INDEX

<table>
<thead>
<tr>
<th>Page References</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abandonment, 374, 414</td>
<td>Abbreviations, in land descriptions, 485–486</td>
</tr>
<tr>
<td>Aband v. Fitzgerald, 415</td>
<td>Abstract companies, 430</td>
</tr>
</tbody>
</table>
Ambient conditions, errors from, 164
Ambiguities: extrinsic evidence explaining, 40
INDEX

Certification of surveys, 381–382
Chain (measurement), 139, 237, 244–246
Chain of title, 429–430
Charcoal, 620–621
Cherry v. Slade, 571–585
Cinque Bambini Partnership v. State of Mississippi, 209–210
Circular curved lines, 480–482
Circumstantial evidence, 26
Claiborne, William, 243
Clark, George Rogers, 244
Clear and convincing evidence, 35
Clients: obtaining survey information from, 341–344
surveyor’s obligations to, 528
Closure, 177, 181
in Manual of Instructions of 1947, 295
mathematical and legal, 458–459
relative error of, 160
Coastal Mapping Act of 1974 (Florida), 213
Collateral facts, admission of, 37
College of William and Mary, 243
Colorado, 316–317, 439, 503–504, 541, 546
Color of title, 418
Common-law dedication, 402
Common report, 125–128
Compasses, 145, 146, 289
Bryan v. Beckley, 565–571
and local attraction, 170
Rittenhouse, 289
solar, 147
Compelling testimony, from experts, 553–554
Compilation plats, 202–203
Compound confusion, 336
Compound hiatus, 337
Computations. See also Measurements and calculations
errors in, 182
for location surveys, 363–364
Conclusions:
drawn from evidence, 24, 25
of location surveys, 340–341
Conclusive evidence, 25, 66
Conclusiveness:
of evidence, 36
of written words of deeds, 53–54
Conclusive presumptions, 38
Confusion (use of term), 336, 337
Connecticut, 210, 213, 241, 254, 263
Consentable line, 399
Consistency of significant figures, 150–152
Constant accidental errors, 159
Constructive possession, 419
Continuous possession, 414–416
Contract(s):
ALTA/ACSM, 57
between attorneys and expert witnesses, 539
privity of, 504–505
for survey projects, 342–343
Contrary proof, 89
Control monuments, 376–378
Conveyances. See also Deeds
basic elements of, 446
determining intent of, 64–65
interpreting words in, 64 linear, 452
planned and indiscriminate, 234–235
proportionate, 451
and resurveys, 90
state land description requirements for, 75
strip, 452, 484
types of, 88
unwritten, see Unwritten transfers of ownership
usual mode of describing, 61
Cooley, Thomas M., 124, 357, 585, 588, 625
Coordinates:
in land descriptions, 492–494
for original corners, 80–81
state plane, 327–328
in land descriptions, 492–494
recording and preserving evidence by, 327–328
for subdivisions, 379–381
straight lines defined by, 475
in subdivisions, 379–381
Corners, 2
ascertained from photographs, 156
chain of history of, 117
double, 287–289
errors in position of, 172
existent, 68
extinct, 627–628
lines determined by, 81–82
lost, 96
accuracy of methods for creating, 73, 80
defined, 96, 293
determining, 313
GLO method for locating, 97–98
relocated, 72
United States v. Doyle, 597–602
monuments vs., 97
obliterated, 68, 293, 313, 597–602
original:
accuracy of, 73
based on found evidence, 79
coordinates for, 80–81
corners control over lines, 81
equal weight of, 130–131
failure to prove position of, 72
measurements for, 75–76
positional tolerance
locations for, 78
standards of precision for, 77
superior to modern measurement, 79–80
proving proximity of monuments and, 165–166
United States v. Doyle, 597–602
witness evidence proving, 119–120
Corner accessories, 297
Corner monuments:
original:
equal weight of, 97–98
field evidence proving, 99–100
requirements for, 376–377
Corner posts, Tiffin’s instructions on, 289–290
The Corpus, 7
Correction lines, 294
Corrective instruments, 438–439
Corroborative evidence, 26
Court reports, historical, 301–305
Court trials, 534–562. See also Major court decisions; specific cases
answering questions, 540–541
and conduct of surveys, 557
conduct on the stand, 538
direct and cross-examination, 541–542
direct and leading questions, 542–543
discovery, 535–536, 556–557
duties in court, 536–538
expert witnesses, 545–547
appointment of, 547
cause and effect testimony, 551
### INDEX

- **Court trials (continued)**
  - compelling testimony of, 553–554
  - cross-examination of, 554, 556
  - duties of, 548–549
  - fees for, 555–556
  - hypothetical questions put to, 550–551
  - opinions of, 549–550
  - hearsay, 543
  - initial court appearance, 536
  - juries for, 543–544
  - jury decisions in, 3
  - lay witnesses, 544–545
  - oaths, 540
  - object of litigation, 538
  - photographs used in, 552–553
  - preparation for testimony, 557–562
  - pretrial motions, 539
  - questions on measurements in, 134–135
  - surveyor–attorney relationship, 538–539
  - textbook and treatise support for cases, 551–552
  - view of site by court, 562
  - witnesses, 544

- **Covenants and restrictions**, 374–375

- **Cragin v. Powell**, 137, 592–597

- **Crawford v. Gray & Associates**, 514

- **Creditable evidence**, 99

- **Cross-examination**, in court trials, 541, 542, 554, 556

- **Cubits**, 237

- **Cultural improvements**, on plats, 194

- **Curtis v. Donnelly**, 543

- **Curved lines (land descriptions):**
  - circular, 480–482
  - irregular, 483
  - spiral, 482–483

- **Damages**, 513
  - punitive, 508–509
  - trespass, 510–511

- **Datum determination**, (water boundaries), 219

- **Dead reckoning**, 147

- **Dedication**, 382, 401–424
  - acceptance of, 404
  - common-law, 402, 405
  - donor of, 403
  - and easement, 402
  - effect of, 405–406
  - implied intent to dedicate, 404
  - location and description of, 403

- **Deeds**, 444, 446
  - See also Conveyances
  - agreement, 390
  - ancient, 64
  - basic elements of, 446
  - conclusiveness of, 53–54
  - conflicts within, 170
  - construed as a whole, 55–56, 67
  - descriptions vs., 332, 444
  - interpreting intent and meaning of, 4
  - land descriptions in, 453
  - “meaning and intending” clauses in, 65
  - senior, equal, and junior rights, 66–67
  - void, 75
  - warranty, 429

- **Deed lines**, ownership lines vs., 343

- **Defects**, latent, 40

- **Definitions of Surveying and Associated Terms (ACSM and ASCE)**, 6

- **Deflection angles**, 474–475

- **Degree (quantum) of proof of evidence**, 32

- **De Jure Maris** (Lord Matthew Hale), 212

- **Delaware**, 220, 259, 601

- **Delivery of possession**, (livery of seisin), 241–242

- **Density of monuments**, 377–378

- **Depositions**, 535, 556

- **DeWitt, Simeon**, 280

- **Diehl v. Zanger**, 588–591

- **Digges, Thomas**, 208

- **Dimensional data**, for plats, 191–193

- **Direction**, 145–146
  - basis of bearings for, 471–474
  - indicated on plats, 190
  - in land descriptions, 476
  - methods of observing, 147–149
  - observed errors in, 162–163
  - reckoning, 146–147

- **Distance**, 138–139
  - analyzing, 137
  - early determination of bearing references, 144–145
  - errors in measurement, 142
  - historical determination of, 142–144
  - horizontal vs. lay-of-the-land, 167
  - in land descriptions, 479–480
  - in public land surveys, 137
  - standardization of measuring devices, 139–140
  - taped distances errors, 161–162
  - units of length, 140–142

