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SUPPLEMENT TO ECHINODERMATA ARTICLES 8-10

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COLLECTING LOCALITIES

Localities are designated by assigned letters (e.g., Ogz, as recorded in lists of the University of Kansas Paleontological Institute—UKPI) or by letter and numbers (e.g., E 733, recorded in lists of the Esso Production Research Company, Houston). The localities are arranged in groups according to the age of the fossil-bearing strata, beginning with Ordovician (oldest represented) and proceeding upward in stratigraphic succession.

ORDOVICIAN

LOC. DESCRIPTION

Ocb *Fernvale Formation, Richmond Group, Cincinnatian, Upper Ordovician;* near Decaturville, Camden County, Missouri. Moore coll., Univ. Kansas Paleont. Inst.

Ogg *Catheys Limestone, Trentonian, Middle Ordovician;* bottom of Reservoir Hill in Nashville, Davidson County, Tennessee. Moore coll., Univ. Kansas Paleont. Inst.

Ogq *Blanchester Formation (Waynesville), Richmond Group, Cincinnatian, Upper Ordovician;* near Clarksville, Clinton County, Ohio, U. S. Natl. Museum.

Ogr *Maquoketa Shale, Richmond Group, Cincinnatian, Upper Ordovician;* near Spring Valley, Fillmore County, Minnesota, U. S. Natl. Museum.

Ogv *Wilmington Limestone, Richmond Group, Cincinnatian, Upper Ordovician;* near Savannah, Carroll County, Illinois. U. S. Natl. Museum.

Ogw *Fernvale Limestone, Richmond Group, Cincinnatian, Upper Ordovician;* near Cape Girardeau, Cape Girardeau County, Missouri. Ulrich coll., U. S. Natl. Museum.

Ogx *Wilmington Limestone, Richmond Group, Cincinnatian, Upper Ordovician;* near Wilmington, Wills County, Illinois, U. S. Natl. Museum.

Ogz *Cincinnatian, Upper Ordovician;* unspecified locality in Cincinnati, Hamilton County, Ohio. O. C. Marsh coll., Yale Univ. Peabody Museum 17110.

Oha *Cincinnatian, Upper Ordovician;* Cincinnati, Hamilton County, Ohio. U. S. Natl. Museum.

Ohg *Maquoketa Shale, Cincinnatian, Upper Ordovician;* near Clermont, Fayette County, Iowa. Slocom coll.

SILURIAN

LOC. DESCRIPTION

Sad *Waldron Clay Member, Waynesville Formation, Niagaran, Upper Silurian;* quarry of Lambert Bros. Stone Company 1.5 miles west-southwest of junction of U. S. 70N and 70S 11 miles west-southwest of center of Nashville, Davidson County, Tennessee, Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Sdg *Brownsport Formation, Niagaran, Upper Silurian;* Blue Mound Glade (Amsden, 1949, p. 38, loc. 18) 0.8 mile northeast of Cedar Grove Church and 0.2 mile north of road to Mt. Carmel Church, Perryville quadrangle, near Decaturville, Decatur County, Tennessee. Moore and Jeffords coll., Univ. Kansas Paleont. Inst. —Esso Prod. Research Co.

Sfr *Waldron Shale, Niagaran, Upper Silurian;* south mouth of tunnel at Tunnel Mill, about 0.1 mile west of Ind. 3, 0.5 mile south of Vernon, Jennings County, Indiana (SE ¼ sec. 11, T. 6 S., R. 8 E.). Moore, Jeffords, and Hattin coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Shd *Waldron Shale, Niagaran, Upper Silurian;* on county road 2.5 miles east of Dupont, Jefferson County, Indiana. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.
county road 2.5 miles east of Dupont, Jefferson County, Indiana. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Shg *Waldron Shale, Niagaran, Upper Silurian;* pit in west part of Waldron, Shelby County, Indiana. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

DEVONIAN

LOC. DESCRIPTION

Ddv *Rockport Limestone (lower part), Traverse Group, Erian, Middle Devonian;* quarry at Rockport, Alpena County, Michigan, Laudon coll., Esso Prod. Research Co.

Ddx *Wanakah Shale Member, Ludlowville Formation, Hamilton Group, Erian, Middle Devonian;* on 18-mile Creek near bridge on old Lakeshore Road near Lake Erie southwest of Buffalo, Erie County, New York. Jeffords coll., Esso Prod. Research Co.

