil clays, 322
 ternary, 335
 Interstratified clay minerals in West Texas
 Permian sands, 234
 Ion pairs, 290
 Ion-transfer, silicate rocks, 413
 Ionic substitution, effect on swelling of
 montmorillonite, 212
 Ionization, extent of, in clays, 110

 Kaolinite
 D.T.A., 103, 115
 dehydroxylation, D.T.A., 67
 electron microscopy, 5, 32, 445
 flow properties, 549
 kaolinitic clay, 270
 kaolinite/illite mixtures, 421
 North Carolina Coast Recent marine
 sediments, 430
 peptization, 260
 swelling, 209
 Texas soils, 375
 Kaolinitic clay materials, 260
 analyses of, 270
 peptization of, 269, 272, 278
 Kikuchi lines, 34

 Layer silicate, weathering of, 329
 Lissie formation, 35
 Loess, 356
 London forces, 457
 Lyotropic series, 295

 Magnesium acetate, 89, 374
 Magnesium ion, effect on swelling, 216
 Magnesium silicates, 94
 Marine clay materials, 260, 276
 composition of, 276, 277
 peptization of, 276, 277, 278
 Marine sediments, 430
 Membranes, permselective, 291
 Mica, 67, 322
 Mica, hydrous, 337
 Micelle, colloidal, 455
 Mixed-layer clay in Wyoming oil-reser-
 voir sands, 509, 510
 Mixed-layer minerals, 90
 in Recent sediments off North Caro-
 lina Coast, 434, 440
 Moisture tension measurements, 557
 Montmorillonite
 acid treatment, 403
 activity of exchangeable ions, 288
 D.T.A., 69, 103, 111, 115
 decomposition of, 404
 dehydroxylation, D.T.A., 67
 electron microscopy, 7, 450
 electrophoretic properties, 462
 exchangeable H and Al, 284
 heat treatment, 403
 in Recent sediments off North Caro-
 lina Coast, 434
 ion-exchange, 146
 lattice expansion, 296, 299
 montmorillonitic soil, 270, 322, 356,
 376, 434
 peptization, 260
 preparation for X-ray diffraction, 297
 purification, 297
 rehydroxylation, 71
 rheology, 305
 structure, 94, 203
 swelling, 174, 205, 212
 synthesis, 454
 titration curves, 285
 water sorption, 186
 Montmorillonitic clay materials, 260
 analyses of, 270, 276
 peptization of, 269, 272, 277, 278, 280
 Montmorillonoids
 Ancient sediments, 235
 effect of acid treatment, 404, 405, 410
 effect of heat, 408, 410, 411
 Morphology
 clays, 31
 hydrated halloysite, 30
 soils, 385
 Mullite, 111

 Nacrite, 209
 Newtonian systems, 305
 Nontronite, 403
 Neutrons
 fast, 518
 scattering of, 519

 Oden balance techniques, 271
 Oolitic clay, 389

 Paper industry, application to, 466
 Pastes, flow of, 550
 Peptizing agents, 270
 Peptization, 261, 267
 clay suspension, 268, 274
 resistance, 260, 261, 264, 265, 267, 279
 resistance factor of clay material, 268,
 271, 274, 278
 Permeability, 389
 Permeability, oil-reservoir sands
 air-water relationships, 510
 effect of clays on, 510
 effect of saline waters on, 510
 Pharmacy, applications to, 471
 Phi scale, 271
 Photoelasticity, 458