- **District of Columbia**, 554

- **Disturbed evidence**, 103–104

- **Dixon, Jeremiah**, 244

- **DMD (double meridian distance)**, 248

- **Documents. See also specific types of documents ancient:**
  - deeds, 53, 64
  - meaning of words in, 69
  - plats, 63–64
  - rules of evidence for, 63–64
  - for boundary surveys, 347–348
  - recording, 319–320. See also Recording and preserving evidence researching, 344–349

- **Domesday Book**, 240

- **Double corners**, 287–289

- **Double meridian distance (DMD)**, 248

- **Drawings**, for plats, 187, 188

- **Due (magnetic) north**, 169

- **Duncan v. Peterson**, 401

- **Early settlements**, 267

- **Easements**, 486–487

- **East. See also specific states historical knowledge as evidence in:**
  - Connecticut, 254
  - Delaware, 259
  - New England, 250–254
  - New Hampshire, 255
  - New Jersey, 257–258
  - New York, 255–257
  - Ohio lands, 262–263
INDEX

origin of title, 248–249
Pennsylvania, 258
Rhode Island, 243
trans-Appalachian states, 260
planned and indiscriminate conveyancing in, 234–235
Education, 522–523, 532
Effect of evidence, 27, 40–41
Electronic measuring equipment (EDM), 140, 143, 144
Elevation datum, 191
Ellicott, Andrew, 234, 280
Ellicott’s line, 280
Eminent domain, 410
Employment issues, 529
Empressario system, 267–268
Encroachments, 198, 337, 406
English common law, 50, 248
Equal rights, intent of, 66–67
Errors:
in measurement, 142, 157–182
and adaptability of accuracy standards, 176–178
adjustment, 181
classification of, 158–160
computations, 182
and consistency of significant figures, 150–152
and importance of measurement as evidence, 166–172
location of boundaries, 179–180
and location surveys, 358–361
and monuments, 181–182
observed directions, 162–163
placement of, 289
in position of corners and lines, 172
precision and accuracy, 157–158
proving proximity of corners and their monuments, 165–166
and purpose of survey specifications, 175–176
reliability of meridian observations, 163–165
size of properties and survey classes, 180–181
and statements of uncertainty, 178–179
taped distances, 161–162
theoretical uncertainty, 160–161, 179
in traversing, 172–174
uncertainties in area, 174–175
and value of property, 179
in original surveys, 371, 376
legal decision on, 137
and technology, 78
and professional stature, 529–530
Escarpments (scarps), 223
Estoppel, 392–394
Evidence, 13–46. See also specific types of evidence
admissibility of, 35–39
best, 23
best available, 45
beyond reasonable doubt, 35
burden of proof, 29–32
circumstantial, 26
classifications of, 25–26
clear and convincing, 35
conclusions drawn from, 25
conclusiveness of, 36
conclusiveness of, 36
corroborative, 26
defined, 14–16
degree (quantum) of proof of, 32
direct, 26
extrinsic, 26, 40
historical concept of, 13–16
impartial use/presentation of, 19–22
indirect, 26
indispensable, 25
inferences as substitute for, 39
judging effect or value of, 40–41
judicial notice as substitute for, 41–42
kinds of, 23–24
law of, 27–29, 44–45
materiality of, 35–37
new and old, weight of, 42–43
partial, 26
preponderance of, 32–34
prima facie, 25
primary, 26
proof vs., 21, 24
relevancy of, 35–37
scope of, 18–19, 27, 43–44
secondary, 26
surveyors’ duties in finding, 45–46
surveyor’s role in, 16–18
surveyors’ use of, 26
Exceptions:
form for, 491
in land descriptions, 487
Exclusive possession, 417
Existing corners, 68
Expert witnesses, 534–535, 545–547. See also Court trials
appointment of, 547
cause and effect testimony, 551
compelling testimony of, 553–554
cross-examination of, 554, 556
duties of, 548–549
fees for, 555–556
hypothetical questions put to, 550–551
opinions of, 549–550
Expressed guarantees, 509–510
Extinct corners, 627–628
Extrinsic evidence, 26
of ambiguities in written evidence, 60–62
use of, 40
Fact finding, 340–341
from clients, 341–344
fieldwork for, 350–363
by researching records and documents, 344–349
Fairfax, Thomas, 244
Federal Homestead Act of May 20, 1862, 299–300
Federal Title Test, 209
Fees:
for expert witnesses, 555–556
for surveyors, 524–525, 530–531
Fee simple ownership, 247
666

INDEX

Fee tail ownership, 247
Fee title, 374

Fences:
as actual possession, 412–413
and adverse rights, 412
as evidence, rather than lines, 129–130
in legal descriptions, identifying, 103
to prove boundaries, 128–130, 356, 397

Feudal land system, 240–241

Field evidence, 86–131
common report, reputation, and hearsay, 125–128
competent parol evidence, 120–121
corners:
chain of history of, 117
witness evidence proving, 119–120
disturbed evidence, 103–104
of fences proving boundaries, 128–130
historic private surveys, 93
intent of surveys, 94
for location surveys, 353–355
monuments, 94–97
chain of history of, 117
control of original monuments, 97–98
evidence of original corner monuments, 99–100
indispensability of, 98–99
physical characteristics of, 100–103
surveyors’ records on location of, 118–119
witness evidence proving, 119–120
passing calls and topographic calls, 121–123
possession evidence, 124–125
for retracements, 89–93
trees:
characteristics of, 111–117
identifying, 104–111
of witness objects, 104
Field notes:
conflicts between original plats and, 205–206
for location surveys, 361–363
as written evidence, 58–60
Fieldwork, 350–363
assembling data, 363
field evidence, 353–355
field notes, 361–363
importance of possession, 356–367
measurements, 358
planning for, 350–353

preserving recovered evidence, 361
search for monuments, 353–355
testimony of monument location, 347–348
uncalled-for monuments, 355
and uncertainty of position, 358–361

First Principal Meridian, 284
“First survey,” 335

Fish and Wildlife Service, 6
Florida, 28, 52
adverse possession, 420–422
ambiguity in land descriptions in, 458
definition of profession in, 523
types of evidence, 111, 123
water boundaries, 209, 210, 213, 221–222
Florida Land Title Association (FLTA), 196
Florida Surveying and Mapping Society (FSMS), 196
“Following the footsteps,” 2, 3
Foot (measurement), 138–140
Foot-meter, 139
Forensic surveys, 43–44, 341, 342, 539
Free surveys, 335
French land grants, 263
Fry, Joshua, 244
FSMS (Florida Surveying and Mapping Society), 196
Gadsden Purchase, 264
Gallatin, Albert, 286
Gaps, 336, 337
General Instructions, 291
General Land Office (GLO), 76–77
acts creating, 649–660
importance of approval of, 34
reorganization of, 291, 293
General Land Office (GLO) states:
adoption of Manual of Instructions by, 298
bearing references, 147
distance measurement in, 138
weight of original corners in, 130, 131, 135
General Land Office (GLO) surveys. See also Public Land Survey System (PLSS)
boundaries set in, 30–31
defined, 336
early, 107, 136
land area embraced by, 276
laws regulating, 368–369
locating lost corners, 97–98
metes-and-bounds system vs., 274
as original surveys, 334
and perpetuation of evidence, 315
presumptions based on, 27
questioning, 119
solar compass used by, 147
Geodetica, of the Art of Surveying (John Love), 75, 138, 246, 351, 635–648
Geographer of the United States, 280
Geographic information system (GIS), 6–7, 11
Geomorphological features (water boundaries), 222–223
Georgia, 52
court trials, 535, 539, 543
early surveying, 259–261
indiscriminate settlement prior to survey, 235
land patents, 304–305
measurements and calculations, 169
survey systems, 276
title insurance, 437
Torrens title, 439
unwritten conveyances, 391
water boundaries, 213
GIS, see Geographic information system
GLO, see General Land Office
Global positioning systems (GPS), 6, 11–12
capabilities of, 144
determining coordinates with, 327
for retracements, 140
as substitute for azimuth use, 153–154
GLO states, see General Land Office states
GLO surveys, see General Land Office surveys
Good faith, 418–419
Gore, 336, 337
Government, unwritten transfers of ownership and, 391
GPS, see Global positioning systems
Gradient Boundary, 271
Grants, usual mode of describing, 61
Graphic representations, in land description, 447
Greenleaf, 15
Guadalupe-Hidalgo, Treaty of, 264, 265, 273
INDEX