Dh *Birdsong Shale, Linden Group, Helderbergian, Lower Devonian;* along Turkey Creek and valley wall on old Love farm east of Ky. 69 about 9.5 miles south of underpass at south edge of Camden, Benton County, Tennessee. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Di *Birdsong Shale, Linden Group, Helderbergian, Lower Devonian;* road cut on Tenn. 13 about 4 miles north of Linden, Perry County, Tennessee. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Dia *Wanakah Shale Member, Ludlowville Formation, Hamilton Group, Erian, Middle Devonian;* shale pit on Big Tree road about 0.5 mile southeast of N. Y. 5 near Bay View, about 10 miles south of downtown Buffalo, Erie County, New York. W. F. Berry coll., Univ. Kansas Paleont. Inst.

Dib *Wanakah Shale Member (upper part), Ludlowville Formation, Hamilton Group, Erian, Middle Devonian;* cut on N.Y. 63 about 2 miles southeast of East Bethany, Genessee County, New York. W. F. Berry coll., Univ. Kansas Paleont. Inst.

Did *Centerfield Limestone, Darien Member, Ludlowville Formation, Erian, Middle Devonian;* 2 miles northeast of Darien, Genessee County, New York, W. F. Berry coll., Univ. Kansas Paleont. Inst.

Dii *Birdsong Shale, Linden Group, Helderbergian, Lower Devonian;* near Swaynes Mill, Benton County, Tennessee. Springer coll., U. S. Natl. Museum.

MISSISSIPPIAN

LOC. DESCRIPTION

Ma *New Providence Shale, Borden Group, Osagian, Lower Mississippian;* pit of Coral Ridge Brick and Tile Company on South Park road 0.3 mile southeast of junction with old National Turnpike, 1.1 miles southeast of Coral Ridge and about 3 miles west of Kentucky Turnpike, also 1.2 miles northwest of summit of Button Mould Knob, about 15 miles south of downtown Louisville, Bullitt County, Kentucky. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Maa *New Providence Shale, Borden Group, Osagian, Lower Mississippian;* northwest flank of Button Mould Knob, 2.3 miles southeast of Coral Ridge and about 15 miles south of downtown Louisville, Bullitt County, Kentucky. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Mc. *Brodhead Formation, Borden Group, Osagian, Lower Mississippian;* hill side at northwest edge of Knob Creek Church on Ky. 44 about 2.7 miles west of Shepherdsville, Bullitt County, Kentucky. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Md *Brodhead Formation, Borden Group, Osagian, Lower Mississippian;* north side of U. S. 62 at point 0.75 west of junction with Kentucky 583 east of Elizabethtown, Hardin County, Kentucky. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Mdp *"Fort Payne Limestone" (Borden Group equivalent), Osagian, Lower Mississippian;* weathered road cut along Eagle Creek, 8 miles northeast of Livingston, Overton County, Tennessee. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Me *Floyds Knob Formation, Borden Group, Osagian, Lower Mississippian;* large cut on U. S. 31W on Muldraugh Hill, southeast of Muldraugh, Bullitt County, Kentucky. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Mec *Burlington Limestone, Osagian, Lower Mississippian;* in and near Burlington, Des Moines County, Iowa. Springer coll., U. S. Natl. Museum.

Mey *Paint Creek Formation, Chesteran, Upper Mississippian;* along creek near Vogel School, SE ¼ SW ¼ sec. 3, T. 2 S., R. 9 W., about 1.5 miles west of Floraville, St. Clair County, Illinois. Moore and Van Sant coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Mfm *Edwardsville Formation ("Crawfordsville beds"), Borden Group (middle part), Osagian, Lower Mississippian;* Montgomery County Poor Farm in NE cen. SW ¼ sec. 29, T. 19 N., R. 4 W., northeast of Crawfordsville, Indiana, along creek bank below hog fields. Moore, Jeffords, and Gary Lane coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Mfn *Edwardsville Formation, Borden Group, Osagian, Lower Mississippian;* cut on north side of Indiana 46 approximately 6 miles east of Bloomington, Monroe County, Indiana ("Stobo bioherm," in sec. 4, T. 84 N., R. 1 E.). Moore, Jeffords, and Hattin coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

PENNSYLVANIAN

LOC. DESCRIPTION

Pak *Mingus Shale Member, Garner Formation, Strawn Group, Desmoinesian, Middle Pennsylvanian;* cut on south side of U. S. 80 just east of Eastland-Erath County line, 3.5 miles west of junction with Texas

