

INDEX.

- Acer dasycarpum*, 502.
negundo, 503.
saccharinum, 502.
- Actinocrinus multiradiatus*, 73, 76, 88.
scitulus, 77, 88.
- Administrative reports, 9.
- Aftonian, 104, 343.
- Albertan, Louisa county, 102.
- Algonkian, 23.
- Allorisma marionensis*, 146.
- Alluvium, Clay and O'Brien counties, 483.
 Louisa county, 113.
 Marion county, 166.
 Page county, 448.
 Pottawattamie county, 265.
- Ambocœlia planoconvexa*, 222, 225, 423, 429, 432, 434.
umbonata, 221.
- Analyses.
 Artesian water, 273.
 Coggan limestone, 320.
 Gower limestone, 311, 312, 386.
 Independence shale, 325.
 Ironstone, 151.
 Limestone, 336.
 Lower Davenport limestone, 327.
 Mineral spring water, 456.
 Otis limestone, 323.
 Saint Louis limestone, 186.
- Anamosa limestone, 305.
- Anderson, C. F., brickyard, 272.
- Anderson, J. D., quarry, 117.
- Annularia longifolia*, 162.
- Apple, C., quarry, 431.
- Archæocidaris*, 222, 225.
triserrata, 228.
- Artesian water, State School for Deaf and Dumb, 273.
 Wells, 194.
- Allorisma subcuneata*, 228.
- Athyris*, 72, 74.
corpulenta, 77, 82, 84.
crassicaudinalis, 74, 86.
incrassatus, 77, 87.
 (*Seminula*) *subquadrata*, 146.
 (*Seminula*) *subtilita*, 221, 224, 423, 432, 425.
- Atrypa aspera*, 340, 341.
reticularis, 341.
- Aviculopecten*, 76.
carboniferous, 222, 224, 225.
caroli, 85.
fisheri, 79.
occidentalis, 223.
- Axophyllum rude*, 228.
- Bain, H. F., 90, 239.
- Ballast, 276.
- Batocrinus laura*, var. *sinuosus*, 80, 88.
pistillus, 76, 88.
- Basswood, 502.
- Bealer quarries, 378, 329, 311, 312.
- Bellamy, Herbert, acknowledgments, 197.
- Bellerophon*, 82.
bilabiatius, 80, 85.
carbonaria, 222.
crassus, 223.
- Besley, L. C., brickyard, 272.
- Beyer, S. W., Mineral Production of Iowa, 1900, 37.
 Work of, 35.
- Bifidaria armifera*, 263.
pentodon, 113, 262, 263, 264.
- Big lake, 203.
- Bitter Nut, 506.
- Black Diamond mine, 176.
- Black Haw, 505.
- Black Walnut, 505.
- Bloom, W. H., acknowledgments, 496.
- Boulder clay, pebbles of, 253.
 Pottawattamie county, 250.
 Thickness of, 250.
- Boyer lake, 203.
- Box elder, 503.
- Braddyville section, 424.
- Brewer, O. H., 436.
- Brick works, Cedar county, 387.
 Clay county, 491.
 Louisa county, 120.
 Marlon county, 190.
 O'Brien county, 491.
 Page county, 453.
 Pottawattamie county, 270.
 Production in 1900, 45.

