

Field Museum of Natural History

Founded by Marshall Field, 1893
Roosevelt Road and Lake Michigan, Chicago

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FIELD MUSEUM NEWS

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Field Museum is open every day of the year (except Christmas and New Year's Day) during the hours indicated below:

Nov., Dec., Jan., Feb., Mar.	9 A.M. to 4:30 P.M.
April, September, October	9 A.M. to 5:00 P.M.
May, June, July, August	9 A.M. to 6:00 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays and Sundays; non-members pay 25 cents on other days. Children are admitted free on all days. Students and faculty members of educational institutions are admitted free any day upon presentation of credentials.

The Museum's natural history Library is open for reference daily except Saturday afternoon and Sunday.

Traveling exhibits are circulated in the schools of Chicago by the N. W. Harris Public School Extension Department of the Museum.

Lectures for schools, and special entertainments and tours for children at the Museum, are provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Announcements of free illustrated lectures for the public, and special lectures for Members of the Museum, will appear in FIELD MUSEUM NEWS.

A cafeteria in the Museum serves visitors. Rooms are provided for those bringing their lunches.

Chicago Motor Coach Company No. 26 buses go direct to the Museum.

Members are requested to inform the Museum promptly of changes of address.

MEMBERSHIP IN FIELD MUSEUM

Field Museum has several classes of Members. Benefactors give or devise \$100,000 or more. Contributors give or devise \$1,000 to \$100,000. Life Members give \$500; Non-Resident Life and Associate Members pay \$100; Non-Resident Associate Members pay \$50. All the above classes are exempt from dues. Sustaining Members contribute \$25 annually. After six years they become Associate Members. Annual Members contribute \$10 annually. Other memberships are Corporate, Honorary, Patron, and Corresponding, additions under these classifications being made by special action of the Board of Trustees.

Each Member, in all classes, is entitled to free admission to the Museum for himself, his family and house guests, and to two reserved seats for Museum lectures provided for Members. Subscription to FIELD MUSEUM NEWS is included with all memberships. The courtesies of every museum of note in the United States and Canada are extended to all Members of Field Museum. A Member may give his personal card to non-residents of Chicago, upon presentation of which they will be admitted to the Museum without charge. Further information about memberships will be sent on request.

BEQUESTS AND ENDOWMENTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, named by the giver.

Contributions made within the taxable year not exceeding 15 per cent of the taxpayer's net income are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron for life. These annuities are guaranteed against fluctuation in amount, and may reduce federal income taxes.

FORMS OF IGNEOUS ROCKS ILLUSTRATED BY MODEL

By HENRY W. NICHOLS
Curator, Department of Geology

Granites, and all igneous rocks other than lavas, are never formed at the surface of the earth. They can be seen only where thousands of feet of other rocks that once lay above them have been eroded away. A new model installed in Clarence Buckingham Hall (Hall 35) illustrates the various shapes assumed by bodies of igneous rock in their original positions before they are exposed by erosion of the rocks above.

The crust of the earth, composed of the various rocks with which we are familiar, is underlain at the great depth of possibly thirty-five or forty miles by rock so hot that it would be liquid were it not compressed into a state that more resembles a solid by the enormous weight of the rock above. This hot rock is called magma, and from magma come all lavas, all granites and all other igneous rocks.

Magma is more or less plastic, and in places it endures not only the weight of the miles of rock above, but other pressure exerted by mountain-building forces. In places where the pressures are unusually great, or where the strata above have been weakened, portions of magma may be squeezed upwards into the overlying rock, becoming liquid by relief from pressure as it moves upward. The liquid magma may penetrate completely through the crust and cause a volcanic eruption. Usually the injections do not reach the surface but remain entrapped in the rocks below as bodies of liquid magma. As the magma mass is surrounded by an insulating body of rock thousands of feet thick, it cools very slowly, and thousands of years may pass before the molten magma has frozen to solid rock. The slow cooling under pressure produces a rock in appearance and properties quite unlike the more rapidly cooled lava from a magma of the same composition. The deep seated plutonic rock is dense, strong and completely crystallized. The lava is more or less porous, less well crystallized, and finer grained, and it contains glassy matter from the freezing of liquid rock before it has had time to crystallize completely.