Guarantees:
expressed and implied, 509–510
of title and location, 427–443
abstract of title, 430–436
abstracts with attorney’s opinions, 436
aids to, 428
chain of title, 429–430
corrective instruments, 438–439
land courts, 441–443
location guarantees, 438
patents, 429
registration of titles vs. ownership, 428
title and location insurance policies, 438
title insurance policies, 436–438
Torrens registration, 439–443
warranty deeds, 429
wording of title policies, 437–438

Guide meridians, 294
Gunter, Edmund, 143, 244
Hacks, 108, 110
Hale, Lord Matthew, 212
Half-tide level, 214
Hardwood, 623–624
Hawaii:
land ownership, 300–301
measurements and calculations, 144–145
Torrens title, 439
water boundaries, 212, 220
written evidence, 69
Hawaii Homes Commission, 301
Hawaii Land Court, 443
Head right concept, 250
Hearsay evidence, 125–128
admissibility of, 125
in court trials, 543
maps as, 204
reputation evidence as, 127
Hearsay rule, 28
Herodotus, 235–236
Hiatus, 336, 337
Highways, 410
Historical application of measurements, 149
Historical knowledge as evidence, 233–306
Act of February 11, 1805, 283
Act of May 10, 1800, 282–283
Alaskan lands, 301
ancient Greek literature, 239
biblical references to surveying, 238–239
concept of area, 246–247
concept of title, 247
court reports, 301–305
eyearly New World surveys, 243–246
in East and South, 248–264
Carolina territory, 259
Connecticut, 254
Delaware, 259
Georgia, 259–261
Louisiana territory, 264
Maryland, 259
New England, 250–254
New Hampshire, 255
New Jersey, 257–258
New York, 255–257
Ohio lands, 262–263
origin of title, 248–249
Pennsylvania, 258
Rhode Island, 243
Tennessee, 260, 262
trans-Appalachian states, 260
Virginia, 249–250
feudal land system, 240–241
geographer of the United States, 280
Hawaiian lands, 300–301
homesteading lands, 299–300
instructions to deputy surveyors, 286
livery of seisin (delivery of possession), 241–242
Manual of Instructions:
1947, 294–297
1973, 297–298
manuals of instructions, 291–293
measurement, 237–238
National Forest Lands classification, 299
and need for legal history, 305–306
Ordinance of 1785, 276, 278–279
Ordinance of 1796, 282
planned and indiscriminate land conveyancing, 234–235
precolony surveys, 235–237
principal meridians and baselines, 284, 285
prior surveys, 279
Public Domain system, 274–278
public land surveys, 298–299
Rectangular Systems protraction program, 298
reorganization of General Land Office, 293
small tracts within public domain, 300
in Southwest, 264–274
early California, 272–273
early settlements, 267
torrens system, 267–268
Gradient Boundary, 271
instructions to surveyors, 268–269
lands of Spanish origin, 265
Mexican land grants, 267
mineral rights, 265
and Native Americans, 271–272
Ordenanza de Intendentes, 267
resurvey of land grants of public domain, 273
righs with Spanish and Mexican grants, 265
road beds, 266
seniority of titles, 264–265
Spanish water laws, 265–266
suits against sovereign, 268
survey of Spanish and Mexican grants, 269–270
units of measurements or length, 273–274
sovereignty and ownership, 240
Statute of Frauds, 242–243
survey of Seven Ranges, 280–282
surveyor general, 284, 286
Tiffin’s instructions, 287–291
Timber Culture Act of 1873, 299
Historic private surveys, 93
Holland Land Purchase, 256
Holmes, Oliver Wendell, 564
Hommer, 239
Homesteading, land acquired by, 299–300
Hostile possession, 416
Hutchins, Thomas, 244, 280–281
Hydrological evidence (water boundaries), 225–226
Hypothetical questions, 550–551
Herald (Hommer), 239
Illinois, 29
boundary line establishment in, 390
court trials, 556
historical knowledge as evidence in, 234
privity of contract, 504
Torrens title in, 439–441
unwritten agreement in, 395
Impartial use/presentation of evidence, 19–22
Implied guarantees, 509–510
Implied intent to dedicate, 404
Independent judgment, 524
Indirect evidence, 26
Indispensable evidence, 25
monuments as, 98–99
writings as, 50–51
Inferences:
defined, 39
as proof, 24
as substitute for evidence, 39
Infrared photography, 325
Initial points, 294
In Re Ashford, 212
Instruments, in Manual of Instructions of 1947, 297
Instrumentation errors, 164
Insurance, title and location, 438
Integrity, 525–526
Intention:
of conveyances, 64–65
of land descriptions, 466
and meaning of deeds, 56
and senior, equal, and junior rights, 66
of surveys, 94
Interested landowners, testimony of, 68
Interpretation:
of words in conveyances, 64–65
of written evidence, 54–55
Interrogatories, 556
Iowa, 234, 310
Irregular curves, in land descriptions, 483
Irregular watercourses, 632–633
Jarrad v. Seifert, 507
Jefferson, Peter, 243, 244, 276
Jefferson, Thomas, 243–244, 276, 278
Judicial knowledge, 42
Judicial legislation, 535
Judicial notice:
judicial knowledge vs., 42
as substitute for evidence, 41–42
of words in land descriptions, 53
Junior rights:
calls for senior description, 464–466
intent of, 66–67
and quality of parent title, 733–374
Juries, 543–544
Kelly’s Creek and N.W.R. Co. v. United States, 221
Kentucky:
acquiescence and agreement by parol, 394
historical knowledge as evidence, 235
indiscriminate settlement prior to survey, 235
measurements and calculations, 167, 169–171
professional liability, 500–501
types of evidence, 126–128
Lakes, boundaries in, 229–230
Land Acts, 649–660
Act of 1754, 267
Act of 1785, 147, 275, 649
Act of 1796, 138, 139, 169, 275, 282, 650, 655–658
Act of 1800, 282–283, 287
Act of 1805, 137, 139, 276, 283, 378, 650, 658–660
Act of 1938, 300
An Ordinance for Ascertaining the Mode of Disposing the Lands in the Western Territory, 650–654
Resolution of May 12, 1786, 654
Land courts, 441–443
Land data systems, 11
Land (property) descriptions, 444–497
abbreviations in, 485–486
ambiguity in, 458
area, 478
area conveyances, 452
areas on one side of described line, 452
azimuth, 474
based on surveys, 459
basis of bearings for direction, 471–474
beginning and ending points, 478–479
body of, 463–464
bounds, 451
bounds form, 490–491
calls for survey, 467
caption, 463
changing wordings in, 460–462
checklist for, 494–497
coordinates used in, 492–494
deeds vs., 332, 444
deflection angles, 474–475
directional calls, 476
easements, 486–487
enforceable, 331–332
exceptions form, 491
exceptions in, 487
graphic and written, 447, 448
identification of, 51–53
indicating superior calls, 483
indispensable parts of, 453–454
intent of, 466
irregular curves, 483
linear conveyances, 452
lines, 468–469
areas on one side of, 452
circular curved, 480–482
defined by geometric relationships, 476–477
distance from starting point, 479–480
straight, 469–470, 475
loss of evidence on location, 457–458
mathematical and legal correctness/closure in, 458–459
metes-and-bounds, 449–451
monument calls, 467–468, 491–492
objectives of, 454
parts of, 462
proportionate conveyances, 451
punctuation in, 486
qualifying (habendum) clauses, 464
and qualities of scriveners, 459–466
Rivers v. Lozeau, 602–608
senior rights, 457
senior rights and calls for adjoining parcels, 464–466
spiral curve, 482–483
state requirements for, 75
and stationing, 484
straight lines, 469
defined by coordinates, 475
defined by dimension from a point, 470
defined by monuments, 469–470
strip conveyances, 452
subdivision, 447–449
sufficiency of, 455
title identity, 456–457
true metes-and-bounds, 488–490
whole descriptions, 487–488
writing technique for, 462
Land information system (LIS), 6–7, 11
Land surveying, defined, 5, 6
Land surveyors, see Boundary (property) surveyors
INDEX