- Brick plants.
 Anderson, C. F., 272.
 Besley, L. C., 272.
 Coin, 454.
 Cooley, J. G., 491.
 Crabill, J. M., 444, 453.
 Dye Bros., 272.
 Essex, 454.
 Heinke, H. B., 272.
 Hughes, Martin, 272.
 Hurley, A. S., 491.
 Kettill, G. H., 387.
 King, 190.
 Kinzie, D. V., 272.
 McClurkin, Ockletree & Co., 120.
 McNaughton, 453.
 Norcut, S. B., 272.
 Oakes Bros., 120.
 Pella Brick and Tile Company, 190.
 Rankin Bros., 446, 454.
 Redfern, Saul, 272.
 Seifert Bros., 272.
 Weaver, J. P., 272.
 Wickham Bros., 272.
 Wright, 190.
 Zerber, O. M., 120.
- Bryant, Hartson, quarry, 223, 269.
- Buchanan gravels, Cedar county, 366.
 Louisa county, 105.
- Building stone, Pottawattamie county,
 269.
 Cedar county, 377.
 Louisa county, 117.
 Marion county, 183.
 Page county, 453.
- Burroughs quarry, 382.
- Buwalda mine, 175.
- Calvin, Samuel, Acknowledgments, 126,
 277, 497.
 Cited, 298, 239, 284.
 Geology of Page county,
 397
- Cambrian, 23.
- Campophyllum torquium*, 224.
- Carboniferous, Cedar county, 342.
 Marion county, 142.
 Page county, 415.
 Pottawattamie county,
 220.
- Cary quarry, 384.
- Carya amara*, 506.
- Cedar Bluff quarry, 381.
- Cedar county, geology of, 279.
 Aftonian, 343.
 Anamosa limestone, 305.
 Area, 282.
 Bealer quarries, 378.
 Bowlders, 368.
 Buchanan gravels, 366.
 Building stone, 377.
 Carboniferous, 342.
 Cedar river, 288.
- Cedar county, Cedar river, terraces of,
 291.
 Clay, 387.
 Coggan limestone, 320.
 Devonian, 319.
 Drainage, 286.
 Economic geology, 377.
 Elevations, 285.
 Ferretto, 346.
 Geological formations,
 301.
 Gower limestone, 304.
 Independence shale, 323.
 Iowan drift, 367.
 Kansan drift, 344.
 Location, 282.
 Le Claire limestone, 305.
 Lime, 384.
 Loess, 375.
 Lower Davenport, 325.
 Niagara, 304.
 Ordovician, 303.
 Origin of paha, 365.
 Otis beds, 321.
 Paha, 356.
 Physiography, 284.
 Pleistocene, 343.
 Preglacial drainage, 297.
 Pre-Kansan, 343.
 Relief, 284.
 Road material, 388.
 Sections of the Devonian,
 329.
 Silurian, 304.
 Sinks, 296.
 Soils, 389.
 Stanwood paha, 356.
 River, 298.
 Stratigraphy, 300.
 Topography of Kansan
 drift, 351.
 Upper Davenport, 327.
 Wapsipinicon river, 286.
 Water power, 389.
- Cedar river, 288.
 Terraces of, 291.
- Cedar Valley lime kiln, 387.
- Cement, Marion county, 189.
- Chaetetes*, 146.
- Choke Cherry, 504.
- Chomatodus*, 74, 84.
- Chonoplectus fisheri*, 73, 77, 79, 84.
 Sandstone, 83.
- Chonetes*, 77, 84
granulifera, 221, 222, 225, 226,
 423, 425, 432.
illinoensis, 77, 87.
logani, 73, 74, 86, 89.
verneuilliana, 425.
- Cladodus*, 74, 77, 84, 88.
- Clarinda drill hole, 418.
 Wells at, 455.
- Clark, C. M., acknowledgments, 126.

- Clay, Cedar county, 387.
 Clay and O'Brien counties, 491.
 Ironstone, analyses of, 151.
 Louisa county, 119.
 Marion county, 189.
 Output for 1900, 45.
 Pottawattamie county, 270.
 Total production, 40.
 Value of, 39.
- Clear creek, 293.
 Clinton lobe, 373.
 Crab Apple, 504.
 Crabill brick yard, 444, 453.
Crania crenistriata, 341.
Cratægus coccinea, 504.
 Cretaceous, distribution of, 238.
 General section of, 237.
 Page county, 439.
 Pottawattamie county, 233.
 Sandstone, Clay and O'Brien counties, 489.
- Crooked creek, 294.
 Coal. (See also Mines and Des Moines formation.)
 Clay and O'Brien counties, 492.
 Creek mines, 178.
 How formed, 20.
 Louisa county, 120.
 Marion county, 146, 169.
 Measures, quarries in, 187.
 Page county, 450.
 Pottawattamie county, 276.
 Total production, 40.
 Value of, 39.
 Wherefound in Iowa, 20.
 Coalport mines, 179.
 Coggan limestone, 320.
 Composition of, 320.
 Sections of, 329.
 Cooley, J. F., brickyard, 491.
 Concretions, fern bearing, 161.
 Conglomerates of Coal Measures, 152.
Conocardium, 321.
 Constructional valleys, 467.
Conularia micronema, 79, 85.
Conulus fulvus, 113, 262, 264.
 Copper, 192.
Corylus americana, 506.
 Cottonwood, 506.
Ctenacanthus, 76, 88.
 Culp, A., well, 455.
Cyrtoceras, 342.
- Dakota sandstone, 239, 439.
 Pebbles in, 240.
- Dalzell quarry, 117.
Dalmanites erina, 321.
 Davenport, Lower, see Lower Davenport.
 Davenport, Upper, see Upper Davenport.
 Davisson, W. H. acknowledgments, 126.
 Deep well at Pella, record, 142.
- Deep wells, Pottawattamie county, 217.
 Deformations, Page county, 449.
 Pottawattamie county, 267.
Deltodopsis bialveatus, 81, 88.
 convexus, 81, 88.
Deltodus, 77, 88.
 occidentalis, 74, 84.
 spatulatus, 81, 88.
Derbya crassa, 222, 423, 424, 432.
 robustus, 425.
 Des Moines formation, 21, 22.
 Louisa county, 93.
 Marion county, 146.
- Devonian, Cedar county, 319.
 Dey, Mervin, acknowledgments, 496.
Dichocrinus striatus, 76, 88.
Dictyospongia, 90.
Dielasma bovidens, 225, 425.
 rowlei, 75.
Dizygocrinus rotundus, 77, 80, 88.
Dorycrinus quinquelobus, 76, 77, 88.
 Drainage, Cedar county, 286.
 Clay and O'Brien counties, 471.
 Louisa county, 65.
 Marion county, 135.
 Page county, 413.
 Pottawattamie county, 211.
 Preglacial, 297.
- Drill holes, Page county, 437.
 Dunbar, J., spring, 456.
 Analysis of water, 456.
 Dubuque Ore Concentrating Co., 52.
 Dunreath mines, 176.
 Dye Bros., brickyard, 272.
- Eagle Rock, 155.
 Eastman, C. R., acknowledgments, 126.
Edmondia, 79.
 burlingtonensis, 77, 85.
- Economic Products, Cedar county, 377.
 Clay and O'Brien counties, 490.
 Louisa county, 117.
 Marion county, 169.
 Page county, 450.
 Pottawattamie county, 269.
- Elderberry, 505.
 Elevations, Cedar county, 285.
 Clay and O'Brien counties, 482.
 Louisa county, 65.
 Marion county, 135.
 Page county, 414.
 Pottawattamie county, 210.
- Elk Cliff, 156.
 Elk lake, 468.
Elephas primigenius, 377.
 English River gritstone, 83.
Enteleles hemiplicata, 432, 434.
 Erickson, O., quarry, 431.

