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the Conservationist





A vintage illustration of a snowy winter landscape. The scene is dominated by evergreen trees, likely spruce or fir, with their branches heavily laden with snow. The background shows rolling hills or mountains, also covered in snow, under a pale, overcast sky. In the foreground, a large, round, glass ornament hangs from a branch, partially obscured by the snow. The overall color palette is muted, consisting of various shades of green, brown, and white, giving it a classic, nostalgic feel.

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*Detail from logging exhibit,
New York State Museum
by Ed Kenney*

the Conservationist

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Jobs and the Environment II



"American Landscape," by Charles Sheeler

Courtesy the Museum of Modern Art

Some 300 labor union officials, environmentalists and community leaders with an ecological bias gathered last May at Black Lake, Michigan, at the call of the United Automobile Workers. Their purpose was to explore the contradictions, if any, between programs to protect or enhance the environmental quality of life and economic progress.

It is a well known fact of life that many proponents of economic progress take a dismal view of the environmental movement. They contend that laws and regulations which require industry to eliminate practices which pollute the air or water add too much to production costs. They oppose limitations on real estate developments as obstacles to the promised economic prosperity of the community.

Leaders of the UAW were acting on the conviction that the friction between the environmentalists and at least the more far-seeing industrialists could be resolved through roundtable discussion of the problem.

The deliberations of the conference revealed that many workers shared industry's opposition to environmental improvement, and some labor leaders reflected this opposition. As Tom Donahue, executive assistant to President George Meany of the AFL-CIO, said, "We often find ourselves in the middle between the movement to clean up the environment and our mission to protect the workers' jobs."

Leonard Woodcock, president of the UAW, charged that many corporations have adopted tactics designed to persuade workers that their jobs are in jeopardy if environmental regulations are enforced. In short, Mr. Woodcock said, these corporations pose the issue as jobs

or ending pollution, threatening to move their plants or close them down if they are required to end polluting practices.

"It's frequently a false conflict," he said, "but to a worker confronted with the loss of wages, health care benefits and pension rights, it can seem very real."

The UAW leader called this "environmental blackmail" and urged a "new alliance" between the labor and environmental movements which would jointly support the drive against pollution while fighting for full employment.

As pointed out on this page in our May-June issue, environmental improvement has become an industry in its own right and has produced more jobs than the imposition of anti-polluting regulations has eliminated. There is also evidence that most of those factories which closed rather than comply with environmental regulations were financially marginal and had a dubious future.

In any case, Mr. Woodcock's proposal that the unions and the environmental movement work together for their common interests is excellent and deserves the fullest support. Not all labor leaders share the UAW leader's wisdom with respect to labor's stake in the environment, and the workers' fear for their jobs will not disappear as a result of editorials like this one.

But a dialogue between environmentalists and workers will serve a useful purpose and the Black Lake conference has opened the way for such exchanges of opinion. The environmentalist must convince the worker that his program is beneficial for all the people, and that a healthy economy and healthy environment can and must go hand in hand.—R.F.H.

The Canada Lynx

by Eric A. Fountain, Jr.



THE Canada lynx, or *loup-cervier* as it is known in Canada, is a perfect example of a species declining primarily because of man's alteration of its habitat. This beautiful and fascinating cat with its distinctive bloodcurdling howl has given an added mysterious quality to the dense and quiet coniferous forests, thickets and swamps of the North American continent where it lives. Not that it is seen frequently by man. On the contrary, as far as man is concerned, the lynx would just as soon run in the other direction. In fact, one would be fortunate indeed just to see its tracks or hear its call even on its home range. Actual sightings are rare since the lynx is usually wary and prefers to live in the dense forests.

The lynx is often confused with another close relative, the wildcat or bobcat. Although the lynx is generally larger, it is more easily distinguished by differences in coloration. Both cats have characteristic ear tufts, cheek ruffs and disproportionately long legs and large feet, but these features are more pronounced in the lynx. The lynx has long soft fur of clouded gray blended with various shades of pale buff and tawny; also, the tip of its short tail is solid black above and below. With this coloration, the lynx becomes extremely difficult to distinguish in any light or against nearly any background. On the other hand, the bobcat's color varies from light brown to reddish brown with dark streaks and spots on a whitish belly. It also has a short tail but with just a few black marks on the upper side.

The lynx has heavily furred feet in the winter, an adaptation that aids it in its travels

over snow and when stalking prey. It is also a very good climber and, unlike most other cats, is a good swimmer. A favorite method of hunting is for the lynx to lie waiting on a log or rock next to a well-used trail and pounce on unsuspecting prey. But most hunting is done on level ground where surprisingly the lynx is slow, so slow that it has been reported that a swift man can run a lynx down and kill it with a club.