Latent ambiguities, 62–63
Latent defects, 40
Laurel, Mississippi, 375
Law:
changes in, 77
plating, 368, 371–373
presumptions of, 38–39
related to boundaries and evidence, 44–45
subdivision, 368, 369
and technology development, 7
unwritten, 45
Laws of evidence, 14–15, 18, 27–29
defined, 27
order of importance of evidence, 43
surveyor’s presumed knowledge of, 46
Lawyers Title Insurance Co. v. Huges, 505–506
Lay witnesses, 544–545
Leadership, 524
Leading questions, 542
Legal history, need for, 305–306
Legal title, 386
Length, units of, 140–142, 273–274
Levees, 222–223
Liability, 343
of abstractors, 513–515
for errors in surveys, 376
for failure to recognize lawful possession, 420
of professionals, 524. See also Professional liability
Licensing, 522
Lincoln, Thomas, 235
Line(s), 2
accuracy of, 73
ascertained from photographs, 156
baselines, 256, 284, 285, 294
consentable, 399
corners control over, 81
corners defining, 81–82
correction, 294
deed lines vs. ownership lines, 343
ers in position of corners, 172
fixing by acquiescence, 629–630
identifying marks on, 319
in land descriptions, 468–469
circular curved lines, 480–482
defined by geometric relationships, 476–477
irregular curves, 483
spiral curves, 482–483
straight lines, 469–470, 475
marking, 295
meander, 630–631, 633–634
in retracements vs. original surveys, 77
section, 296
Tiffin’s instructions for, 287–288
transit, 256
Linear conveyances, in land descriptions, 452
LIS (land information system), 6–7, 11
Litigation, 534. See also Court trials
object of, 538
provoking, 526–527
Livery of seisin (delivery of possession), 241–242
Loan surveys, 97
Location:
loss of evidence on, 457–458
practical, 62, 91, 398–399
Location guarantees, 438
Location surveys, 329–367
authority of boundary surveyors, 339–340
compilation of evidence, 363–364
computations, 363–364
and conduct of surveys, 332–333
contact with clients, 341–344
court decisions on, 2–3
definition of terms, 333–338
and errors in measurement, 179–180
fact finding and conclusions, 340–341
fieldwork, 350–363
assembling data, 363
collection of evidence, 353
field notes, 361–363
importance of possession, 356–367
measurements, 358–361
planning for, 350–353
preserving recovered evidence, 361
search for monuments, 353–355
testimony of monument location, 347–348
uncalled-for monuments, 355
and uncertainty of position, 358–361
legal authority for regulating surveys, 338–339
platting, 364
presentation of results, 365–367
researching records and documents, 344–349
surveyor’s functions, 333–338
in written documents, 331–332
Lost corners, 96
accuracy of methods for creating, 73, 80
defined, 96, 293
determining, 313
GLO method for locating, 97–98
recovering, 626–627
relocated, 72
United States v. Doyle, 597–602
Louisiana, 31, 33–34, 210, 221, 505–506
Louisiana territory, prior land grants in, 264
Love, John, 75, 81, 136, 138, 143, 246, 351, 478, 635–648
Lozano, Mario, 269–270
Magnetic declination, 170
Magnetic meridian, 145–147, 169–170
Magnetic needle, 145
Magnetic (due) north, 169
Mailbox rule, 39
Maine, 57
adverse possession, 414
binding unwritten agreement, 398
land boundary case, 303–304
survey systems, 276
types of evidence, 91–93
water boundaries, 220
Maintenance, crime of, 526
Major court decisions. See also other court cases
Bryan v. Beckley (1809), 565–571
Cherry v. Slade (1819), 347–351
Cragin v. Powell (1888), 592–597
Diehl v. Zanger (1878), 588–591
Rivers v. Lozeau (1989), 602–608
Stewart v. Carleton (1875), 585–588
United States v. Doyle (1972), 597–602
Mansfield, Jared, 286
INDEX

INDEX

M etes-and-bounds states: conflicts of bearing and distance in, 170
distance measurements in, 137
location of lost corners in, 98, 135
reputation evidence in, 127–128
weight of original corners in, 130, 131
M etes-and-bounds surveys (use of term), 336
M etes-and-bounds system: in early United States, 234
GLO system vs., 274
Mexican land grants, 267
in California, 272–273
indiscriminate settlement prior to survey, 235
resurvey of, 273
rights with, 265
survey of, 269–270
M HHW (mean higher high water), 214
M HW (mean high water), 214, 220
Miami, Florida, 168
Michigan:
fences as boundaries in, 356
historical knowledge as evidence in, 234
quasi-judicial function of surveyors, 625–634
surveyors in court trials, 537–538
types of evidence, 124
M idcall v. Hawaiian Housing Authority, 301
M iles, 237
M inimum technical standards, 189
M innesota, 155, 439
M ississippi, 209–210, 213, 346, 439, 550
M issouri, 89, 99–100, 119
M LLW (mean lower low water), 214
M LW (mean low water), 214, 220
Monuments:
artificial, 100
certification of, 381–382
chain of history of, 117
control, 376, 377
corners vs., 97
density of, 377–378
in early Southwest, 234
errors in measurement, 181–182
field evidence of, 94–97
identifying marks on, 319
locating from photographs, 325–326
in Manual of Instructions of 1947, 296
natural, 100
obliterated, 96
original:
control of, 97–98
disturbed, 103–104
use of term, 95–96
physical characteristics of, 100–103
placed after conveyance, 97
on plats, 193–194
proving proximity of corners and, 165–166
search for, 353–355
straight lines defined by, 469–470
surveyors’ records on location of, 118–119
testimony of location of, 347–348
uncalled-for:
and land descriptions, 467
and location surveys, 355
value as evidence, 94
witness evidence proving, 119–120
Monument calls, in land descriptions, 95, 467–468, 491–492
M orse v. Emery, 57–58
M ortgage surveys, 97
Mother Hubbard clause, 415
M T L (mean tide level), 214
M ulford, A.C., 8, 13, 157, 182, 507–508, 512, 532
N ational Council of Examiners for Engineering and Surveying (NCEES), 5
N ational Forest Lands, classification of, 299
N ational Geodetic Survey (NGS), 170, 326
N ational Land System, 248, 249
N ational Oceanic & Atmospheric Administration (NOAA), 170
N ational Park Service, 6
N ational Tidal Datum Epoch, 215
N ative Americans, 234
and early surveying, 271–272
philosophy of property rights, 237
N atural levees, 222
N atural monuments, 100
N avigability of water bodies, 209–210
NCEES (National Council of Examiners for Engineering and Surveying), 5
N ebraska, 439
Negligence, 499. See also Professional liability breach of contract vs., 508–509
and breach of professional standards, 532
damages for, 513
and differences of opinion, 532
N ew England. See also specific states
early surveying, 250–255
measurements and calculations, 170
planned conveyancing, 234
water boundaries, 209
New Hampshire, 57, 67
early surveying, 255
easements, 374
measurements and calculations, 169
types of evidence, 90, 93, 97
water boundaries, 220
N ew Jersey:
court trials, 553
early surveying, 257–258
measurements and calculations, 172
punitive damages, 508–509
water boundaries, 210, 213
N ew Mexico, 417
N ew World surveys, 243–246
N ew York State, 63
discovery rule, 601
early surveying, 255–257
indiscriminate settlement prior to survey, 235
practical location, 399
survey systems, 276
Torrens title, 439
water boundaries, 210, 213
N GS (National Geodetic Survey), 170, 326
N ixon, J. A., 268–269
N OAA (National Oceanic & Atmospheric Administration), 170
N onpublic trust waters, 228–230
N ontidal waters:
botanical evidence, 224–225
definitions, 220–222
determining ordinary high water mark, 226–228
geomorphological features, 222–223
hydrological evidence, 225–226
Non-tidal waters (continued)
- Navigability for title purposes, 209–210
- Soil composition changes, 224
- Types of evidence, 222

