

## LOTUS SEEDS CENTURIES OLD GERMINATE AT MUSEUM

Recently there were received at Field Museum, through the kindness of Professor C. F. Chamberlain (University of Chicago), some seeds of the pink lotus of the Orient (*Nelumbium Nelumbo*) estimated to be three to five hundred years old. Their history was supplied by Professor Charles A. Shull, of the department of botany of the university, and by Dr. Nougouchi who brought them from Japan.

The seeds came originally from a locality in southern Manchuria found by Mr. U. Lin, a banker, who communicated his information to Professor Ichiro Ohga. The latter discovered the seeds under several feet of soil accumulated on top of an ancient peat bed which had once been the bottom of a lake, now long filled in. Judging from the topography, depth, and all other conditions, including the size of trees growing on top, he estimated the age of the seeds to be at least two hundred and fifty and probably three to five hundred years. A willow tree growing on the site measured four feet in diameter. A smaller one, which was cut down, showed 125 annual rings.

To Professor Ohga's surprise the ancient seeds were still capable of germination. Their glassy hard seed coat had proved sufficiently impervious to provide perfect protection for centuries, a hermetic seal preventing the fossilization of the embryo and cotyledons. When the seeds were brought to the University of Chicago about twelve years ago, Professor Shull found that they would germinate readily providing the external covering was first softened with sulphuric acid.

On receipt of some of these seeds at the Museum, a few were tested for present viability, which was found still unimpaired. Two of the seeds were placed in water after some filing of the hard covering in order to facilitate penetration of the water, a practice usual in planting lotus seeds. A third one was immersed for an hour in sulphuric acid, at the suggestion of Professor Shull, and then was washed and placed in a glass

of water. The first two swelled rapidly and showed signs of germination, developing a small green plumule, but were eventually attacked by fungal algae and decomposed. The third seed germinated within a week, and within three weeks presented a growing shoot seven and a half inches in length. It was photographed, and then transferred to Garfield Park Conservatory for further care.

Newspaper accounts of the germination of the ancient seed brought many inquiries, and requests for seeds as well. There were also various reminders of the long exploded but persistent story of the germination of wheat from Egyptian tombs. From a European weekly, came a radioed request for photographs of the development of the plant in all its stages, including flowers and fruit, but lotus plants do not flower until the second or third year after storing up a reserve of food in their underground root-stalks. It should be explained that the Oriental lotus is a very different plant from the so-called Egyptian lotus, the latter being a water lily with floating leaves. The large leaves of the Oriental or pink lotus, like those of the native yellow lotus of North America, are borne on stiff leaf stems, mostly raised well above the water surface.

The pink (sometimes red or white) flowered plant is not found in the United States, except as occasionally cultivated, and then generally under glass. It is closely related to the North American yellow lotus, recorded from Canada and the North Atlantic states, but most abundant in various localities from the Mississippi Valley to Texas, notably at Grass Lake near Chicago, and at Memphis, Tennessee.

Seeds of the American lotus are known to retain their vitality for a long time. It is not unusual to have them germinate after thirty or forty years. Older seeds are seldom offered for experiment.

The question of the longevity of seeds is of perpetual interest. One is reminded of Guppy's dictum that theoretically seeds should live forever, and that there are some that seem fitted to withstand even the conditions prevailing on the surface of the moon.—B.E.D.

## Important Polish Minerals

Examples of minerals of economic value mined in Poland, recently added to the economic geology collection in Halls 36 and 37, have greatly enlarged the exhibit of useful minerals from that country. The recent additions include various salts of potash from the important potash mines around Boryslaw, salt from the famous Wieliczka salt mine, the more important Polish marbles, the mineral wax called ozocerite, and a peat from which wrapping paper, yarn, woven fabrics, and other products are made.

## Huge Prehistoric Camel

In Case No. 72 of Ernest R. Graham Hall (Hall 38) is a leg bone of a camel as long as the leg bone of a giraffe. From New Mexico there have recently been reported heads of fossil camels a yard in length. Why the camel, that had such a favorable home in North America, died out here while it survived in the Old World, is a worthy subject for speculation.

## Marble from Jerusalem

Several of the more important marbles used in Jerusalem, collected for the Museum by Mr. Maurice G. Morrison, of Evanston, Illinois, have been added to the marble collection in Frederick J. V. Skiff Hall (Hall 37).

