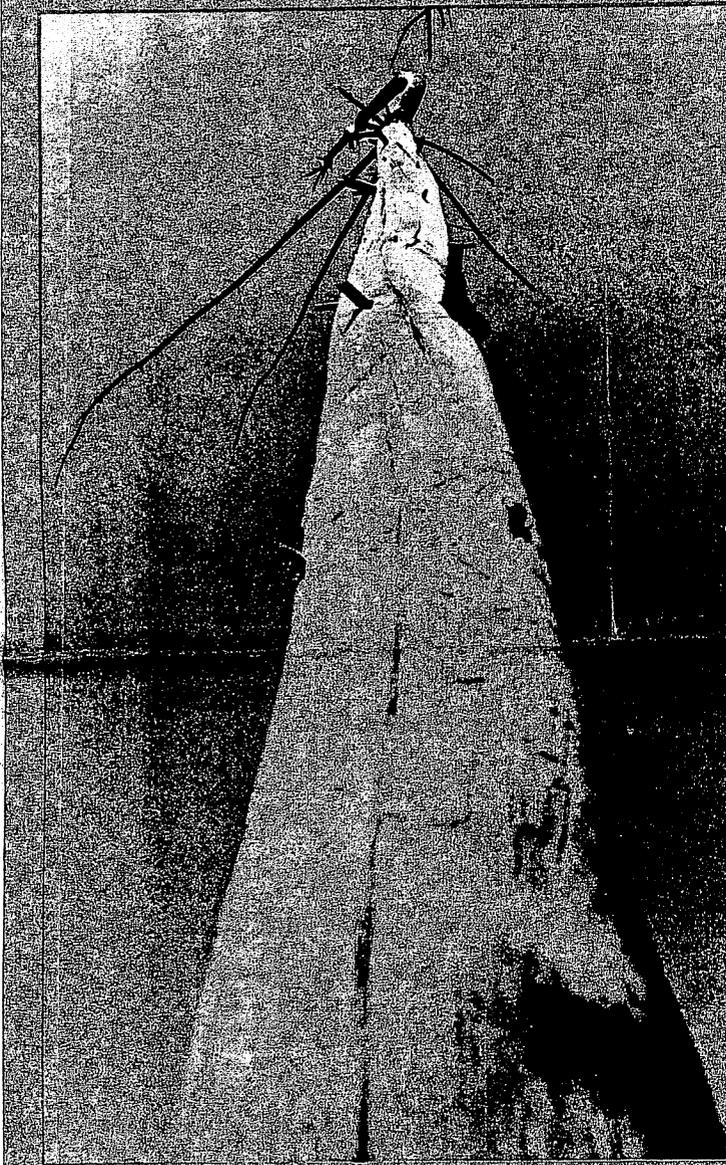


NEWS PAGES 11-15

# FLEA MARKET



**SPRUCE  
HOLE:  
a question  
of values**

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*Probably  
April 5, 1974*

# SPRUCE HOLE:



## The fate of a glacial bog.

"Certain beetles and many other species occur at Spruce Hole and nowhere else — it's a relic really; a relic area." — Dr. Robert L. Blickle, Entomologist, University of New Hampshire.

"The more Morgan gets upset about this thing, the more he is going to do what he damn well pleases." — Walter Cheney, Housing Developer, Durham, New Hampshire.

When the last glacier moved down out of Canada some fifteen thousand years ago, it buried the Durham area beneath six hundred feet of ice. As the glacier receded, an enormous chunk of ice broke loose. A river of glacial melt water buried this chunk beneath tons of pulverized stone. As the climate warmed, this chunk of ice melted and left a crater-like depression known as a kettle.

Within this kettle, now called Spruce Hole, a floating bog mat supports a delicate balance of plant and animal life indigenous to mountain peaks and subarctic regions of Canada. Often mis-

treated in the past, the bog is on the verge of eradication.

The same glacier that created Spruce Hole Bog, effected sweeping changes in the landscape of New England. Lakes were destroyed, mountains eroded and the seashore altered dramatically. But changes in the plant and animal life of the region were even more significant.

As the glacier moved southward, it created a zone of subarctic conditions. Plants and animals of the tundra persisted just ahead of the ice and when the glacier receded, these subarctic forms followed. As the ice moved out of Southeastern New Hampshire and Spruce Hole filled with melt water, these northern plants and animals moved into the crater. They have survived there for over twelve thousand years.

Spruce Hole's close proximity to the University of New Hampshire enhances its value. "Five or six specimens (the first recorded discovery of a species) have been found out there" said Dr. Blickle. He con-

tinued, "Spruce Hole may be the only place south of the White Mountains where Pleistocene insect fossils exist. We don't know enough about the area yet. It would be a shame to see it destroyed."