Norris Oil Company, 62

North Carolina:
- Historical knowledge as evidence, 235
- Measurements and calculations, 169, 170
- Torrens title in, 439
- Unwritten conveyances, 391
- Water boundaries, 210, 213

North Dakota, 439

Northwestern Ohio, 263

Northwest Ordinance (1785), 275

Notches, 108

Oak trees, 107–108, 621–622

Oaths:
- Court trials, 540
- Recording and preserving, 318–319

Obligations of surveyors:
- To clients, 528
- In monumenting, 526
- To other surveyors and profession, 528–529
- To the public, 526

Obliterated corners:
- BLM discussion of, 68
- Defined, 293
- Determining, 313
- United States v. Doyle, 597–602

Obliterated monuments, 96

Official plats, 200–206

Ohio, 169, 235, 439

Ohio Company purchase, 262

Ohio lands, subdivision of, 262–263

Oklahoma, 271

Oklahoma v. Texas, 271

Omitted information, on plats, 195–196

Onsrud, H., 86

Open possession, 413–414

Opinion evidence, 549–550

Ordenanza de Intendentes, 267

An Ordinance for Ascertaining the Mode of Disposing the Lands in the Western Territory (May 20, 1785), 276, 278–279, 650–654

Ordinary high water mark (line), 220, 226–228. See also Non-tidal waters

Oregon, 89, 210, 213, 439

Oregon Manual (1851), 291

Original corners:
- Accuracy of, 73
- Based on found evidence, 79
- Coordinates for, 80–81
- Corners control over lines, 81
- Equal weight of, 97–98
- Failure to prove position of, 72
- Measurements for, 75–76
- Positional tolerance locations for, 78
- Standards of precision for, 77
- Superior to modern measurement, 79–80

Original corner monuments:
- Equal weight of, 97–98
- Field evidence proving, 99–100

Original documents, recording and preserving, 319–320

Original monuments:
- Control of, 97–98
- Corner, 97–100
- Disturbed, 103–104
- Use of term, 95–96

Original plats, 200–206

Patents, 429

Patent ambiguities, 40, 62–63

PD, see Public domain

Pennsylvania, 67

Consentable line in, 399
- Early surveying in, 258
- Indiscriminate settlement prior to survey, 235
- Measurements and calculations, 167–168
- Privity of contract, 504
- And Seven Ranges survey, 280
- Survey systems in, 276
- Water boundaries, 220
- Perennial streams, 265–266
- Perpetuation of evidence, 313–314. See also Recording and preserving evidence

Personal liability, 499

Photogrammetry, 154–159

Photographs:
- Aerial, 154–157
- As evidence, 553
- Recording and preserving evidence with, 321–325
- Availability of, 156–157
- Identifying points on, 144–145

“Paces,” 243

Parol agreement, 394

Parol evidence:
- And ambiguities in writings, 61
- Competent, 120–121
- On monument positions vs. titles, 124
- Of practical location, 62
- Partial evidence, 26
- Passing calls, 121–123
- Patents, 429
- Patent ambiguities, 40, 62–63
- PD, see Public domain

Perennial streams, 265–266

Permission to use, 144–145

Pennsylvania, 67

Consentable line in, 399
- Early surveying in, 258
- Indiscriminate settlement prior to survey, 235
- Measurements and calculations, 167–168
- Privity of contract, 504
- And Seven Ranges survey, 280
- Survey systems in, 276
- Water boundaries, 220
- Perennial streams, 265–266
- Perpetuation of evidence, 313–314. See also Recording and preserving evidence

Personal liability, 499

Photogrammetry, 154–159

Photographs:
- Aerial, 154–157
- As evidence, 553
- Recording and preserving evidence with, 321–325
- Availability of, 156–157
- Identifying points on, 144–145

“Paces,” 243

Parol agreement, 394

Parol evidence:
- And ambiguities in writings, 61
- Competent, 120–121
- On monument positions vs. titles, 124
- Of practical location, 62
- Partial evidence, 26
- Passing calls, 121–123
- Patents, 429
- Patent ambiguities, 40, 62–63
- PD, see Public domain

Perennial streams, 265–266

Permission to use, 144–145

Pennsylvania, 67

Consentable line in, 399
- Early surveying in, 258
- Indiscriminate settlement prior to survey, 235
- Measurements and calculations, 167–168
- Privity of contract, 504
- And Seven Ranges survey, 280
- Survey systems in, 276
- Water boundaries, 220
- Perennial streams, 265–266
- Perpetuation of evidence, 313–314. See also Recording and preserving evidence

Personal liability, 499

Photogrammetry, 154–159

Photographs:
- Aerial, 154–157
- As evidence, 553
- Recording and preserving evidence with, 321–325
- Availability of, 156–157
- Identifying points on, 144–145

“Paces,” 243

Parol agreement, 394

Parol evidence:
- And ambiguities in writings, 61
- Competent, 120–121
- On monument positions vs. titles, 124
- Of practical location, 62
- Partial evidence, 26
- Passing calls, 121–123
- Patents, 429
- Patent ambiguities, 40, 62–63
INDEX

for preserving evidence, 321–326
terrestrial, 321–325
used in court trials, 552–553

Photography, infrared, 325

Physical fact test (nontidal water boundaries), 221

Plans, 184, 185
Plane table, 248, 351
Planned land conveyancing (historical), 234–235
Planning boards, 373
Plats, 184–206
basis of bearings, 190–191
features of, 186
indicating direction, 190
monuments, 193–194
original, 200–206
as evidence, 205
laws regulating, 201
official plats, 203
private plats, 203–204
purpose, 200–201
purpose, 186
reference calls for, 56–58
scale, 189
survey:
contents of, 200
effect of, 195
with omitted information, 195–196
surveyor’s certificates, 199
of title surveys for title associations, 196–199
symbols, 189
Tiffin’s instructions on, 290
title, 187, 188
title identity, 194–195
types of, 185
unwritten dedication by, 406
use of term, 184, 185
written evidence vs., 58