It is generally supposed that lynx mate for life, although there is no clear-cut evidence of this. The mating season is any time during the first half of March, the incubation period is between 60 to 65 days and the mother may produce anywhere from one to five kits. After the young have been nursed for two or three months, the family—mother, kits and probably father—set out on their travels. By about midsummer, the young are weaned and have for a month or more been eating solid food but now they begin learning to hunt for themselves. The family may continue together until autumn or even into the following year when the urge to mate causes the young to break up and find mates for themselves.

The lynx's diet is about 75 percent varying hare with the remainder made up of grouse, squirrels and mice. They will eat dead deer and other carrion during periods of scarcity. Only rarely, if on the verge of starvation, will they attempt to kill a larger animal such as a deer. Since the varying hare exhibits a cyclic fluctuation in its population about every ten years, the peaks in this cycle are followed one or two years later by highs in the lynx population. There is a similar correlation between the lows in both populations. The one factor thought to propagate this synchronous fluctuation is the lynx's dependence on the varying hare as its primary food source. These 10-year cycles have been observed in northern trapping records for over 200 years.

The Canada lynx has also been known to track and kill one, or several, foxes. This is unusual because the fox is not a part of the lynx's normal diet. What is more strange is that, although a lynx usually goes to great lengths to catch the fox, it is often left uneaten. This type of behavior is apparently analogous to the familiar dog-cat feud. But, there is a variation: the lynx, not the fox, is clearly the aggressor and usually initiates the attack.

Canada lynx are widely sought for their soft fur which is used in robes, mufflers, and for trim on coats. Lighter colored pelts are generally preferred. Despite the beauty of lynx fur, it is not very durable and requires careful attention.

Canada lynx formerly occupied an area which included much of the northern United States, especially New England and upper New York State. But the past fifty or sixty years have shown a dramatic decrease in lynx populations and in recent years there have been fewer sightings of lynx in the United States indicating a gradual northward shift of its range. The reason is not hard to find: manmade alterations of the environment such as clearing for settlement and large-scale logging operations have caused the lynx to move north despite the fact that its chief food source, the varying hare, has adapted quite well to the new environment and has not disappeared. Today, the lynx inhabits virtually all of Canada and Alaska. In the United States, they are still found in the extreme Northwest, the upper Great Lakes and most of the state of Maine.

In New York, the lynx has been gone for almost a hundred years. The last reported killing took place in the Town of Crogan, Lewis County in 1964. Dr. Rainer Brocke of the Adirondack Ecological Center of SUNY's College of Environmental Science and Forestry in Newcomb, New York, who has been conducting studies of reinroduction of predator species into the Adirondacks (see "Will the Predators Return?" *THE CONSERVATIONIST*, July-August 1976) is puzzled by the absence of lynx in this region, particularly since its chief food source, the varying hare, is still abundant. He thinks that it is inconceivable that lynx was trapped or hunted out of existence and believes rather that it disappeared from the Adirondacks because of competition from the bobcat which also feeds on varying hare and other animals including deer upon which it feeds in the winter. Originally both the lynx and the bobcat existed side by side in the Adirondacks, although they were never in direct competition. But as man took his agricultural and logging activities northward, this favored an increase in deer population, which Dr. Brocke theorizes may have in turn tipped the scales in favor of the bobcat. At present, there is no plan to reintroduce the lynx to New York. ☉

The Varying Hare

by Joseph Dell

It looks like a cottontail rabbit and like the cottontail it is among the most common animals in the state, numbering in the millions. Hunters and beagle field trialers know it as snowshoe hare, snowshoe rabbit, white rabbit and white hare. But those who call it a rabbit are wrong for the varying hare (*Lepus americanus*) has many characteristics which make it different from the cottontail. For one thing cottontails are born in a fur-lined nest, blind, mostly naked and helpless, whereas hares are born in a slight depression at ground surface, fully-furred, eyes open and a few hours after birth are apt to hop away from the birth site. The varying hare thrives only in very dense woodlands while cottontails are visible in open areas around homes, farms and along roadsides. To add to the confusion, most rabbits and hares carry misnomers. The jackrabbit, for example, is really a hare, whereas the domestic Belgian hare is, in fact, a rabbit. Perhaps the most noteworthy difference, however, is that the varying hare has the ability to change color with the seasons, from brown in summer and fall to white in winter. Hence the name varying hare.

The breeding season for varying hares extends from March to September. The gestation period averages 37 days and litter sizes average three to four young but may vary from one to eight. Hares (and rabbits) normally mate again only a few hours after the female gives birth; consequently, varying hares potentially can produce five litters a year. Actually, however, three litters per female is the norm.