- Erisocrinus typus* 222, 228.
Eutrochocrinus christyi, 76, 80, 88.
lovei, 73, 75, 77, 80, 88.
Eumetria altirostris, 82, 84.
Eupachycrinus verrucosus, 228.
Euomphalus rugosus, 423.
 Exchanges, list of, 29.
- Falk test boring, 438.
 Faust, Morgan, acknowledgments, 197.
 Federal Census Bureau, 40.
Fenestella 77, 84.
 Ferretto, 164, 346
 Fillmore, C. W., acknowledgments, 496.
Fistulipora nodulifera, 221, 226, 425.
 Flagler mines, 179.
 Forest bed, 165.
 Forestry notes, Clay and O'Brien counties, 499.
 Fossils of Coal Measures, 161.
 Loess, 261.
Fraxinus americanus, 505.
 Frink quarry, 382.
 Fuel, 491.
 Fulk, Henry, 451.
Fusulina, 222.
 cylindrica, 221, 222, 223, 224, 225, 226, 421, 425, 432.
- Gas, in drift, 25.
 Necessary conditions for, 24.
 Origin of, 22.
 Geers, quarry, 430.
 Geest, Louisa county, 96.
 General section of Mississippian rocks, Louisa county, 82.
 Missourian, 229.
- Geological Board, 3.
 Corps, 4.
 Formations, Cedar county, 301.
 Clay and O'Brien counties, 483.
 Louisa county, 69.
 Marion county, 140.
 Page county, 415.
 Pottawattamie county, 217.
- Geology of Cedar county, 279.
 Clay and O'Brien counties, 461.
 Louisa county, 55.
 Marion county, 127.
 O'Brien and Clay counties, 461.
 Page county, 397.
 Pottawattamie county, 199.
- Gilbert, G. K., cited, 133.
Glossites elliptica, 80, 85.
Glyptopora, 88.
 Gold in Iowa, 18.
 Gower limestone, 304.
 Composition of, 311.
- Gower limestone, sections of, 312.
 Thickness of, 310.
 Weathering of, 310.
Grammysia plena, Hall, 74, 82, 84.
 Gray, W. H., & Bros, 218.
 Greenwood Park well, record of, 21.
 Gresham, Geo, 110.
 Gumbo, 255.
 Materials composing, 257.
Gypidula comis, 340 342.
 Gypsum industry, 51.
 Production of, 51.
 Value of, 39.
- Hamilton mines, 181.
 Hawkeye mine, 179.
 Hawleyville section, 423.
 Hawthorn, 504.
 Hazel, 506
 Hecht quarry, 383.
Helicina occulta, 113, 261, 262, 264, 265.
Helicodiscus liveatus, 263.
 Hemke, H. B., brickyard, 272.
 Herndon, gas at, 25.
 Heuser, Luis, well, 363.
 Hills lake, 61.
 Honey Creek lake, 203.
 Horseshoe lake, 61.
 Houser, G. L., cited, 283.
 Howard, G. W., 451.
 Hughes, Martin, brickyard, 272.
 Hurley, A. S., brickyard, 491.
Hustedia mormoni, 225, 425.
- Ice scorings, 268.
Igoceras capulus, 81, 89.
 Illinoian drift, Louisa county, 107.
 Independence shale, 323.
 Composition of, 325.
 Sections of, 335.
- Iowan drift, Cedar county, 367.
 Boulders of, 368.
 Iowa River lowlands, 61.
 Iron, total production of, 40.
 Value of, 39.
 Ironwood, 506.
- Jacoby, C. E., acknowledgments, 496.
 Joints, Louisa county, 115.
 Pottawattamie county, 267.
- Juglans nigra*, 505.
 Juniper, 508.
Juniperus Virginiana, 508.
- Kansan drift, Cedar county, 344.
 Clay and O'Brien counties, 487.
 Louisa county, 105.
 Marion county, 163.
 Page county, 440.
 Topography of, 351.
- Kelly, H. G., acknowledgments, 497.
 Kettell, G. H., brick plant, 387.