## SARGASSUM

By ALFRED C. WEED  
Curator of Fishes

Passengers on vessels crossing tropical parts of the Atlantic often observe floating masses of sargassum or gulf weed. Tales are told about the "Sargassum Sea," an area in mid-ocean where the currents mass these sea-weeds in such quantities they are said to stop ships. Whether these stories are true or not, the weed itself is most interesting. No one really knows whence it comes or where it goes. Some species of the botanical genus *Sargassum* grow on rocks in the surf on tropical shores. Perhaps the weed seen floating in steamer lanes comes from such places, and continues to live and grow as it floats along. Storms may break it into smaller pieces that grow into large masses and break up again.

Each of these floating masses is a little world with barnacles, sea worms, and moss-like animals living on its branches. Fishes, with fins developed like feet, climb around through it or take short swimming excursions outside. Crabs, with their sidling movements, explore it in search of food, or by standing still hide in it to keep from being eaten themselves. Shrimps likewise dart about in it, concealing themselves from their enemies when necessary.

Snails cling to the branches, along with queer relatives whose bodies are covered by strange growths projecting like the legs of some almost formless monster. These projections are the same size, shape and color as the "leaves" of the gulf weed.

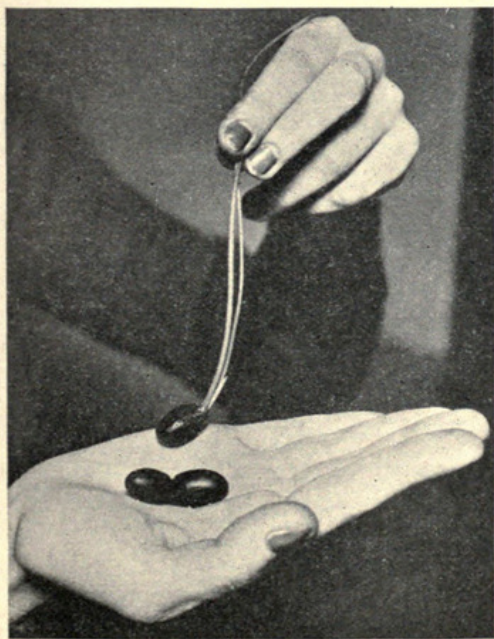
All of the creatures that live in the sargassum are branded with its mark. Pipe-fishes that look like brownish straws lie along the branches. The crabs and sea slugs are colored like the plant in shades of yellow, brown and sepia forming irregular patterns in the shape of the "leaves."

The sargassum fish, one of the great group of angler-fishes, spends its whole life in this little world. Hatched at the surface of the warm sea, it swims freely for a few days or weeks, and then seeks shelter and food in these bushy plants. It climbs among the branches, using its fins like hands, and never swims away except to go to another plant, where the hunting may be better. It is almost as formless as the slugs, but its keen eyes detect the slightest motion of other animals. Its mouth and stomach are big and elastic enough for it to devour creatures almost as large as itself. It is almost impossible to see it among the branches where its color pattern and the fleshy tags on its skin look like sargassum "leaves."

Beneath the floating community of sargassum is an underworld that travels with but not in it. Small fishes of many kinds stay in this shelter, watching for any creature that may stray from its leafy home overhead. In this lower group will be found small jacks, butter-fishes, trumpet-fishes, and sometimes even barracudas or small groupers.

A specimen of sargassum fish in a branch of gulf weed, reproduced in celluloid, is on exhibition in Albert W. Harris Hall (Hall 18).

Not long ago Mr. Leon Mandel presented to Field Museum a collection of typical tenants of a mass of sargassum. Included are one hundred and twenty-five crabs (some with eggs) and shrimps, four of the sea slugs, four worms, sixty-two snails, five sargassum fish, and a mass of eggs that may belong to one of the slugs. These were collected during a voyage from the Bahamas to Bermuda aboard Mr. Mandel's yacht *Buccaneer*.



Photograph courtesy of Chicago Evening American

## Ancient Lotus Seed Germinates

From seed estimated to be between 300 and 500 years old the young Oriental lotus plant shown above was grown in Field Museum's botanical laboratories. It is believed to represent the longest duration of delayed germination on record.





Weed, Alfred C. 1938. "Sargassum." *Field Museum news* 9(5), 3-3.

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