Platting, location surveys and, 364
Platting laws, 368, 373
features of, 372–373
monumenting under, 377
objective of, 371, 372
Plots, 184

PLS (Public Land Survey), 649
PLSS, see Public Land Survey System
Plymouth Company, 250
Points:
as corners, 81
in land descriptions, 478–479
in Manual of Instructions of 1947, 294
straight lines defined by dimension from, 470
Point of confusion, 336, 337
Poles (measurement unit), 237
Pollard’s Lessee v. Hagan, 208
Positional tolerance, for original corners, 78
Possession. See also Adverse possession
actual, 412–415, 419
constructive, 419
continuous, 414–416
exclusive, 417
facts of, 628–629
of, 356–357
open and notorious, 413–414
statute of limitations, 417–418
Possession evidence, 124–125
Possession surveys, 336
Practical location, 62, 91, 398–399
Precision, of measurements, 157–158
Precolonial surveys, 235–237
Preponderance of evidence, 32–34, 99
Prescription, 391, 406–407
Prescriptive easements, 391
Prescriptive title, 409
Presumptive evidence, 38–39
Presurveying:
former practices of, 370–371
for public domain, 235
without recording, 383
Preliminary motions, 253
Prima facie evidence, 25, 30, 118
Primary evidence, 26
Principal meridians, 284, 285
First, 284
in Manual of Instructions of 1947, 294
Second, 286
Third, 286
Priority of Calls, 246
Prior surveys, 279
Private field notes, 58, 60
Private plats, 203–206
Private rights (Stewart v. Carleton), 585–588
Private surveys:
admissibility of, 63
historical, 93
measurements used in, 168
preserving evidence, 320–321
Privity of contract, 504–505
Probative evidence, 37
Production of documents, requests for, 556
Professional:
attributes of, 522
definition of, 517–519
discredit to, 530
Professional, defining, 517–518,
See also Professional stature
Professional liability, 499–515, 524
of abstractors, 513–515
avoiding, 511–512
damages, 513
discovery rule, 501–504
elements of, 512
expressed and implied guarantees, 509–510
negligence vs. breach of contract, 508–509
privity of contract, 504–505
standard of care, 505–508
trespass damages, 510–511
Professional standards, 531–532
Professional stature, 517–533
and advertising, 531
attaining, 520–521
attributes of a profession, 522
definition of profession, 517–519
definition of professional, 519
and discovered errors, 529–530
and discredit to the profession, 530
and education, 522–523
employment issues, 529
ethical and professional standards, 531–532
ethics, 525–526
fees, 524–525, 530–531
gaining eminence, 523–525
independent judgment and liability, 524
obligations:
to clients, 528
to other surveyors and profession, 528–529
to the public, 526
and others’ reputations, 529
and position of trust, 523
proof of, 533
provoking litigation, 526–527
Professional stature (continued)
qualification of surveyors, 527
reviewing another’s work, 530
surveyors of questionable
capabilities, 527–528
and unauthorized surveying
practice, 527
Proof:
beyond reasonable doubt, 35
burden of, 24, 29–32
of corners, 119–120, 165–166
defined, 21
degree of, 32, 313
evidence vs., 21, 24
fences as, 128–130, 356,
397
methods of, 35
of original corner monuments,
99–100
of professional stature, 533
Property descriptions, see Land
(property) descriptions
Property rights:
defining extent of, 2
Native Americans’
philosophy of, 234, 237
Property surveying (use of
term), 5
Property surveyors, see
Boundary surveyors
Property value, errors in
measurement and, 179
Proportionate conveyances, 451
Public domain (PD), 248, 249
defined, 276
obtaining small tracts within,
300
presurvey system for, 235
sources of land to, 277, 278
subdivision of, 369
Public Domain system,
274–278.
See also General
Land Office (GLO) surveys
Public lands:
acts creating,
see Land Acts
bearings presumptions,
168–169
resurvey of land grants, 273
surveying system for, 76
Public Land Survey (PLS), 649
Public land surveys, 298–299
Public Land Survey System
(PLSS). See also General
Land Office (GLO) surveys
land area embraced by, 276
and original units of
measurement, 137
and perpetuation of evidence, 315
survey system for public
domain, 76
unit of measurement for, 139
Public Law 92-562, 311
See also Water boundaries
Public trust doctrine, 207
Puerto Rico, 69, 417, 439
Punctuation, in land
descriptions, 486
Punitive damages, 508–509
Putnam, Rufus, 284, 286
Qualifying (habendum) clauses,
464
Quantum (degree) of proof
evidence, 32
Quasi-judicial function of
surveyors, 625–634
duty of the surveyor, 630
facts of possession, 628–629
fixing lines by acquiescence,
629–630
irregular watercourses,
632–633
meander lines, 630–631,
633–634
recovering lost corners,
626–627
riparian rights, 633–634
Questions, in court trials,
540–543, 550–551
Ranges, in U.S. Rectangular
System, 256
Range ratio method (tidal
datum), 216–217
Realengos, 267
Real evidence, see Field
evidence
Reasonable (use of word),
165–166
Reasonable doubt, 35
Rebuttable presumptions, 38, 39
Reckoning direction, 146–147
Recordation, of original surveys,
383
Recording and preserving
evidence, 309–328
with aerial and terrestrial
photographs, 321–325
arrangements for
preservation, 326–327
authority for, 314–315
degree of proof needed, 313
identifying marks on lines and
monuments, 319
in location surveys, 361
oaths and witness evidence,
318–319
original documents, 319–320
perpetuation of evidence,
313–314
private survey records,
320–321
responsibility for, 315–318
by state plane coordinates,
327–328
vanishing evidence, 313–313
with video presentations, 327
Recovering lost corners,
626–627
Rectangular System:
and Act of May 18, 1796, 282
area covered by, 248, 249
boundaries of, 286
Jefferson’s introduction of,
276, 278
protraction program, 298
ranges and townships in, 256
resurvey of public domain
land grants, 273
and Seven Ranges survey,
280–281
Reference calls:
for maps, 488
in metes-and-bounds
descriptions, 450
for written evidence, 56–58
Reference systems, for
coordinates, 379–380
Registration, of titles vs.
ownership, 428
Regulation of surveys:
legal authority for, 338–339
original surveys, 369–370
Relative error of closure, 160
Relevancy of evidence, 35–37
Repeating measurements, 149
Reputation, 529
Reputation evidence, 125–128
Researching records and
documents, 344–349
Residual accidental errors, 161
Resolution of May 12, 1786, 654
The Restoration of Lost or
Obliterated Corners, 298
Resurveys, 333–336
connotation of, 336
and conveyances, 90
defined, 335
of land grants of public
domain, 273
purpose of, 338, 369
retracements vs., 334
Rivers v. Morrell, 602–608
Retracements:
boundaries created by, 334
Cherry v. Slade, 571–585
Diehl v. Zanger, 588–591
of easements, 487
evidence for, 378
field evidence for, 89–93
INDEX