- Keyes, C. R., cited, 90, 91, 131, 402, 403, 418.
 Kinderhook group, 89.
 King brickyard, 190.
 Kinne, F. M., acknowledgments, 197.
 Kinzie, D. V., brickyard, 272.
 Kirchner, J. A., 494, 496.
 Klim lake, 61.
 Knight, Nicholas, 311, 320, 323, 325, 336, 386.
 Knoxville mines, 179.
 Kramer, Chas., well, 363.
 Larrabee, H., well, 420, 435, 437.
 Lead, 193.
 Lead and zinc, value of, 39.
 Production of, 40.
 Le Claire limestone, 305.
 Leonard, A. G., acknowledgments, 497.
 Work of, 31.
Lepidosteus, 446.
 Letts, natural gas at, 25, 124.
 Leverett, Frank, cited, 64, 107, 108.
Limnaea caperata, 112, 264.
 humilis, 112, 113, 264.
 Lime, Cedar county, 384.
 City lime kilns, 386.
 Quarries, 330, 331.
 Kilns, Cedar Valley, 387, 329, 312.
 Lime City, 315, 330, 386.
 Lime, Marion county, 189.
 Limestone, production of, 50.
 Linden, 502.
 Linn, 503.
 Linquist, C. A., coal mine, 435, 437, 438, 452.
 Lithographic limestone, 85, 188.
 Little Sioux river, 472, 476.
Lobocrinus pyriformis, 75, 77, 87, 88.
 Loess, Cedar county, 375.
 Clay and O'Brien counties, 483.
 Fauna of, 261.
 Louisa county, 111.
 Marion county, 165.
 Materials composing, 257.
 Page county, 444.
 Pottawattamie county, 258.
 Lonsdale, E. H., 239.
Lophophyllum proliferum, 222.
 profundum, 224.
 Lost Island lake, 468, 477.
 Louisa county, geology of, 55.
 Aftonian, 104.
 Alluvium, 113.
 Buchanan gravels, 105.
 Building stone, 117.
 Clays, 119.
 Coal, 120.
 Des Moines formation, 93.
 Drainage, 65.
 Economic products, 117.
 Elevations, 64.
 Geest, 96.
 Louisa, Geological formations, 69.
 Structure, 114.
 Illinoian drift, 107.
 Joints, 115.
 Kansan drift, 105.
 Loess, 111.
 Minerals, 116.
 Mississippian, 71.
 General section of, 82.
 Natural gas, 121.
 Ozarkian, 96.
 Physiography, 60.
 Pleistocene, 101.
 Pre-Kansan, 102.
 Saint Louis limestone, 92.
 Sangamon, 109.
 Soils, 125.
 Stratigraphy, 68.
 Terrace, 113.
 Topography, 60.
 Water supply, 125.
 Well records, 96.
 Yarmouth soil, 105.
 Lower Burlington limestone, 87, 90.
 Davenport limestone, 325.
 Composition of, 327.
 Section of, 332.
 Lowery, G. H., 420.
Loxonema, 74, 85.
 Maple Mill shale, 83.
 Macbride, T. H., geology of O'Brien and Clay counties, 461.
Macrodon cochlearis, 79, 85.
 Main Lower chert, 87.
 Mammoth, remains of, 377.
 Manawa lake, 203.
 Marion county, geology of, 127.
 Alluvium, 160.
 Analysis of clay ironstone, 151.
 Artesian wells, 194.
 Building stone, 182.
 Carboniferous, 142.
 Cement, 189.
 Clays, 189.
 Coal, 169.
 Copper, 192.
 Des Moines formation, 146.
 Drainage, 185.
 Economic products, 169.
 Elevations, 185.
 Fossils of Coal Measures, 161.
 Geological formations, 140.
 Kansan drift, 163.
 Lead, 193.
 Lime, 189.
 Lithographic stone, 188.
 Location, 160.
 Loess, 165.
 Ochre, 191.
 Physiography, 131.
 Pleistocene, 163.

