

Notice of transfer of the University of Minnesota paleontology collections to Cincinnati Museum Center

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Cincinnati Museum Center (CMC) recently acquired the paleontology collections of the Department of Earth Sciences, University of Minnesota (UM). The University of Minnesota (UM) paleontology collection is an unparalleled regional resource that was underutilized due to poor accessibility and a lack of institutional support. Significant type material, research specimens, and regional data were deteriorating under the absence of curatorial maintenance and inadequate storage conditions. Recognition by the University of Minnesota that this rich research resource needed proper care, research accessibility, and data dissemination, caused it to approach Cincinnati Museum Center for assistance. Based on the shared goals of both institutions, the UM paleontology collection was ultimately deeded to, removed to, and accessioned by CMC in December, 2018.

In 1872, the Minnesota Legislature authorized the University of Minnesota to start the Geological and Natural History Survey of Minnesota and establish a museum (Winchell, 1889, p. 6; Rice, 1990). The collections grew rapidly and in 1890, the museum was separated into three divisions (geological/paleontological, zoological, and botanical), with only the geological and paleontological collection remaining housed in Pillsbury Hall on the University of Minnesota's Minneapolis campus. In the 1990s, the majority of the collection was moved to the basement of the (former) Bell Museum of Natural History building, also on the Minneapolis campus, with a small portion of the collection remaining in Pillsbury Hall, primarily for teaching (Rice, 1990).

These collections complement and augment CMC's existing invertebrate and vertebrate paleontology holdings. In particular, a strong collection of Cambro-Ordovician fossils from Minnesota, Iowa, and Wisconsin add to CMC's existing Ordovician strength from Ohio, Indiana and Kentucky. UM vertebrate fossils that particularly complement existing CMC holdings are those from the Pleistocene of the American Midwest, Cretaceous Hell Creek and Paleocene Tullock formations of Montana, Niobrara Cretaceous marine reptiles and fish, Pennsylvanian Linton, Ohio cannel coal specimens, and Devonian fish from Beartooth Butte, Wyoming and Escuminac Bay, Quebec.

A historical connection is also shared between these collections, with contributions to the UM collection by paleontologists that started their careers in Cincinnati and have specimens at CMC: (1) E.O. Ulrich was part of the "Cincinnati School of Paleontology," naturalists that conducted research and fossil collecting in the Cincinnati region in the mid-1800s – mid 1900s; (2) S.A. Miller, one of the most important "amateurs" in the

Cincinnati School, was a prolific researcher, collector, and proprietor of the Cincinnati Quarterly Journal of Science, in which many important papers on Cincinnati (Late Ordovician) fossils were published; and (3) C. Schuchert began his career as a serious fossil collector in Cincinnati, working for Ulrich in preparing lithographs for the Illinois and Minnesota geological surveys. He later became an assistant for the New York Geological Survey, worked at the U.S. National Museum, and ultimately became a Professor of Geology at Yale University.

The invertebrate collection is of significant size, with ~15,000 catalogued specimen lots. As expected for a regional collection, it is focused on the Midwest region of the United States with strengths from Wisconsin, Minnesota, Illinois, Iowa, Missouri, Indiana, Kentucky, and Ohio. Stratigraphic focus is primarily on the Paleozoic, but there are significant holdings of Jurassic, Cretaceous, and Tertiary invertebrates. All major invertebrate phyla are represented, with particular strengths in Annelida, Bryozoa, Brachiopoda, and Arthropoda. The paleobotany collection is small (a few hundred specimens) and primarily focused on Pennsylvanian Mazon Creek, Illinois material. Contributors to the invertebrate paleontology collection have included several prominent paleontologists. From 1872 to 1900, a large collection of Ordovician fossils from Minnesota, Iowa, and Wisconsin was amassed by N.H. Winchell, E.O. Ulrich, C. Schuchert, W.H. Scofield, and others (Rice, 1990). F.W. Sardeson collected fossils from the Ordovician Period from about 1890–1914, with the Department of Geology and Mineralogy acquiring his large private collection in 1947 (Rice, 1990). From the 1920s–1940s, C.R. Stauffer collected thousands of specimens, primarily conodonts and scolecodonts, from the Ordovician of Minnesota and Devonian of Minnesota, Ohio, and Ontario (Rice, 1990). Cambrian trilobites from Minnesota and Wisconsin were collected by W.C. Bell and his students in the late 1940s (Rice, 1990). From the 1950s–1990s, F.M. Swain added a substantial collection of ostracodes from all over the world (Rice, 1990). While the collection is significant for Paleozoic invertebrate biodiversity of the Midwest, of particular research value are the historic type collections of the Geological and Natural History Survey of Minnesota. These include Stauffer's scolecodonts, Ulrich's bryozoans, brachiopods, molluscs, and trilobites, F.M. Swain's ostracodes (Swain, 1967, 1985, 1986, 1987), W.C. Bell's trilobites (Bell et al., 1952), J. Hall's bivalves, Schuchert's brachiopods, Sardeson's crinoids (Brower and Veinus, 1978), and R. Ruedmann's graptolites, among others.

While of only moderate size (~ 5,500 catalogued specimens), there are nevertheless significant vertebrate paleontology

holdings. Most notably, the collections made by R.E. Sloan and colleagues at Bug Creek Anthills in McCone County, Montana and surrounding localities (Bug Creek West, Harbicht Hill, Purgatory Hill, Rattlesnake Hill, Mammal Hill, McKenna Hollow, Ken's Saddle, Brownie Butte) in the 1960s are of great importance. From the late Maastrichtian and early Danian Hell Creek and Tullock formations, respectively, they document microvertebrate faunas across the K-Pg boundary in a classic terrestrial sequence of North America. A dozen UM holotypes of early mammals have resulted (Rice, 1990). Historic collections of note are those made from classic localities and include Devonian fish from the Gaspé Peninsula of Quebec and Beartooth Butte, Wyoming, Pennsylvanian specimens from Linton, Ohio, Niobrara Cretaceous and Neogene Ogallala (Loup Fork) fossils, including many collected by C. H. Sternberg, Eocene Green River fish, Eocene Bighorn Basin Willwood and Wasatch Formation mammals collected by F.W. Sardeson in 1899 and R.E. Sloan over a half century later, and White River Oligocene material of similar vintage. In addition to processed collections, bulk matrix and concentrate holdings include large samples from the Cretaceous/Paleocene Hell Creek Formation and the Paleocene Love Quarry of Wyoming.

All specimens will be rehoused and secured in dedicated collections storage, recatalogued and incorporated into CMC's current holdings (i.e., arranged taxonomically in the invertebrate paleontology collection and stratigraphically in vertebrate paleontology), and their data disseminated to the scientific community through image digitization, georeferencing, and record

upload to iDigBio (www.idigbio.org). Specimen histories will be maintained in CMC's collection database. These projects are currently underway.

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