objective of, 144
requirements for, 336–338
resurveys vs., 334
Rivers v. Lozeau, 602–608
and technology, 77–78.
See also Technology
Reviewing another’s work, 530
Rhode Island, 213, 243, 254, 395
Richfield Oil Co., 61–62
“Right of trespass” laws, 318
Rights-of-way, on plats, 198
Ring count of decayed wood, 624
Riparian rights, 633–634
Rittenhouse, David, 280
Rittenhouse compass, 289
Rivers v. Lozeau, 318, 335, 602–608
Road beds, in Southwest, 266
Road rights, in early New England, 251
Rods (measurement unit), 237
Roman Institutes of Justinian, 207–208, 211
Rules of evidence, 14
for ancient documents, 64
and private plats, 204
for retracements, 74
Rules of Evidence for U.S. District Courts and Magistrates, 14, 124
Ruth v. Dight, 502
Satisfactory evidence, 99
Scale, for plats, 189, 195–196
Scarp, 223
Scope of evidence, 18–19, 27, 43–44
Scriveners, qualities of, 459–460
Sectant method, 281
Secondary evidence, 26
Second Principal Meridian, 286
Section lines, 296
Self-calibration, of tapes, 139–140
Seniority of titles, 264–265
Senior rights:
intent of, 66–67
and land descriptions, 457, 464–466
Setbacks, 382–383
Seven Ranges survey, 280–282
principal meridians and baselines, 284
prior surveys system introduced by, 279
public sales of, 262
“Short-cut methods,” 247
Las Siete Partidas, 211–212
Signal error, 163
Ski Roundtop Inc. v. Wagerman, 345
Softwood, 623–624
Soil composition changes, 224
Solar compass, 147
South. See also specific states
historical knowledge as evidence in:
Carolina territory, 259
Georgia, 259–261
Louisiana territory, 264
Maryland, 259
origin of title, 248–249
Tennessee, 260, 262
trans-Appalachian states, 260
Virginia, 249–250
planned and indiscriminate conveying in, 235
South Carolina:
mechanics and calculations, 170
photographic evidence, 325–326
survey systems, 276
Torrens title, 439
water boundaries, 210, 213
South Dakota, 119–120, 439
Southwest, 264–274. See also specific states
early California, 272–273
early settlements, 267
empresario system, 267–268
Gradient Boundary, 271
instructions to surveyors, 268–269
lands of Spanish origin, 265
Mexican land grants, 267
mineral rights, 265
and Native Americans, 271–272
Ordenanza de Intendentes, 267
resurvey of land grants of public domain, 273
rights with Spanish and Mexican grants, 265
road beds, 266
seniority of titles, 264–265
Spanish water laws, 265–266
suits against sovereign, 268
survey of Spanish and Mexican grants, 269–270
units of measurements or length, 273–274
Sovereignty, ownership of lands and, 240
Spanish land grants:
historical knowledge as evidence, 265
indiscriminate settlement prior to survey, 235
resurvey of, 273
rights with, 265
survey of, 269–270
water laws, 265–266
Spiral curves, 482–483
Squatter’s rights, 414
Standards, 175–176, 531–532
accuracy, 176–178
effect of, 79
ethical and professional, 531–532. See also Professional stature of precision, for original corners, 77
state minimum technical standards, 189
Standard of care, 505–508
Standard parallels, 294
State Departments of Transportation, 6
State plane coordinates:
in land descriptions, 492–494
recording and preserving evidence by, 327–328
for subdivisions, 379–381
Stationing, 484
Statute of Enrollments, 242
Statute of limitations: and discovery rule, 501–504
of possession, 417–418
Statutory dedication, 402–403, 405
Statutory proceedings, 390–391
Stewart v. Carleton, 585–588
Straight lines, in land descriptions, 469
defined by coordinates, 475
defined by dimension from a point, 470
defined by monuments, 469–470
Streams:
boundaries in, 228–229
perennial, 265–266
Strip conveyances, 452, 484
Stump holes, 116–117
Subdivisions:
and easements, 374
in Manual of Instructions of 1947, 294–297
use of coordinates in, 379–381
Subdivision descriptions, 447–449, 460
Subdivision laws, 368, 369
Subdivision plats, 192–193, 197, 370
Subpoenas, 557
Substitutes for evidence:
inferences as, 39
judicial notice as, 41–42
INDEX

Sufficiency, of land descriptions, 455
Sufficient evidence, 99
Superior calls, forms used to indicate, 483
Surveys:
calls for, 467
certification of, 381–382
definition of, 4–6
evidence of, see Field evidence
forensic vs. utility, 43–44
land descriptions based on, 459
original, see Original surveys
Survey computations, 149–150
Surveying:
in ancient Greek literature, 239
biblical references to, 238–239
definitions of, 2, 4–5
history of, 3–4, 234. See also Historical knowledge as evidence
steps to follow in, 21–22
three disciplines of, 10
unauthorized practice, 527
Surveyors. See also Boundary (property) surveyors
definition, 4–5
legal advice from, 388–389
qualification of, 527
quasi-judicial function of, 625–634
of questionable capabilities, 527–528
reporting substandard work of, 526
types of evidence gathered/considered by, 26
Surveyor–attorney relationship, 538–539
Surveyor general, 284, 286
Surveyor’s certificates, 199
Surveyor’s Report, 611–619
Survey plats:
contents of, 200
effect of, 195
with omitted information, 195–196
purpose of, 186
surveyor’s certificates, 199
of title surveys for title associations, 196–199
Survey specifications, purpose of, 175–176
Symbols, on plats, 186, 189
Symmes Purchase, 263
Systematic errors, 158–159
Tachometric surveys, 144
“Tacking” on of possession, 415
Tapes, measuring, 139–140, 143
taped distances, errors in, 161–162
Taxes paid, adverse possession and, 418
Tax plats, 204–205
Technology, 72–85. See also Measurements and calculations applying to evidence, 74–75
changes in, 77
coordinates and corners, 80–81
corners control over lines, 81
and development of the law, 7
effect of standards, 79
global positioning systems, 11–12
for land data systems, 11
original corners, 75–76
based on found evidence, 79
and setting lost corners, 80
superior to modern measurement, 79–80
original surveys:
errors in, 78
as without error, 76–77
and retracements, 77–78
and technical skill of surveyors, 9–10
two points (corners) defining a line, 81–82
wise use of, 82–84
Tennessee:
discovery rule, 601
early surveys, 260, 262
indiscriminate settlement prior to survey, 235
Title(s):
with adverse possession:
character of title acquired, 408–409
claim of title, 414
color of title, 418
defined, 247
fee, 374
guarantees of, see Guarantors,
of title and location
historical concept of, 247
parol evidence on, 124
of plats, 187, 188
prescriptive, 409
quality of, 373–375
registration of ownership vs., 428
unwritten, 43, 386, 392
and unwritten transfers of ownership, 392
“virgin,” 392, 408, 409
written (legal), 386
Title and location insurance policies, 438
Tides, 213
Tiffin, Edward, 286–291
Timber Culture Act of 1873, 299
Timing of surveys, 351
Tidal epoch, 214–216
Tidal waters:
datum determination, 219
evidence and procedures for, 213–219
under law, 210–213, 220
navigability for title purposes, 210
Tides, 213
Tiffin, Edward, 286–291
Timber Culture Act of 1873, 299
Timing of surveys, 351
Title(s):
with adverse possession:
character of title acquired, 408–409
claim of title, 414
color of title, 418
defined, 247
fee, 374
guarantees of, see Guarantors,
of title and location
historical concept of, 247
parol evidence on, 124
of plats, 187, 188
prescriptive, 409
quality of, 373–375
registration of ownership vs., 428
unwritten, 43, 386, 392
and unwritten transfers of ownership, 392
“virgin,” 392, 408, 409
written (legal), 386
Title and location insurance policies, 438
INDEX