Young hares (leverets) nurse for a few days before becoming completely independent of parental care. During past game farming operations we routinely weaned young at three weeks of age. By chance we learned that leverets only a very few days old can survive on vegetation alone. A few escaped their mother's pen and were observed in the holding yard two weeks later, recaptured, and found to be in good health. This did not change the weaning routine but it demonstrates the precociousness of this species.

Availability of food generally is not a limiting factor for varying hares. They utilize a very wide variety of both herbaceous and woody plants both in summer and winter. In the winter time they show a

very definite preference for such common tree species as aspen, maple and apple, utilizing the buds, twigs and bark of limbs or trunks of young trees. They also commonly eat twigs and needles of several conifers.

The varying hare has the typical characteristics of prey species—a high reproductive potential (as described earlier), short life span and a very rapid population turnover. Hares very rarely live to be four years old and in any one year's population two-thirds to three-quarters are juveniles less than one year old. Chief among their numerous predators in New York State are the bobcat, coyote, great horned owl, red fox and weasels. In Canada and Alaska the lynx and wolf also use hares for a substantial portion of their food supply, particularly the lynx which lives on them almost exclusively. These same population characteristics hold true whether or not the population in question is or is not hunted by humans. There is a compensating mechanism at work balancing losses from predators, disease, and severe weather.

Being a northern zone species the varying hare has developed remarkable adaptations for life in deep snow habitats. As the snowfall period begins, so also begins a molt pattern which over a ten or eleven week period changes the hare's color from almost totally brown to almost totally white. Sitting motionless in the daytime it is almost invisible against the snow. During the same molt period hair on the soles of its feet grows long and dense so that by spreading its toes, thus greatly widening foot contact with snow surface, it glides over the fluffiest of snows without bogging down.

In the spring, in a reverse process, another molt restores the brown color so as to better blend with summertime backgrounds. During both molts the coat is a splotchy combination of brown and white patches that also fits the mottled background created by light fall snowfalls and spring thaws. On rare occasions, however, a heavy fall snowstorm or a March thaw upsets the normal pattern and the hare becomes a very conspicuous brown on white or white on brown object. Since its normal habit is to sit tight, depending on its camouflage and ability to bolt rapidly away in high gear should a potential enemy get too close, under such conditions it becomes much more vulnerable to predation.



Varying hare populations undergo drastic fluctuations in numbers, commonly referred to as "cycles," on about a ten year average between peaks. Many hypotheses about the causes for these fluctuations have been advanced and challenged and none has given a total answer. To me the most plausible theory is the one which claims that the increasing stress of competition for range, food, mates and other necessities of life builds as the population increases and results in physiological changes that result in a crash decline. No one factor is the cause; rather it is a combination of several compounding factors that could be different for different cycles. Although the cause remains unknown the effects can be very dramatic. For example, in 1942 nearly six million varying hare skins were shipped from Alberta, Canada to felt and hat manufacturers. The following year the hare population had crashed to the point where contracts had to be cancelled and shipments discontinued for lack of skins. Hudson Bay Co. records dating back two hundred years have shown similar dramatic fluctuations in lynx that parallel the varying hare ups and downs.

Cyclic fluctuations are generally more severe in more northerly ranges. New York being more southerly located exhibits these changes but not to the same extremes.

The highest abundance of varying hare in New York is reached in habitats that provide wide expanses of dense, low-growing, coniferous escape and resting cover. In fact the varying hare's ability to exist in an area is predicated on the amount and

(Continued on page 44)



Cultural Education Center
Empire State Plaza



Photos by Ken Hay, Charles Kelley, Greg Troup and John Ross, the photographic staff of the New York State Museum.



Man and Nature

The new State Museum offers a unique and exciting approach in telling the story of New York.

by G. Carroll Lindsay

Drawings by Edward Kenney

AT 4:30 on the afternoon of June 30, 1976, the guards in the New York State Museum in Albany made their time-honored announcement of, "Closing time, closing time," and cleared the exhibit halls of lingering visitors. The last stragglers moved toward the elevators, the

guards darkened the cavernous galleries as they had each afternoon of the past sixty years, and the State Museum's exhibit halls on the fifth floor of the State Education Building were closed for the last time. An era in the one hundred and forty year history of the State Museum had come to an end. A lit-

tle afternoon on the following day, July first, as the climax of a public ceremony on the Empire State Plaza, the doors of the new State Museum were opened, the first visitors streamed into the vast marble structure, and a new era in the long career of the museum began.