- Marion, Red Rock sandstone, 153.
 Saint Louis limestone, 142, 186.
 Analysis of, 186.
 Sand ridges, 167.
 Soils, 196.
 Stratigraphy, 140.
 Topography, 131.
 Water power, 139.
 Supply, 193.
 Zinc, 193.
- Martin, John, quarry, 222, 269.
 Marysville mines, 181.
 Maxwell, J. D., 439.
 McClurkin, Ockletree & Co., brick yard, 120.
 McGee, W. J., 356.
 Cited, 283.
 McLeod quarry, 382.
 McNaughton brickyard, 453.
Meekella striatocostata, 432.
 Meyers, P. F., acknowledgments, 126.
 Miller, B. L., geology of Marion county, 127.
 Miller, Wolf, quarry, 431.
 Minerals, Louisa county, 116.
 Mineral Point Zinc Company, 52.
 Mines.
 Black Diamond, 176.
 Buwalda, 175.
 Huwkeye, 179.
 Ingraham, 451.
 Linqvist, C. A., 435, 452.
 O. K. Coal Company, 180, 197.
 Otley Coal Company, 176.
 Roberts & McCloskey, 176.
 Success, 176.
 Vriezelaar & Smith, 176.
 Whitebreast Fuel Company, 179, 197.
 York Coal Company, 181.
 Mineral production in Iowa in 1900, 37.
 Mississippian series, Louisa county, 71.
 Missourian, fossils of, 231.
 General section of, 229.
 Page county, 415, 419.
 Pottawattamie county, 220.
 Typical sections of, 422.
- Modimorpha* 81, 84.
 Montrose cherts, 89, 90.
 Morgan Valley mines, 177.
 Morris, J. R., quarry, 184.
 Morrison, G. S., 266.
 Mud lake, 468.
Myalina subquadrata, 431.
- Natural gas in Iowa, 221.
 Louisa county, 121.
 Nodaway coal, 427, 435, 437, 450.
 Nelson, J. A., acknowledgments, 126.
Neuropteris angustifolia, 162.
hirsuta, 162.
 Niagara, Cedar county, 304.
 Norcutt, S. B., brickyard, 272.
 Norton, W. H., 283, 402.
- Norton, W. H., Geology of Cedar county, 279.
 Work of, 33.
- Oakleaf, J. L., acknowledgments, 277.
 Oaks Bros., brickyard, 120.
 O'Brien and Clay counties, geology of, 461.
 Acknowledgments, 496.
 Alluvium, 483.
 Clays, 491.
 Coal, 492.
 Constructional valleys, 467.
 Cretaceous sandstone, 489.
 Drainage, 471.
 Economic products, 490.
 Elevations, 482.
 Forestry notes, 499.
 Fuel, 491.
 Geological formations, 483.
 Kansan drift, 487.
 Location, 463.
 Loess, 483.
 Physiography, 465.
 Pre-Kansan sands, 489.
 Pre-Wisconsin sands, 487.
 Soils, 490.
 Stratigraphy, 482.
 Topography, 465.
 Water supply, 495.
 Wisconsin clays, 486.
 Gravels, 484.
- Ochre, 191.
 Oil in Iowa, 22.
 Necessary conditions for, 24.
 Origin of, 22.
 O. K. Coal company mines, 180.
 Oneota, 23.
 Oolite ledges, 86.
 Ordovician, 303.
 Origin of natural gas, 22.
 Paha, 365.
 Petroleum, 22.
- Orodus*, 77, 88.
Orthis iowensis, 341.
keokuk, 146.
macfarlanei, 327, 328, 341.
pecosi, 425.
Orthoceras, 72, 86, 89.
indianensis, 85.
inequalis, 82, 85.
whitei, 79, 80, 85.
- Orthothes* *inequalis*, 77, 79, 84, 85.
Ostrya virginica, 506.
 Otis limestone, 321.
 Composition of, 322.
 Sections of, 333.
- Otley coal company, 175.
 mines, 175.
 Output of clay for 1900, 45.
Ovidos cavifrons, 261.
 Owen, D. D., 130, 153, 283.
 Ozarkian, 96, 101.

- Page county, geology of, 397.
 Alluvium, 448.
 Area, 400.
 Brick, 453.
 Building stone, 453.
 Carboniferous, 415.
 Coal, 450.
 Cretaceous, 439.
 Dakota sandstone, 439.
 Deformations, 449.
 Drainage, 413.
 Drill holes, 437.
 Economic products, 450.
 Geological formations, 415.
 Kansan drift, 440.
 Location, 400.
 Loess, 444.
 Missourian, 415.
 Correlations, 419.
 Divisions of, 419.
 Typical sections of, 422.
 Physiography, 405.
 Pleistocene, 440.
 Soils, 449.
 Summary, 457.
 Stratigraphy, 414.
 Tile, 453.
 Topography, 405.
 Unconformities, 449.
 Water power, 456.
 Supplies, 454.
- Paha, 356.
 Origin of, 365.
- Palmer, J. H., quarry, 430.
- Parson's lake, 62.
- Pella beds, 145, 185.
 Fossils of, 146.
- Pella Brick and Tile company, 190.
- Deep well, 142.
- Mines, 175.
- Pentamerus comis*, 327, 328.
- Pentremitis*, 74, 75.
 elongatus, 77, 88.
 koninekana, 146.
- Peripristis semicircularis*, 222.
- Petrodus*, 163.
- Petroleum, origin of, 22.
- Phillipsastrea billingsi*, 328, 341, 342.
- Physiography, Cedar county, 284.
 Clay and O'Brien counties, 465.
 Louisa county, 60.
 Marion county, 131.
 Page county, 405.
 Pottawattamie county, 203.
- Pignut, 506.
- Pinna peracuta*, 221, 224.
- Pinnatopora*, 221.
- Platycrinus glyptus*, 76, 88.
 nodostratus, 76, 88.
- Platyschisma*, 82, 85.
- Pleistocene, Cedar county, 343.
- Pleistocene, Clay and O'Brien counties, 483.
 Louisa county, 101.
 Marion county, 163.
 Page county, 440.
 Pottawattamie county, 248.
- Polygyra leai*, 262, 264.
 multilineata, 113, 262, 263, 264.
- Polypora submarginata*, 221.
- Populus deltoidea*, 506.
- Porcellia obliquinoda*, 82, 85.
- Pottawattamie county, geology of, 199.
 Alluvium, 265.
 Area, 202.
 Ballast, 276.
 Boulder clay, 250.
 Building stone, 269.
 Carboniferous, 220.
 Clay, 270.
 Coal, 276.
 Cretaceous, 233.
 Dakota, 239.
 Deep explorations, 217.
 Deformations, 267.
 Economic products, 269.
 Elevations, 210.
 Flood plains, 203.
 Fossils of Missourian, 231.
 Geological formations, 217.
 Gumbo, 255.
 History of drainage, 211.
 Ice scorings, 268.
 Joints, 267.
 Loess, 258.
 Fossils of, 261.
 Missourian, 220.
 Physiography, 203.
 Pleistocene, 248.
 Soils, 276.
 Stratigraphy, 217.
 Tertiary erosion, 242.
 Topography, 203.
 Uplands, 207.
 Valley drift gravel, 254.
 Water supply, 273.
 Well records, 243.
- Pottery, 191.
- Pre-Kansan drift, 343.
 Louisa county, 102.
- Preglacial drainage, 297.
- Productella concentrica*, 72, 86.
 nummularis, 82, 84.
- Production of building stone, 49.
 Clay, 40.
 Coal, 40.
 Gypsum, 40.
 Iron, 40.
 Lead and zinc, 40.
 Limestone, 50.
 Minerals, 40.
- Productus*, 73.
 burlingtonensis, 74, 76, 80, 81, 89.
 cooperensis, 77, 84.