Title associations, title surveys for, 196–199
Title examination, 344–345
Title guarantee, 375–376
and insurance policies for, 436–438
aids to, 344–345
corrective instruments, 428
U.S. Bureau of Standards, 139, 140
U.S. Forest Service, 6, 155
U.S. Forest Service Forest Products Laboratory, 117
U.S. Supreme Court, 91, 335, 503, 592
Torrens titles, 407, 411, 427, 439–443
advantages and disadvantages of, 440
characteristics of, 439–440
and land courts, 440–443
and location guarantee, 428
principle of title registration, 123, 251
Title identity: and land description, 456–457
plats, 194–195
Title insurance policies, 436–438
Title surveys, for title associations, 196–199
Topographic calls, 121–123
Torrens, Robert, 439
Torrens titles, 407, 411, 427, 439–443
advantages and disadvantages of, 440
characteristics of, 439–440
and land courts, 440–443
and location guarantee, 428
principle of title registration, 439
Totality of evidence, 24, 72
Total stations, 148
Trans-Appalachian states, 260
Transit, 148
Transit lines, 256
Translated words, meanings of, 69
Traverses: closures of, 160, 177–178
errors with, 172–174
Trees: calls for, 104
characteristics of, 111–117
colloquial names of, 116
growth of, 112–113
identifying, 104–111
remains of, 116–117
ring count, 113–116
wooden evidence, 620–624
Trespass, 334
Trespass, 337
damages of, 510–511
punitive damages for, 508–509
Trial court, 540
True metes-and-bounds, 488–490
True (astronomical) north, 168, 169
Trunnion error, 172, 173
Trust, 523
TU, see Theoretical uncertainty
Uncalled-for monuments: and land descriptions, 467
and location surveys, 355
Uncertainty(-ies), 136, 337
in area, 174–175
computation of, 162
and measurements, 358–361
statements of, 178–179
U.S. Bureau of Standards, 139, 140
U.S. Forest Service, 6, 155
U.S. Forest Service Forest Products Laboratory, 117
United States Coast and Geodetic Survey (USC&GS, USCGS), 143, 170, 475, 507
United States Military District, 263
United States v. Doyle, 597–602
Unwritten agreements, 389–390, 394–401
agreement by adjoining owners, 396–398
described line known, 395
elements of, 394–395
possession following, 399–400
practical location, 398–399
property line in dispute, 395–396
recognition and acquiescence, 400–401
Unwritten dedication, 401–424
canopy, 402
and easement, 402
effect of, 405–406
implied intent to dedicate, 404
by plat, 406
prescription, 406–407
purpose of, 405
revoking offer, 405
statutory dedication, 402–403
Unwritten law, 45
Unwritten titles, 43, 386, 392
Unwritten transfers of ownership, 385–424
acts of nature, 390
actual vs. constructive possession, 419
adverse possession, 407–418
actual possession, 412–415
burden of proof, 408
character of title acquired, 408–409
claim of title, 414
color of title, 418
continuous possession, 414–416
effect of survey on adverse rights, 409
elements of adverse rights, 411–412
exclusive possession, 417
historical concepts of, 407
hostile possession, 416
open and notorious possession, 413–414
prescriptive title, 409
statute of limitations, 417–418
statutory character of, 407–408
taxes paid, 418
against whom adverse rights do not run, 410–411
adverse relationships, 390
agreement deed, 390
difficulty of determining rights with, 419–423
duties to unwritten title transfers, 423–424
estoppel, 392–394
and good faith, 418–419
government, 391
and legal advice from surveyors, 388–389
prescriptive easements, 391
recent court decisions related to, 391
statutory proceedings, 390–391
and surveyor’s responsibility, 424
unwritten agreements, 389–390, 394–401
agreement by adjoining owners, 396–398
described line known, 395
elements of, 394–395
possession following, 399–400
practical location, 398–399
property line in dispute, 395–396
recognition and acquiescence, 400–401
Unwritten dedication, 401–424
canopy, 402
and easement, 402
effect of, 405–406
implied intent to dedicate, 404
by plat, 406
prescription, 406–407
purpose of, 405
revoking offer, 405
statutory dedication, 402–403
Unknown law, 45
Unwritten agreements, 389–390, 394–401
agreement by adjoining owners, 396–398
described line known, 395
elements of, 394–395
possession following, 399–400
practical location, 398–399
property line in dispute, 395–396
recognition and acquiescence, 400–401
Unwritten dedication, 401–424
agreement by adjoining owners, 396–398
described line known, 395
elements of, 394–395
possession following, 399–400
practical location, 398–399
property line in dispute, 395–396
recognition and acquiescence, 400–401
Unwritten dedication, 401–424
agreement by adjoining owners, 396–398
described line known, 395
elements of, 394–395
possession following, 399–400
practical location, 398–399
property line in dispute, 395–396
recognition and acquiescence, 400–401
Unwritten dedication, 401–424
agreement by adjoining owners, 396–398
described line known, 395
elements of, 394–395
possession following, 399–400
practical location, 398–399
property line in dispute, 395–396
recognition and acquiescence, 400–401
INDEX

Unwritten transfers of ownership (continued)
poole of, 405
revoking offer, 405
statutory dedication, 402–403
unwritten titles, 392
and written titles, 392
USC&GS, USCGS, see United States Coast and Geodetic Survey
USGS, 143
Utah, 439
Utility surveys, 43–44, 341–342, 539

Vacation, 374
Validios, 267
Value of evidence, 28–29
judging, 40–41
monuments, 94
verbal evidence, 48, 67–69
written evidence, 48–49
Value of property, errors in measurement and, 179
Vanishing evidence, recording and preserving, 313–313
Vera, 274
Verbal agreements, see Unwritten agreements
Verbal evidence, 48
to determine intent of conveyances, 64–65
value of, 67–69
Vermont, 243, 276
Video presentations, for recording and preserving evidence, 327
Videotaped evidence, 553
Virginia, 220, 244, 249–250, 439
Virginia Military District, 262
“Virgin” title, 392, 408, 409
Warranty deeds, 429
Washington, George, 243, 244
Washington, John, 244
Washington, Lawrence, 244
Washington State, 210, 213, 439, 601
Water boundaries, 207–230
changes in, 230
irregular watercourses, 632–633
nonpublic trust waters, 228–230
nontidal waters:
botanical evidence, 224–225
definitions, 220–222
geomorphological features, 222–223
hydrological evidence, 225–226
ordinary high water mark determination, 226–228
soil composition changes, 224
types of evidence, 222
public title interest, 207–210
tidal waters:
datum determination, 219
evidence and procedures for, 213–219
under law, 210–213, 220
Weeks Law, 299
Weight of evidence:
new vs. old, 42–43
original corners, 130–131
preponderance of evidence vs., 34
Western Reserve (Connecticut), 263
Western Title Guaranty Co. v. Murray and McCormick, Inc., 511–512
West Virginia, 235
Wigmore, 15–16
Williams, M., 46
Wisconsin, 97, 124, 415
Witnesses, 544
expert, see Expert witnesses lay, 544–545
Witness evidence, recording and preserving, 318–319
Witness objects, 104
Wooden evidence, 620–624.
See also Trees
Words:
as evidence, 48–50. See also Verbal evidence; Written evidence
locating boundaries described by, see Location surveys
Writing technique, for land descriptions, 462
Written contracts, 342–343
Written documents, boundaries defined by, 331–332
Written evidence, 48–67, 69
ambiguities in:
extrinsic evidence of, 60–62
patent ambiguities, 62–63
ancient survey plats and documents, 63–64
conveyances determining intent of, 64–65
interpreting words in, 64
deeds:
conclusiveness of, 53–54
construed as a whole, 55–56
fields notes as, 58–60
to identify property
Descriptions, 51–53
as indispensable, 50–51
of intent of senior, equal, or junior rights, 66–67
plats vs., 58
practical location and descriptions, 62
reference calls for, 56–58
rules for interpreting, 54–55
under Statute of Frauds, 3
value of, 48–49
Written title, 386
Wyoming, 415