108, Erath County, Texas. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Paw *Chaffin Limestone Member, Thrifty Formation, Cisco Group, Virgilian, Upper Pennsylvanian;* north side of FM 1850 1.8 miles west of Texas 279, Brown County, Texas. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Pba *South Bend Shale Member, Graham Formation, Cisco Group, Virgilian, Upper Pennsylvanian;* side of stock tank at northeast base of prominent sandstone-capped hill in southwest part of South Bend, east of FM 701 with Main Street, Young County, Texas. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Pbd *Blach Ranch Limestone Member, Thrifty Formation, Cisco Group, Virgilian, Upper Pennsylvanian* (fossil bed "B" called Breckenridge Limestone by Roth and Kauffman); stock tank dam 5.6 miles northwest of U. S. 281 junction with Texas 199, about 12 miles northwest of Jacksboro, Jack County, Texas. Moore, Jeffords, and Roth coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Pca *Pumpkin Creek Limestone Member, Dornick Hills Formation, Atokan, Middle Pennsylvanian;* on Daube Ranch road about 4.75 miles east of Baum, near center sec. 32, T. 3 S., R. 4 E., Johnston County, Oklahoma. Moore and Jeffords coll., Univ. Kansas Paleont. Inst. —Esso Prod. Research Co.

Pdq *Belknap Limestone Member, Thrifty Formation, Cisco Group, Virgilian, Upper Pennsylvanian;* on FM 578 and U. S. 183 at point 6.1 miles north of Birch Hotel in Breckenridge, Stephens County, Texas. Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Pef *Coffeyville Formation, Missourian, Upper Pennsylvanian;* old shale pit in west part of Coffeyville, Montgomery County, Kansas. Moore coll., Univ. Kansas Paleont. Inst.

Peg *Marble Falls Limestone, Atokan, Middle Pennsylvanian;* near Turkey Roost Creek, Jym Sloan ranch, 1¼ miles south of Maxwell Crossing on San Saba River, 10 miles south of Richland Springs and southwest of San Saba, San Saba County, Texas. Moore coll., Univ. Kansas Paleont. Inst.

Phu *Caprock of Mineral coal near middle of Cabaniss Formation, Cherokee Group, Desmoinesian, Middle Pennsylvanian;* strip pits about 5 miles west of Pittsburg, Crawford County, Kansas, Moore coll., Univ. Kansas Paleont. Inst.

Piw *Minturn Formation, Desmoinesian, Middle Pennsylvanian;* near McCoy, Eagle County, Colorado. Univ. Kansas Paleont. Inst.

Pr *Millsap Lake Formation, Strawn Group, Desmoinesian, Middle Pennsylvanian;* cattle tank 250 feet west of fence located 0.3 mile north of ranch road at point 0.75 mile south of U. S. 190, which is joined by ranch road 2.7 miles east of railroad overpass at Rochelle, McCulloch County, Texas. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

Pt *Wayland Shale Member, Graham Formation, Cisco Group, Virgilian, Upper Pennsylvanian;* scarp about 50 yards south of road at point 1.25 miles east of Fife, McCulloch County, Texas. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co. [=loc. E 5].

E 5 *Wayland Shale Member, Graham Formation, Cisco Group, Virgilian, Upper Pennsylvanian;* scarp about 50 yards south of road at point 1.25 miles east of Fife (or east of U.S. 283 road junction about 3 miles south of Colorado River), McCulloch County, Texas [=loc. Pt of Moore & Jeffords, 1967]. Collectors: R. M. Jeffords, R. G. Todd, R. C. Moore, T. H. Miller, and E. K. Martin, 1958-66.

E 672 *Wayland Shale Member (upper part), Graham Formation, Cisco Group, Virgilian, Upper Pennsylvanian;* stock-tank area just west of road, 2 miles southeast of Thrifty; locality is reached by going 1.1 miles southeast of Thrifty on F.M. 2492 and turning south on gravel road (U. S. Geol. Survey loc. 16020), Brown County, Texas. Collectors: R. M. Jeffords, T. H. Miller, and E. K. Martin, 1963-64.

E 675 *Wayland Shale Member, Graham Formation, Cisco Group, Virgilian, Upper Pennsylvanian;* unrecorded locality in McCulloch County, Texas. Collector: E. K. Martin, 1963.