It might be supposed that these masses of igneous rock formed by injection into rocks of various kinds and structures would present such a variety of irregular shapes that any attempt to classify them by shape would be hopeless. But it has been found that nearly all forms, however they may differ in minor detail, can be grouped into a few easily recognized classes. The more important classes appear on the model.

The largest bodies of igneous rock are the batholiths, some of which are exposed over thousands of square miles. They are irregular in outline, with irregularly flat or roughly domed roofs. They have no floor, but extend indefinitely downwards, possibly merging below with the magma of the sial or outer shell of the earth. They are often found in mountainous regions where they form the cores of mountain ranges.

The stock is a small batholith. A mass with less than forty square miles area would be a stock. If the stock is circular in outline it is a boss. A laccolith is an igneous body with a flat floor and a domed roof connected through a fissure or conduit with the supply of magma below. Although they do not attain the size of batholiths they are sometimes, as in the case of the Henry Mountains of Utah, large enough to form mountains.

Among the smaller igneous bodies are dikes which fill parallel walled fissures.

Some are shown penetrating through the base of the model to unknown depths where they may connect with the large reservoirs of magma below. Others are offshoots from batholiths and laccoliths, and branches from other dikes. Sills are dikes which have been injected between the beds of a sedimentary series of rocks. Any of the bodies may have small tongues projecting from them called apophyses.

The model has been made simple in design with the hope that it can be easily and quickly understood by the visitor without technical knowledge. Only the more important and most frequently mentioned types are represented. Specialists who study intensively the origin and features of igneous rocks recognize and have named a number of other forms most of which are only variations of the forms displayed. These are not shown, as it is believed that the model in its simple form will be more readily understood than would a model with numerous complicating features.

IMPORTANT PLANT COLLECTIONS RECEIVED AT FIELD MUSEUM

From the National Museum of Prague, Czecho-Slovakia, Field Museum received recently for study a collection of 500 Mexican plants gathered in 1791 by Thaddeus Haenke. The material was determined in the Department of Botany, and portions of most of the specimens were retained for deposit in the Museum Herbarium. Haenke was one of the botanists of the famous Spanish voyage under the navigator Malaspina, who circumnavigated the globe. His collection was one of the first made in Mexico, and many well known Mexican plants were described from his specimens.

From the Botanic Garden of Madrid the Museum has received a large and extremely valuable collection of plants for permanent deposit in the Herbarium. They were collected in Mexico and South America, most of them about 1800 or earlier, and include original material of many hundreds of species described by Ruiz and Pavón, Ortega, Lagasca, Cavanilles, and other famous Spanish botanists. Such important material cannot be purchased at any price, and its acquisition by Field Museum is possible only because of the courtesy of Dr. Antonio García Varella, Director of the Jardín Botánico de Madrid, and his associate Dr. José Cuatrecasas. These early collections from the former Spanish colonies are of the greatest importance to botanists who study the tropical American flora, and they are not duplicated elsewhere in America, or, for that matter, in many if any of the great museums of Europe.—P.C.S.

Trustees Honor Dr. E. E. Sherff

Dr. Earl E. Sherff, well-known botanist, and member of the faculty of the Chicago Normal College, was elected Research Associate in Systematic Botany on the staff of Field Museum, by the Board of Trustees at a meeting held July 20. This honor was bestowed in recognition and appreciation of the valuable services and cooperation given to the Museum by Dr. Sherff for many years.

A large collection of fossils of prehistoric fishes and fish-lizards, obtained chiefly in Germany and England, is on exhibition in Ernest R. Graham Hall (Hall 38).

Exhibits in Hall 25 (Cases 22 and 24) illustrate principal facts about the cane and beet sugar industries and their by-products.



1936. "Forms of Igneous Rocks Illustrated by Model." *Field Museum news* 7(8), 2-2.

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Field Museum of Natural History Library

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