- Pipette analysis, 271
 Plasticity, 186, 199, 202, 458
 Plastics limits, 188
 Polarizability, 476
 Porosity, 389
 Potential, hydraulic, 562, 563
 Potential energy curves, 455
 Prochlorite, see chlorite
 Proportional counter, 524
- Quartz, 34
- Radiation detectors, 523
 Radioactivity, 516
 Recent marine sediments, 430, 434
 clay mineral composition, 434
 color, 432
 diagenesis, 440, 441
 Rehydrate, structure, 67
 Replicas
 polystyrene, 4
 techniques, 4
 Rheograms of montmorillonite, 306
 Rheological behavior, 296, 302
 Rheology, effect of electrolytes on, 308
 Rheopexy, 457
 Rubber compounds, thixotropic, 470
- Sands, petroleum reservoir, 221, 505, 509
 Scintillation counter, 526
 Sediments, 276, 278
 river, 276, 277, 278, 280
 sea, 276, 277, 278
 Sepiolite, 94, 96
 Sericite, 339
 Shadow casting, 3, 32
 Silica analysis, 341
 Silicates
 interstratified layer, 322
 layer, F-OH exchange, 402
 rocks, 413
 Siliceous matter, 442
 Slips
 clay, 553
 flow of, 553
 Slope of liquid limit line, 189, 193, 202
 Sodium hexametaphosphate, 373
 Soil density determination, 516
 field tests, 538
 gamma ray scattering theory, 522
 instrumentation, 528
 Soil feeders, 320
 Soil moisture determination, 516
 field tests, 538
 instrumentation, 526
 neutron scattering theory, 519
 Soil profiles, 373, 384
 Soil science, 317, 321
 Soil solidification
 chemical, 317, 321
 loading agents, 319
 techniques, 319
- Soils, 117
 clay, 317
 density, 516
 exchange capacity, 239
 moisture content, 516
 outcrop, 33
 sandy accelerated leaching in, 333
 South Texas outcrop, 33
 vermiculite-type clays from, 74, 86
 Sorption, of water on montmorillonite, 186
 Stability, 484
 clay-electrolyte, 275, 277
 measurement of, 271
 suspensions, 260, 263
 Stabilometer, 485
 Stokes' law, 271
 Streaming double refraction, 457
 Structure and properties of montmorillonite, 203
 Surface
 area, 480
 forces, 478
 Surface tension, 465
 Swell pressure, 486, 501
 Swelling
 bivalent iron, effect on, 217
 calculation, 176
 c-axis spacing, 179
 cell, 178
 clays, 233, 482, 483
 concentration effect, 182
 definition, 176
 hydroxyl effect, 183
 in various media, 179
 measurement, 175, 177
 mechanism, 179
 pressure effect, 174, 180, 181
 theories of, 206
 Wyoming bentonite, 179
 Swelling ratio, definition, 176
- Tensiometer, soil moisture, 560
 Tension, soil moisture, 559, 560
 Thermal analysis, differential
 chlorites, 123, 130
 dehydroxylation of clay minerals, 67
 hydrous micas, 339
 kaolinites, 103
 montmorillonites, 103, 146, 149
 variable pressure, controlled atmosphere, 103
 vermiculite type clay minerals, 77
 Wyoming bentonite, 459
 Thixotropy, 306, 456
 Thuringite, 306, 456
 Thuringite, see chlorite
 Till, 356
 Tuff, 416, 418
- Ultra-microscopy, clays, 442
 Ultropak microscope, 442, 443
 Underclay, quantitative mineralogy of, 421

- van der Waals forces, 457
- Vermiculite
 - hydrothermal techniques, 87
 - structures, 94, 100
 - vermiculite-type clays, 74
 - Wisconsin sails, 322
- Versenate, 459
- Viscosity, 246

- Water content at compaction, 498
- Water sensitive, criteria for prediction in petroleum reservoir sands, 226, 232
- Water sensitive petroleum reservoir sands and clay minerals, 221
- Water sensitivity, Wyoming oil-reservoir sands, 505, 512
- Water softening, 470
- Water movement (soil), 563, 564, 566
- Water sorption, 187, 190, 194, 202
- Water sorption properties of homoionic montmorillonite, 186
- Weathering, 413
 - depth function, 333
 - diabase, 414
 - granite, 415
 - tuff, 416
- Wettability, 464

- Wyoming bentonite swelling in various media, 505
- Wyoming oil-reservoir sands, 505

- X-ray diffraction analysis
 - bentonite, 461
 - chloritic soils, 126, 133
 - clay minerals in petroleum reservoir sands, 223, 508
 - dehydroxylation, 73
 - ethylene glycol solvation techniques, 89, 90, 375
 - halloysite, 27
 - hydrrous micas, 339, 342, 346
 - Illinois soil of loess and till, 361
 - kaolinite and illite mixtures, 422
 - lower Mississippi delta, 387
 - montmorillonite, 146, 161, 164, 165, 296, 299, 410
 - oscillating heating camera technique, 73
 - peptization of clay minerals, 277
 - preparation of montmorillonite for x-ray diffraction, 297
 - Recent marine sediments of North Carolina Coast, 435
 - silicates of Wisconsin, 324
 - Texas soils, 377
 - vermiculite type clay minerals, 74, 83