At the south end of the Empire State Plaza in Albany, about a quarter mile from the State Education Building, the new State Museum is located in the Cultural Education Center which will also house the State Library, the State Archives and other units of the State Education Department's Office of Cultural Education. The new museum contains four and one half acres of exhibit space on two levels plus spaces for curatorial and administrative offices, laboratories and workrooms, storage for the historical and scientific collections of over one and a half million objects and specimens, as well as a large space designed especially for museum educational activities.

The major exhibit area found at the Madison Avenue or ground level of the twelve story Cultural Education Center, contains about 130,000 square feet of space divided into three enormous halls. Each of the two largest halls is 140 feet wide, 330 feet long and 22 feet in height. The third hall, only slightly smaller, is about 200 feet square. The remaining exhibit space on this main floor has a ceiling height of ten feet and consists of a gallery 370 feet long and some 60 feet wide. All of these spaces were designed to provide the greatest possible degree of flexibility in planning and designing museum exhibits. These exhibit halls are simply huge, enclosed spaces provided with unusually extensive utility services, so that no matter what electrical power or water any exhibit now or in the future may require, the service can be readily available at the point where it is needed. Walls and structures are, of course, necessary within the giant open exhibit halls. However, the erection of permanent walls or permanently fixed structures has been kept to an absolute minimum through the development of a unique structural system based upon eighteen foot long by four foot wide interlocking panels of unusually light weight. Using this system, a small crew of technicians can erect an interior wall or structure eighteen feet high in a minimum of time.

At the top of the grand stairway leading from the plaza to the Cultural Education Center is the State Museum's Terrace Gallery. This exhibit space is a huge glass box, 150 feet square and 28 feet high, protected by the sixty foot cantilevered overhang of the upper seven stories of the building. The Terrace Gallery at the top of the imposing stairs commands a stunning view of the ninety-seven acres of white marble buildings, reflecting pools, landscaped walks and gardens, and exciting sculpture that form the Empire State Plaza. The interior of the Terrace Gallery, elegantly finished in white marble and bronze with a floor paving of grey Adirondack anorthosite,

is intended for changing exhibits of fine and decorative art objects.

The collections of the State Museum are defined by the State Education Law as "all scientific specimens and collections, works of art, objects of historic interest and similar property appropriate to a general museum. . . ." However, throughout most of its long history the State Museum's collections, exhibitions, research and education programs emphasized the natural science of New York. The museum's concern for history varied sporadically over the years depending upon the interests of a rather few curators and at least one director who assembled a significant collection of Shaker technological materials. When, in the early 1960's, the construction of a much needed new museum became a certainty, the State Museum determined to deal equally with the history of the state as well as with its natural science. This determination was emphasized by the theme of *Man and Nature* adopted by the museum to guide the development of the major exhibits planned for the new building. Until the adoption of this theme and its underlying policy, New York possessed no museum devoted to the total range of the state's historical involvement in everything from seventeenth century Dutch delftware through electric generators and 1950's jukeboxes. The museum's revitalized commitment to New York history together with its already long and extensive concern for New York natural science formed the basis for a new approach to the interpretation of human activity and natural phenomena in the Empire State.



Museums ordinarily deal discretely with such apparently diverse subjects as history, art and science. Many of the great museums in New York, as elsewhere, devote their activity to only one of these three areas. For the State Museum, the responsibility to deal with all of these subjects for all of the state and all of its citizens was compelling. The classical arrangement of separate exhibits on history, on art and on natural science left much to be desired. The state already possessed one of the largest and finest natural history museums in the world as well as several equally large and fine art

museums. While no museum dealt solely with the entire history of the state, the many fine local history museums, considered together, contained collections and performed a function that could not, and need not, be duplicated.

After lengthy and careful consideration of its collections, and other resources balanced against the activities of other museums, the State Museum found a unique role for its primary exhibits in its new building. This role, exemplified in the *Man and Nature* theme, demanded that the museum begin an entirely new program that would explain to its visitors the significant links and interrelationships between the activities of human beings in New York and their natural environments. No exact models for this exhibit program could be found. Useful ideas, however, lay in the fields of geography, cultural anthropology, sociology and of course in the disciplines of history and the natural sciences. Because no single individual can be expert in all of these studies, the museum gathered a staff of exhibit planners with training in one or another of these areas. With the support of the curatorial and scientific staffs of the Science Service and Historical Services and with the help of a large staff of exhibits designers and museum technicians, these planners set about the task of developing a broad scheme for the exhibits.