- Productus*.
cora, 221, 225, 226, 228, 425, 432.
costatus, 221, 425.
curtirostra, 82, 84.
laevicostus, 77, 79, 84.
longispinus, 221, 222, 425, 429, 434.
marginicinctus, 146.
nebraskensis, 221, 224, 225, 429, 432.
pertenuis, 221, 225.
semiriticulatus, 75, 80, 425, 429, 432, 434.
symmetricus, 425.
Proetus, 321.
 Prickley Ash, 502.
Prunus americana, 504.
virginiana, 504.
Psammodus glyptus, 80, 88.
Ptyctodus calceolus, 342.
Pugnax striatocostata, 74, 77, 84.
uta, 225, 432.
Pupa muscorum, 263, 264.
Pyramidula altirnata, 262, 263.
perspectiva, 113.
striatella, 113, 263, 264.
strigosa iowensis, 113.
Pyrus iowensis, 504.
- Quarries.
 Anderson, J. D., 118.
 Apple, C., 437.
 Bealer, E. J. C., 312, 329, 378.
 Bryan, Hartson, 269.
 Bryant, W. C., 118.
 Burrough, 383.
 Cary, 384.
 Cedar Bluff, 381.
 Erickson, O., 431.
 Frink, 382.
 Geers, 430.
 Gray, J., 118.
 Hecht, 383.
 Lime City, 330.
 Lohmann, Lombard, 318.
 Martin, John, 269.
 McLeod, 382.
 Miller, Wolf, 431.
 Moore, F. J., 118.
 Morris, J. R., 184.
 Palmer, J. H., 430.
 Red Rock, 187.
 Rees, J. H., 184.
 Snapp, David, 269.
 Springston, J. H., 118.
 Turner, Wm., 118.
 Wallick, 383.
 Wasson, J. H., 118.
 Whann, 384.
- Rain, R. F., 217.
 Randall, E., acknowledgments, 197.
 Rankin Bros., brickyard, 446, 454.
 Records of wells, 243.
 Red Cedar, 508.
- Red Haw, 504.
 Red Rock sandstone, 153.
 quarry, 187.
 Coal and Mining Company, 197.
 Redfern, Saul, brickyard, 272.
 Rees, J. H., quarry, 184.
 Relief, Cedar county, 284.
Rhipidomella burlingtonensis, 74, 77, 78, 79, 84, 86, 88.
Rhombopora lepidodendroides, 221, 222, 226, 423, 432.
Rhus glabra, 503.
vernix, 503.
Rhynchonella (pugnax) ottumwa, 146.
intermedia, 340.
 Road materials, Cedar county, 388.
 Roberts and McCloskey mines, 175.
 Rocky run, 294.
 Rock creek, 294.
 Rothert, H. W., 218.
- Sambucus canadensis*, 505.
 Sand ridges, 167.
 Sandstone, production of, 1900, 51.
 Sangamon, Louisa county, 109.
 Saint Louis limestone, 92.
 Absorption test, 186.
 Analysis of, 186.
 Crushing test, 186.
 Louisa county, 92.
 Marion county, 142.
 Quarries in, 183.
- Saint Peter sandstone, 23.
 Schleuter, Ernest, well, 363.
Schizophoria swallowi, 73, 80, 88.
 Seifert Bros., brickyard, 272.
Seminula argentea, 222, 223, 225, 226.
 Shambaugh mill section, 426.
 Shenandoah, wells at, 456.
 Schimek, B., report on loess fauna, 261.
 Silurian, Cedar county, 304.
 Sinks, 296.
 Slippery Elm, 505.
 Smith, G. L., 436, 455.
 Smooth Sumac, 503.
 Snapp, David, quarry, 224, 269.
 Soft Maple, 502.
 Soils, Cedar county, 389.
 Clay and O'Brien counties, 490.
 Louisa county, 125.
 Marion county, 196.
 Page county, 449.
 Pottawattamie county, 276.
- Spencer, A. C., cited, 161.
 Spencer lake, 477.
Sphyradium edentulum alticola 113, 263, 264.
Spirifer 72.
 biplicatus, 73, 77, 84.
 cameratus, 224, 425, 432.
 grimesi, 76, 80, 89.
 kentuckiensis, 224.