E 682 *Wayland Shale Member, Graham Formation, Cisco Group, Virgilian, Upper Pennsylvanian;* one mile due south of Gunsight, Stephens County, on Perry Farm. Follow road south, taking west fork at 0.9 mile and park at wire gate 0.3 mile from road fork. Exposure is in second scarp to east. Collectors: R. C. Moore and R. M. Jeffords, 1962.

E 705 *Wayland Shale Member, Graham Formation, Cisco Group, Virgilian, Upper Pennsylvanian;* scarp north of stock tank on Gary ranch which is east of U. S. 283 at a point 1.7 miles north of junction with FM 504, McCulloch County. Drive past ranch house and barn on caliche road to stock tank; walk north behind tank approximately 50 yards to shale scarp. Collectors: R. M. Jeffords, T. H. Miller, and E. K. Martin, 1964.

E 706 *Gunsight Limestone.* Flat below scarp on Cornill Ranch near locality 705. From locality 705, walk north 50 yards, cross fence to Cornill Ranch, and go 25 yards to northeast. Collectors: R. M. Jeffords, T. H. Miller, and E. K. Martin, 1964.

E 722 Same as locality 672.

E 732 *Wayland Shale Member, Graham Formation, Cisco Group, Virgilian, Upper Pennsylvanian;* along bluff west of road and in road ditch, about 4 miles south of Whon, Coleman County. Collectors: R. M. Jeffords and T. H. Miller, 1964.

E 733 *Wayland Shale Member, Graham Formation, Cisco Group, Virgilian, Upper Pennsylvanian;* base of road cut and in farm road to north, north side of U. S. 80, 4.15 miles west of Eastland, Eastland County. Collectors: R. C. Moore and R. M. Jeffords, 1962.

E 734 *Wayland Shale (upper part);* bluff 400 yards west of road, 4.5 miles south of Whon, northeast of Parks Mountain, County. Collectors: R. M. Jeffords and T. H. Miller, 1964.

E 790 *Wayland Shale;* scarp on Cornill Ranch just north of localities 705 and 706, McCulloch County. From locality 706, go about 300 yards north past second stock tank to prominent scarp. Collectors: T. H. Miller and E. K. Martin, 1964.

PERMIAN

LOC. DESCRIPTION

Qry *Waldrip Shale Member (Waldrip Limestone 3), Pueblo Formation, Wichita Group, Wolfcampian, Lower Permian;* cut on FM 765 about 350 yards west of bridge over Saddle Creek, about 7 miles west of Fife, McCulloch County, Texas. Moore and Jeffords coll., Univ. Kansas Paleont. Inst.—Esso Prod. Research Co.

CRETACEOUS

LOC. DESCRIPTION

Kix *San Felipe Formation (upper part), Senonian, Upper Cretaceous;* Las Flores and Chocoy haciendas, about 65 km. northwest of Tampico, Tamaulipas, Mexico. Springer coll., U. S. Natl. Museum.

Kja *Prairie Bluff Chalk, Maastrichtian, Upper Cretaceous;* along Josey Creek about 4 miles northwest of Starkville, Oktibbeha County, Mississippi. P. H. Dunn coll., Univ. Kansas Paleont. Inst.

Kjc *Ripley Formation, Maastrichtian, Upper Cretaceous;* near Livingston, Sumter County, Alabama. Cincinnati Soc. Nat. History coll.

Kji *Prairie Bluff Chalk, Maastrichtian, Upper Cretaceous;* at roadside and cut on Houston Road (sec. 10, T. 15 S., R. 3 E.), 1.25 miles north of Sparta, Chickasaw County, Mississippi, (U. S. Geol. Survey loc. 17235). L. W. Stephenson and W. H. Monroe coll., U.S. Natl. Museum.

PALEOGENE-NEOGENE

LOC. DESCRIPTION

Aig *Universidad Formation, Lower Eocene (upper part);* 2 km. northwest of Radas, Las Villas Province, Cuba. Bermúdez coll., Univ. Kansas Paleont. Inst.

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INDEX

This index is chiefly concerned with taxonomic units described or discussed in the Articles, in connection with which an asterisk (*) identifies type species of genera. Morphological terms are explained in the alphabetical glossary given in Article 8, and therefore mostly are omitted in the general index. Pages cited refer to Article 9 unless indicated otherwise by numbers in bold face type (e.g., **8** for Article 8, and **10** for Article 10).

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