The overall exhibit plan recognizes three large regions of the state, each with a degree of homogeneity in the significant features of their natural environment as well as in the broad context of the human activity found in them at a given time. These regions are: the Adirondack Wilderness; Metropolitan New York and Long Island; and Upstate New York. Analysis of the natural and human activity profiles leads to broad conclusions regarding the relationships between them in each of the three regions. The relationship between human activity and the natural environment remains close until the introduction of technology allows human activity to depend less and less directly upon immediate environment. However, at no period, including the present, can human activity proceed without considerable dependence upon the natural environment. Each affects the other in sometimes simple and at other times highly complex ways. The exhibits identify those man-nature relationships of broad and significant historical importance.

In the first of these regional exhibits to be completed, the Adirondack Wilderness, the region is shown as undergoing three successive stages. The Prehistoric Adirondack Wilderness is seen as it was between the last ice age and the arrival of the early

(Continued on page 8)



Hand painting foliage for exhibits



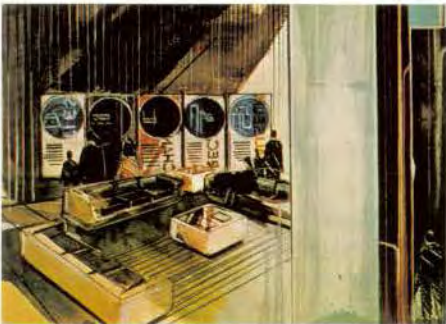
Scale model of whitetail deer exhibit



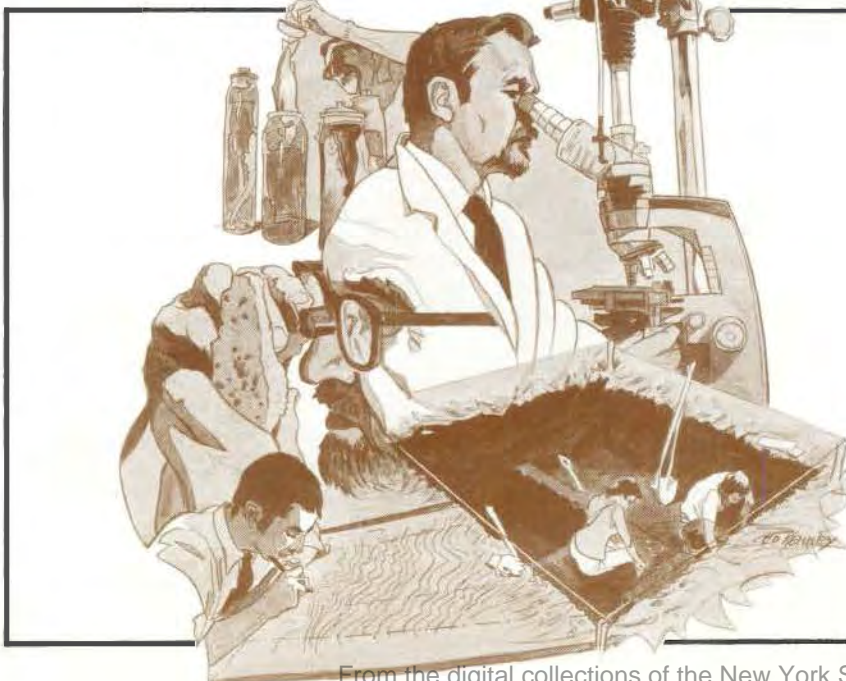
Taking photos in the field



Museum planners discussing proposed Adirondack mining exhibit



Preliminary drawing of lounge area



The Science Service

The Science Service of the New York State Museum, consisting of the Biological, Geological and Anthropological Surveys performs research activities dealing with the natural resources of New York and their relation to human activities. The curators of the Science Service are responsible for the maintenance and growth of the museum's natural history collections. The Science Service also complements the research of other organizations and helps solve specific problems presented by state agencies and by broad segments of industry or taxpayer groups. Results of these research projects appear in scientific journals and in the Science Service's own publications, both popular and technical.