- Spirifer keokuk*, 146.
littori, 146.
logani, 76, 89.
marionensis, 73, 74, 86.
pennatus, 328, 340, 341, 342.
plenus, 73, 75, 78, 89.
subrotundatus, 80, 84.
subumbonus, 320, 321, 323, 329, 332, 333.
- Spiriferina kentuckiensis*, 425, 429.
 Spitznagle lake, 62.
 Stanwood paha, 360.
 River, 298.
 States coal mine, 181.
 Stempel, G. L., acknowledgments, 277.
 Stone, 49.
 Lake, 62.
 Total production of, 40.
 Value of, 39.
- Straparollus*, 80.
 catilloides, 423, 429.
 macromphalus, 80, 85.
 obtusus, 74, 86.
- Stratigraphy, Cedar county, 300.
 Clay and O'Brien counties, 482.
 Louisa county, 68.
 Marion county, 140.
 Page county, 414.
 Pottawattamie county, 216.
- Stropheodonta demissa*, 340, 341, 342.
 Success mine, 176.
Succinea, 262, 263, 264.
 avara, 112, 113, 262, 263, 264.
 grosvenorii, 112, 113.
 obliqua, 113.
- Sugar creek, 295.
 Summary, Page county report, 457.
 Swan lake, 468.
 Swan mines, 177.
 Sweetland Creek beds, 90.
 Synoptical table of formations, Louisa county, 69.
Symphoricarpus occidentalis, 504.
Syringopora, 76, 88.
Syringothyris extenuatus, 73.
- Teleocrinus umbrosus*, 76, 88.
Terebratula (dielasama) turgida, 146.
 Tertiary erosion, 242.
 Terraces, Cedar river, 291.
 Louisa county, 113.
 Pottawattamie county, 265.
- Tilia americana*, 502.
 Tipton lobe, 372.
 Topography, Cedar county, 284.
 Clay and O'Brien cos., 465.
 Louisa county, 60.
 Marion county, 131.
 Page county, 405.
 Pottawattamie county, 203.
- Total production of iron, 40.
 Total production of minerals, 42.
 Total value of minerals, 39.
 Trenton limestone, as source of oil and gas, 23.
 Trumbull lake, 468.
 Turner, J. W., 451.
 Turner, Wm., quarry, 117.
- Udden, J. A., 357.
 Geology of Louisa county, 55.
 Pottawattamie Co., 199.
- Ulmus americana*, 505.
 fulva, 505.
 racemosa, 505.
- Unconformity, Page county, 449.
 Red Rock quarry, 160.
- Upper Burlington limestone, 88, 90.
 Davenport limestone, 327.
 Sections of, 339.
- U. S. Geological Survey, 45.
- Valley drift gravel, 254.
Vallonia gracilicosta, 113, 262, 263, 264.
 Value of mineral production, 1899, 39.
Venustodus robustus, 76, 88.
 Verdi beds, 143, 145.
Vertigo bollesiana, 262.
Viburnum lentago, 505.
Vitrea indentata, 262.
 Vriezelaar and Smith mines, 176.
- Wagner, Wm., acknowledgments, 126.
 Wallick, quarry, 383.
 Wapsipinicon river, 386.
 Wasson, J. H., quarry, 117.
 Wassonville limestone, 86.
 Warstoff's slough, 62.
 Water power, Cedar county, 389.
 Page county, 456.
- Works, Pottawattamie county, 275.
 Supply, Clay and O'Brien counties, 495.
 Louisa county, 125.
 Marion county, 193.
 Page county, 454.
 Pottawattamie county, 273.
- Waterman creek, 475.
 Waukon Iron Co., 53.
 Weaver, J. P., brickyard, 272.
 Weeks, F. G., acknowledgments, 277.
 Weller, Stewart, cited, 84.
- Wells:
 Anderson, A., 244.
 Anderson, C. F., 244.
 Bates, Jos., 98.
 Bike, J., 99.
 Birk, Adam, 300.
 Black, John, 248.
 Boughman, L., 247.
 Boulton, Geo., 97.
 Briggs, E. S., 98.