Botanists also have a strong interest in the area. At Spruce Hole, plants like black spruce, a boreal species from Canada grow beside hardwoods that range south to Florida. In addition, a wide diversity of tundra plants persist. Creeping snowberry, large and small cranberries, sheep laurel, sundews and pitcher plants grow within inches of each other.

Like most kettles, Spruce Hole comprises part of an extinct river bed which geologists call an esker. Rivers like the one that formed Spruce Hole often flow for centuries as they drain a melting glacier. Such rivers sometimes deposit a bed of glacial outwash over a hundred feet thick. This outwash of pulverized stone is highly valued for house and road construction.

This valuable outwash may bring about the demise of Spruce Hole. Norman R. Morgan of Durham owns both Spruce Hole Bog and an active sand pit adjacent to the crater. Members of the Durham Conservation Commission maintain that Morgan plans to protect the bog. If this is the case, he could take more effective measures.

Last fall, pay loaders at work in Morgan's pit began digging away at the outside wall of the crater. Long before they break through that wall — while still hundreds of feet from the delicate bog habitat — the bog itself will be doomed. While the bog encompasses an area of

only seven acres, it depends upon the ecological stability of more than twenty acres for survival. No one knows how much more than twenty acres is involved but one thing is certain; present excavations pose an immediate threat to the bog's survival.

The bowl shaped symmetry of Spruce Hole permits it to effectively regulate the two most critical factors in any bog — temperature and water. If present digging continues, the bog may soon be unable to regulate either.

The first of these two critical factors, water, exhibits a well known cycle throughout the world; evaporation, precipitation, and run-off. Spruce Hole maintains its water level through a modified form of this cycle. Because crater walls surround the floating bog mat on all sides, water cannot escape by run-off. Water can only leave the crater by evaporating and a stable water level requires that evaporation equal the precipitation.

This water micro-cycle is complicated by several factors. The inner slopes of the crater act like a giant funnel. Precipitation that falls on these inner slopes flows into the bog. Plants growing in and around the crater absorb great quantities of water and return much of it to the atmosphere. They retain additional water in their root systems which helps to keep the bog from flooding.

The bog itself offers the best example of just how critical a balance these plants maintain. About thirty years ago, white pines and hemlocks grew on the inner slopes of the crater and a few pines grew from the edges of the bog mat itself. A



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logging company harvested most of these trees and without them to hold back the water, the bog flooded. The pines growing from the bog mat itself were inaccessible to the loggers and drowned in the flood. Their decaying remains stand as mute testimony of man's past carelessness.

As trees repopulated the inner slopes, the flooding subsided. Since most of the plants grow from a floating mat of sphagnum moss, they survived the flood. Too much water simply made the mat float a bit higher. But these plants could not survive for long if the bog dried up. The continued digging in Morgan's pit threatens to undermine the bog's water level and drain it.

Cold air is the other factor critical to Spruce Hole's survival. Cold air settles into any depression in the earth's surface such as a rill, valley, or crater and flows like water to seek a still deeper depression. At Spruce Hole, cold air settles into the crater, but the walls of the crater offer no channel for escape. This trapped air keeps the average temperature of the crater bottom many degrees below the temperature at the rim. Without this cold micro-climate, the subarctic plants and animals could not survive. If one side of the crater were destroyed, by a bulldozer for example, then the cold air would escape.

In the past, as his pit grew, Morgan cut down trees ahead of the digging. Present excavations have reached standing timber again. The trees which now stand between the sand pit and the bog are all that fend off disaster. Last winter, wind blew sand through the trees and into the crater. This means that there are no longer enough trees to provide an adequate windbreak. The sand may destroy Spruce Hole, if warm air blowing into the crater does not do so first.

Perhaps the most frustrating thing about the Spruce Hole situation was summarized by Donald W. Melvin, Chairman of the Durham Conservation Commission. He said, "If Morgan wants to hire a bulldozer and plow Spruce Hole into oblivion, there's nothing we can do — it's his land."

But Melvin, along with other members of the Commission, believes that Morgan has a sincere concern for Spruce Hole. "I think that he really wants to do what's right" commented Walter Cheney, "but I think he's sick and tired of people bugging him about it."

In 1972 the United States Park Service declared Spruce Hole Bog a national



landmark. During that same fall, pay loaders began digging away at the back side of the crater. As of this writing, excavations continue.

Spruce Hole Bog belongs to Norman R. Morgan. It also belongs to the

huntman's cups, the sundews, the black spruces, the pitcher plant mosquitoes, creeping snowberries, greater and lesser cranberries and many others.

The University of New Hampshire stands to lose a fine and rare teaching

area. Mr. Morgan stands to lose a few truckloads of gravel. But the living things of Spruce Hole have more at stake. They have their lives to lose, but they cannot defend themselves.

Text by William B. Walker  
Photographs by Buck Howe

**CREEPING SNOWBERRY AND THE SMALLER CRANBERRY**