MUSEUM SERVICES

Exhibits Planning, Preparation, Installation



Preparing mountain lion diorama



Preparing exhibit base

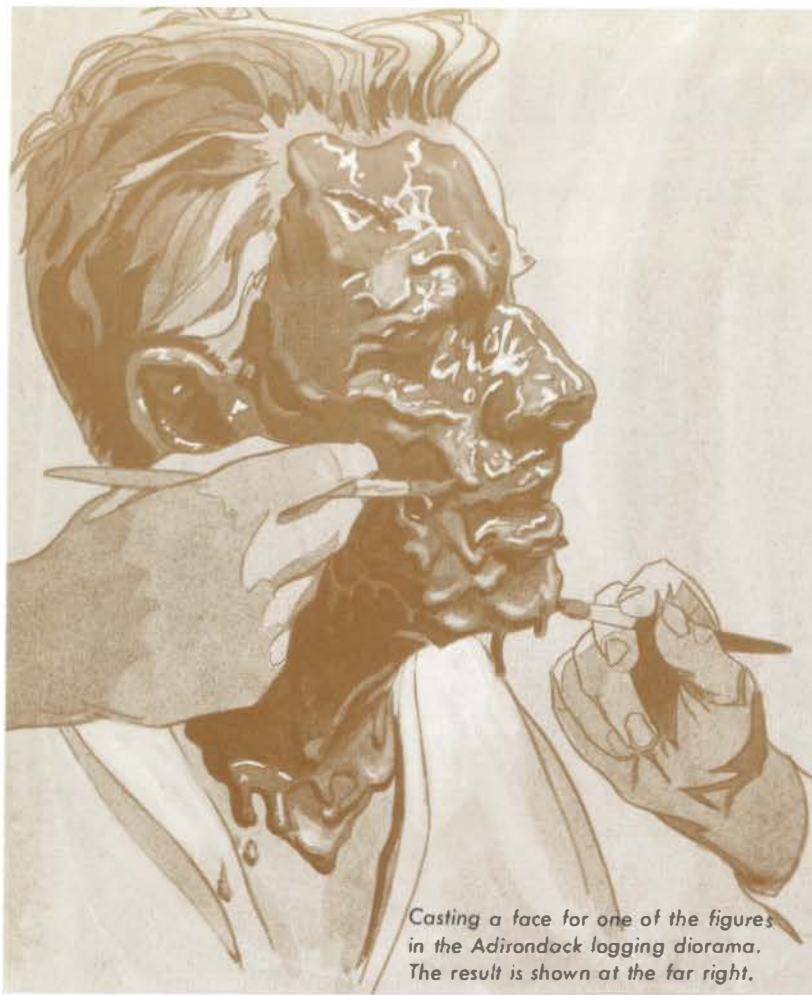


Beginning installation of Pre-historic Wilderness exhibit



"Mixing" the sound for Adirondack Blowdown exhibit

From the digital collections of the New York State Library.



Casting a face for one of the figures in the Adirondack logging diorama. The result is shown at the far right.



Ed Kenney

Finishing touches on the timberwolf diorama

settlers. Individual exhibits reveal the native flora and fauna undisturbed by human activity. The second stage, Wilderness In Transition, contains exhibits which reveal the impact of early mining, logging, hunting, and recreation on the area. In the third stage, The Contemporary Wilderness, the exhibits depict the animal and plant life found in the region today and deal with the major current human activity, recreation and its broad effects.

The Adirondack region exhibit contains life-size as well as reduced scale dioramas, audio visual presentations, and relies upon huge (up to 16 by 90 feet) photographic murals to create an ambience of the actual Adirondack landscape. Among the more dramatic exhibits are a life-size recreation of

an Indian and an elk at the base of a waterfall; a full-size scene of loggers breaking a log jam and the replication, with a four track tape played over fourteen speakers at actual sound levels, of a hair-raising Adirondack thunder storm.

Visitors begin their tour of the museum in a 250-seat theater especially designed to present a brief film showing man as a part of nature but also possessing unique capability to alter the environment. Upon leaving the theater the visitor finds himself in the Adirondacks of 4,000 years ago. As the visitor proceeds through the exhibit time unfolds and on every side he sees examples of the interaction of New Yorkers with the state's greatest wilderness over forty centuries.



Working on the base of lynx diorama



Installing photo mural for Adirondack logging diorama



Restoration, delivery and final placement of 1921 Franklin Runabout in *Wilderness in Transition* exhibit



Historical Services

The Division of Historical Services, Museum Curatorial Section, is responsible for the acquisition, conservation, care and use of the historical artifacts acquired for exhibition in the New York State Museum. It is also responsible for research relating to the collections and for the cataloging and maintenance of objects on present display. Museums, historical societies and scholars throughout the state make ample use of the collections, and one of the other functions of the division is the loan of portions of these collections for temporary exhibits. Personnel from the division make constant trips into the field acquiring objects pertaining to the history of the people of New York State. They rely principally upon donations but also acquire objects from auctions and from dealers. At present the curatorial section is located at an old army storage depot in Rotterdam, New York, but will soon move to new quarters in the Cultural Center.



Man and Elk, Prehistoric Wilderness exhibit



Mountain lion diorama



Detail from Wilderness Camping diorama



Black bear diorama

From the digital collections of the New York State Library.



Adirondack logging diorama



Restored fire engine



Surveying tower, Calvin Survey diorama

From the digital collections of the New York State Library.