Wells:

Brown, J. K., 97.
 Cairo Village, 98.
 Clark, W., 96, 247.
 Chilsom, J., 97.
 Clarinda, 455.
 Clayton, Ely, 248.
 Concord school, 96.
 Cotter, Patrick, 98.
 Culp, A., 455.
 Cummings, R. S., 98.
 Curran, J. S., 97.
 Dalton, James, 97.
 Davis, Evan, 98.
 Dillon, E., 244.
 Dobson & Jameson, 96.
 Dowling, H., 246.
 Driver, James, 243.
 Dryden, R. C., 97.
 Dunbar, J., 456.
 Duncan, F. M., 100.
 Dumphries, P. O., 244.
 Emmetsburg, 493.
 Estle, Chas., 99, 124.
 Everett, H., 246, 247.
 Freeman, H., 98.
 Garner, J. W., 100.
 Glenwood, 422.
 Gittins, Henry, 243.
 Graham, J. L., 248.
 Gray, M. A., 99.
 Green, C., 247.
 Greenwood Park, record of, 21.
 Gregg, J. H., 244.
 Griffin, Wm., 124.
 Hadley, A., 124.
 Hannivan, M., 247.
 Harding, J., 244.
 Harris, H., 96.
 Harris, Thomas, 97.
 Harrison, Geo., 97.
 Hass, P., 99.
 Hautt, J., 97.
 Hays, J., 96.
 Hempstead, J. W., 248.
 Heuser, Luis, 363.
 Hewett, Cyrus, 96.
 Holstein, 493.
 Huff, Lyman, 97.
 Humbert, J. O., 243.
 Idle, J., 124.
 Idle, I., 99, 124.
 Jamison, W. D., 96.
 Jones, Humphrey, 100.
 Keck, J. G., 96.
 Killon, Isaac, 243.
 Kramer, Charles, 363.
 Lane, John, 246.
 Larrabee, H., 439.
 Lee, M., 99, 124.
 Lee, R. M., 99, 124.
 Letts, 99, 124.
 Letts, Fay, 99, 124.

Wells:

Letts, Noah, 99, 124.
 Lewis, J., 247.
 Lintner, B., 99, 124.
 Littrell, Etta, 99, 124.
 Lucky, Jos., 100.
 Marshall, D. C., 97.
 McKay, James S., 100.
 McKinney, Chas., 247.
 McPherrin, J. Q., 243.
 Miller, Wm., 97.
 Morning Sun, 97.
 Moore, F. J., 100.
 Moss, Elija, 244.
 Mullen, James, 98.
 Mullen, M., 244.
 Murdock, Edward, 100.
 Murphy, Cornelius, 98.
 Neely, C. C., 248.
 O'Brien, J., 246.
 Orr, H. E., 100.
 Overholt, D. W., 99, 100.
 Owens, Robert, 99.
 Parsons, Dr., 96.
 Parsons, J., 96.
 Parsons, T. M., 96.
 Peterson, 494.
 Pierson, Grant, 247.
 Reisch, P. M., 98.
 Robinson, E., 100.
 Samson, L. M., 98.
 Sanborn, 493, 496.
 Sapp, W. T., 244.
 Schafer, J., 99.
 Schaum, Martin, 100.
 Schleuter, Ernest, 363.
 Schroeder, J., 243.
 Schoefield, J., 97.
 Sellers, W., 98.
 Simonson, Chris., 244.
 Skinner Bros., 98.
 Smith, J. W., 244.
 Sneider, John, 98.
 Sniverly, E. W., 97.
 Spurgeon, Nels, 100.
 Stapp, Ruben, 100.
 State School Deaf and Dumb, 273.
 Stetson, F. B., 97.
 Stortenbecker, Theo., 244.
 Turkington, M. A., 99.
 Van Horne, Jesse, 98.
 Vincent, C., 99, 124.
 Wabintz, C., 99.
 Wagner, J., 98, 124.
 Wagner, W. W., 99, 124.
 Watkins, H. S., 246.
 Watts, James, 247.
 Weibe, John, 363.
 Weiderecht, Fred., 97.
 Wentz, D., 244.
 Westbrook, Daniel, 98.
 Westbrook, H. H., 98.
 Whitney, W., 244.

Wells :

- Williams, L., 100.
 Wilkinson, L. P., 247.
 Wilson, O. F., 246.
 Young, Geo., 99.
 Well records, Louisa county, 96.
 Pottawattamie county, 243.
 Weems, J. B., work of, 36.
 Weibe, John, well, 363.
 West Liberty plain, 61.
 Whann quarry, 384.
 White Ash, 505.
 White, C. A., cited, 131, 239, 401, 465.
 White Breast Creek mine, 178.
 Whitebreast Fuel company, 179.
 White Elm, 505.
 Maple, 502.
 Wickham Bros., brickyard, 272.
 Wild Plum, 504.
 Wilder, F. A., 239.
 Wisconsin clays, 486.
 Wisconsin Gravels, 484.
 Wilson, P. C., cited, 169.
 Wolf Berry, 504.
 Worthen, A. H., 131.
 Wright brickyard, 190.
Xanthoxylon americana, 502.
 Yarmouth soil, Louisa county, 105.
 York Coal Company mine, 181.
Zaphrentis, 72, 74, 86,
 centralis, 76, 88.
 pellaensis, 146
 Zerber, O. M., 119.
 Brickyard, 120.
 Zinc, 193.
 Industry, 52.
Zonitoides arboreus, 113, 262.
 shimekii, 113, 262, 263, 264.

