

## Field Museum of Natural History

FOUNDED BY MARSHALL FIELD, 1893  
Roosevelt Road and Field Drive, Chicago  
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## FIELD MUSEUM NEWS

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

## LUCKILY FOR STRATEGIC NEEDS U. S. HAS PLENTY OF FLUORITE

By HENRY W. NICHOLS

CHIEF CURATOR, DEPARTMENT OF GEOLOGY

In the economic geology collection in Hall 36 and Frederick J. V. Skiff Hall (Hall 37) the minerals are so classified that the group in which a mineral appears suggests its principal use. Although some are perfectly obvious—iron comes from iron ore, copper from copper ore, and, as most people understand, bricks and pottery are made from clay—there are other minerals, as for example sulphur, with such diverse uses that a grouping according to use is impractical. Fluorite is such a mineral. Although large quantities of fluorite are consumed annually in the production of objects in familiar use, many people have no idea of what it is, how it is used, or for what purposes.

Few minerals exceed fluorite in beauty and variety of color, and its transparency and luster leave little to be desired. The gorgeous blue, green, yellow, and violet colors of the choicer crystals displayed in the mineral collection in Hall 34 suggest that fluorite is a gem, but strictly speaking it is not, for while it possesses the necessary brilliancy and color, it lacks two other essential qualities—durability and rarity. The crystals are so soft that they scratch and mar readily, and their cleavage is so well developed that they break easily. They are not scarce. Hundreds of pounds of fine crystals were included in the more than 182,000 tons of fluorite consumed in the

United States in 1939. The beautiful gem that fluorite could be, were it not for these defects, is demonstrated by several cut stones placed among the gems in H. N. Higinbotham Hall (Hall 31).

In spite of these defects it is used to some extent as an ornamental stone. In England a deep purple, fibrous variety called "blue John" is frequently carved into a variety of ornamental objects.

### USED IN ALUMINUM SMELTING

The value of fluorite to industry depends not on its appearance or physical qualities but on its chemical composition. It is a combination of calcium and fluorine, with fluorine the useful component. When fluorite is substituted for part of the limestone flux in iron and steel smelting and other metallurgical furnaces, its fluorine content improves production. More than two-thirds of all the fluorite mined is consumed in this manner. Although this is the greatest it is not the most important use of fluorite. Fluorite or cryolite, another fluoride mineral mined only in Greenland, is absolutely essential for smelting aluminum. Without fluorite or cryolite, no aluminum is available except at prohibitive cost. Fluorite for this reason may be considered a "strategic mineral" essential in national defense, but fortunately there are abundant deposits of this mineral in the United States, enough to supply any possible need. Fluorine from fluorite or cryolite is incorporated into the electrolyte through which the aluminum passes from ore to metal. Much fluorite is consumed by makers of translucent and opaque glass.

Another important use of fluorite is in the manufacture of enameled metals of which the familiar enameled iron kitchenware is an example. Perhaps the optical applications of fluorite call for smaller quantities and higher qualities of this mineral than does any other important use. Scientists have found that with lenses made of fluorite they can conduct important microscopic and optical researches that would be impossible with glass lenses.

### AN IMPORTANT ACID

If you visit a chemical laboratory you may see among the bottles of chemicals a bottle made of wax. This bottle contains hydrofluoric acid made from fluorite, an acid which cannot be stored in ordinary bottles because it dissolves glass. Advantage is taken of this corrosive action to etch patterns or inscriptions on glass.

Fluorides and other compounds made from the acid have varied important applications. Freon, an organic liquid containing fluorine, is widely used in mechanical refrigerators. Fluorides and silico-fluorides of sodium are coming into increasing use as insecticides replacing arsenic, for mothproofing furs and woollens and for other purposes depending upon their disinfectant qualities and their destructive action on

insect life. Fluorides are also used in other diverse industries ranging all the way from the manufacture of dye stuffs to the bonding of grinding wheels.

Fluorspar is usually found in veins, often accompanied by ores of zinc, lead, and other metals. It is mined in many countries, but the largest deposits in the world are those in southern Illinois and western Kentucky, and there are other large deposits in the United States.

### Wartime Guide-lectures

Among the March guide-lecture tours offered at Field Museum (a complete schedule of which will be found elsewhere in this issue) are two of special significance in the present emergency. On Friday, March 6, at 2 P.M., Mrs. Leota G. Thomas will discuss "Conservation as a Part of National Defense"; on Wednesday, March 23, Miss Miriam Wood will talk on "Sources of Materials Strategic to America."

### Folklore of Garnets

Although every garnet in H. N. Higinbotham Hall of Gems and Jewels (Hall 31) is a genuine garnet, not one of them would pass the drastic test described by Johann de Cuba in the fifteenth century. The owner of a garnet ring, while wearing the ring, was to disrobe and after smearing his body with honey lie down where there were wasps and flies. If flies or wasps refused to light on his body for the honey the garnet was genuine. Anyone who knows anything about wasps and flies knows there was little chance of thus proving garnet genuine.

### A FEW FACTS ABOUT FIELD MUSEUM

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

November, December,  
January, February....9 A.M. to 4 P.M.  
March, April, and  
September, October...9 A.M. to 5 P.M.  
May, June, July, August...9 A.M. to 6 P.M.

Admission is free to Members on all days. Other adults are admitted free on Thursdays, Saturdays, and Sundays; non-members pay admission on other days: Established price 25 cents, Federal tax 3 cents, total 28 cents. 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 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 at 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.

Free courses of lectures for adults are presented in the James Simpson Theatre on Saturday afternoons (at 2:30 o'clock) in March, April, October, and November.

A Cafeteria serves visitors. Rooms are available also for those bringing their lunches.

Chicago Motor Coach Company No. 26 busses provide direct transportation to the Museum. Service is offered also by Surface Lines, Rapid Transit Lines (the "L"), interurban electric lines, and Illinois Central trains. There is ample free parking space for automobiles at the Museum.



Nichols, Henry W. 1942. "Luckily For Strategic Needs, U.S. Has Plenty of Fluorite." *Field Museum news* 13(3), 6-6.

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