James Hall

by Donald W. Fisher



Champion of Paleontology and Engineer of the New York State Museum

Portrait by
Charles M. Lang

"... it may not be amiss to suggest the propriety of erecting a building specifically to accommodate the specimens collected during the progress of the geological survey; so that they may serve to illustrate, in a conspicuous manner, the various natural productions of the State." W. W. Mather, First Annual Report of the First Geological District of New York, January 31, 1837.

ALMOST 140 years have elapsed since Governor William Marcy established the famous Natural History Surveys of New York, thereby implanting the seed of what was to eventually grow into the New York State Museum. Officially the New York State Museum was inaugurated in 1871 but the collections made during these early surveys of the 1830's and 1840's really signaled its unofficial beginnings. Since its founding over a century ago the New York State Museum has served as an example to other state museums and by virtue of its extensive collections and the high quality of its research has established an international reputation particularly in geology and paleontology. What is remarkable, however, is that this reputation was established and still rests solidly upon the accomplishments and character of one man—James Hall, who guided the destinies of the State Museum from its founding until his death in 1898.

James Hall was born in Hingham, Massachusetts on September 12, 1811. As a youth Hall's interest in natural history had been aroused through assisting the organizers of the Boston Society of Natural History and it was his admiration for these pioneers that determined his plan to spend his life in science. In 1830 he enrolled in the Rensselaer School (later Rensselaer Polytechnic Institute) to study natural history, especially geology, under the famous Amos Eaton. He graduated from Rensselaer in 1832, received his M.A. in 1833, and taught chemistry there until 1836. The founding of the Natural History Surveys of New York in 1836 offered Hall an opportunity and he accepted an appointment as a junior member of the newly-formed State Geological and Natural History Survey.

Investigations into New York State's mineral wealth had been conducted as early as the late 1790's but no collections were kept for lack of an organized repository. Equally lamentable is that no specimens remained from Amos Eaton's classic survey for the Erie Canal, commissioned by Governor DeWitt Clinton. When Governor Marcy established the Natural History Surveys on April 15, 1836, he could not foresee the voluminous collections that would result from the combined surveys of the scientists who investigated and collected animals, plants, minerals, rocks, fossils, soils and various other objects of natural history within New York State.

On the advice of Eaton and Edward Hitchcock (professor of geology at Amherst College) the state was apportioned into four geological districts. William W. Mather was placed in charge of the First or Eastern District; Ebenezer Emmons headed the Second

or Adirondack District; Timothy A. Conrad supervised the Third or Central District; and Lardner Vanuxem headed the Fourth or Western District.

The first year's work produced so many unidentified fossils that in the following year the Geological Survey was reorganized with Conrad appointed Paleontologist. Vanuxem was transferred to the Third District and the 25-year old Hall, then assistant to Ebenezer Emmons, was given charge of the Fourth District. Within the 10,000 square mile patent of his jurisdiction, Hall discovered what has proven to be the most complete, highly fossiliferous, undeformed rock arrangement of one great geological system—the Devonian (400-350 million years ago) and ironically in an area that was thought to be geologically dull.

Paleontology, the study of past life preserved as fossils, was in its infancy during the first half of the 19th century and was both an outgrowth and necessary adjunct to geology. Scientists study fossils in order to classify and catalog the earth's roster of life; to help in recognizing divisions of the geologic calendar to reconstruct ancient environments and ancient geography; and to seek direct evidence of evolution through time by change in form and structure of the specimens they study (although it is unlikely that Hall and his contemporaries had this in mind, the theory of evolution not yet having been formulated). The comparatively unexplored North American continent offered great promise for new discoveries in geology and paleontology. All in all it was a fruitful and exciting time in the annals of American science.



Meanwhile, fossil collections were continuing to amass at such a proliferating rate that Conrad threw up his hands in frustration at the thought of organizing, preparing, and describing the mountains of petrifications. Faced with the enormity of preparing a systematic monograph with at least 100 plates, Conrad quit.

So as to partly remedy the problem of growing collections, W. W. Mather, Conrad's colleague at the survey, continued to press for a state museum, "Persons who have had opportunities of examining extensive collections of natural objects, cannot but be aware, that much depends on their arrangement, so that the light may fall upon them in such a manner as to shew [sic] them

to the best advantage. It is therefore desirable, that an edifice should be constructed with special reference to this object. A State Museum of Natural History, like the British Museum, the Jardin des Plantes, or others in Europe, would do honor to the state, and be an example worthy of imitation by others." Mather's vision for a natural history museum for New York was one of international scope and exceedingly ambitious for that period. As it turned out his statement was prophetic for during the ensuing century the New York State Museum has established both a national and international reputation for its research and collections.

During the first New York Geological Survey (1836-1841), the district geologists had developed their own sedimentary rock nomenclature, the New York System—a superposition of strata characterized by diagnostic physical and organic makeup. New York State was one of the most conducive areas that could have been selected for working out the study of the fundamentals of stratigraphic geology—as espoused a few years earlier by William Smith in England. The New York survey left a more impressionable legacy upon American geology than any that preceded or succeeded it, for besides supplying American geology with a nomenclature largely its own, it demonstrated unequivocally the value of fossils for correlation purposes. Four monographic District Reports (1842-1843), classics in American geology, were the products of this survey. But if there was any failing in the reports, it was the omission of detailed descriptions and illustrations of fossils.

The British geologists Sir Charles Lyell, considered by many to be the father of modern geology, and Sir Roderick Murchison, both oracles of mid-nineteenth century geology, had pronounced that if the New York classification of rocks (the name is now abandoned) was to receive international acceptance, it must be fortified by detailed paleontological investigation. Therefore Governor Bouck, following Conrad's departure, commissioned James Hall to initiate a comprehensive project of describing and illustrating the fossils of New York and awarded him in 1842 the title of State Paleontologist. The implementation of such a task demanded a person of competence, enthusiasm, conviction, devotion to the science, and courage. Hall admirably filled all of these qualifications.

The fruit of this commission was the monumental "Paleontology of New York," thirteen quarto volumes of 4320 pages and 980 lithograph plates—a paleontological bequest exceeded only once by Joachim Barrande, the famous Bohemian paleon-

tologist (44 quarto volumes with 1632 lithograph plates) published between 1847 and 1892. No purely scientific work ever supported by New York State has produced results of greater significance. But during its composition Hall would have to battle to maintain his own position, would quarrel with colleagues, particularly Ebenezer Emmons, and would have to suffer through numerous battles with the Legislature—whose enthusiasm for Hall's work would wax and wane.

Governor Bouck abolished the natural history surveys in 1842 and whereas most of the geological survey staff went their separate ways, Hall and Emmons lingered in Albany with the intention of competing for the as yet non-existent job of orderly arranging the now chaotic mass of collected fossils. In a puzzling assignment, Emmons was appointed custodian of the collections. Because of the personal and professional animosity that had developed between Emmons and Hall, there was a great deal of turmoil. In an effort to quiet the unrest, the Legislature transferred the collections of the State Cabinet of Natural History, as it was then called, to the jurisdiction of the Board of Regents of the University of the State of New York. Thus, by design or by accident, the forerunner of the State Museum came under the Education Department. The Regents dismissed Emmons from the curatorship and evicted both him and Hall from their working quarters in the State House, whereupon Hall transferred his hostility from Emmons to the politicians—a lifelong battle. The Hall-Emmons contest was short-lived, ending in 1842 when Hall was made State Paleontologist, either because of superior competence, relative youth or political favor. As a conciliatory measure, the aging Emmons was made State Agriculturist.

Emmons performed a creditable job and prepared several monographs promoting some of his pet geological ideas within some of the agriculture volumes. Chief among these was his view that the Taconic System of deformed rocks, east of the Hudson River, was older than the then-oldest strata in New York—the Potsdam Sandstone. This was anathema to Hall who, along with most distinguished American geologists of that period, maintained that the Taconic rocks were nothing more than deformed equivalents of the same rocks further to the west. Older fossiliferous rocks were unknown in North America at this time. This philosophic duel lingered too long, both in print and in the courts. Hall, and his supporters, succeeded in winning their case; the embattled Emmons left New York and retired to obscurity as State Geologist of

North Carolina. Later generations of Taconic workers have demonstrated that Emmons and Hall were both right. Much of the Taconic rocks are older than the Potsdam but many are the deformed correlatives of the rocks west of the Hudson River.

In order to continue his work on the "Paleontology," Hall erected a building adjacent to his home, where he labored until 1852. Earlier (1847) the first volume of the "Paleontology of New York (Organic Remains of the Lower Division of the New York System)" had made a notable impression throughout world scientific circles. Now, Hall had achieved peer recognition on an international basis, and the leading scientists of the day, including Sir Charles Lyell, Louis Agassiz, the great Swiss naturalist; Joseph Henry, the physicist and pioneer in electro-magnetic studies, late of Albany and now director of the newly-founded Smithsonian Institution (see "The Professor Rang a Bell," *THE CONSERVATIONIST*, June-July 1973); James D. Dana, professor of geology at Yale; and Edouard de Verneuil, the eminent French geologist were counted among his personal friends.

When it came to science, state policy makers tended to be sedentary rather than progressive. Not until 1847 was a modest appropriation made for preserving and increasing the collections of the State Cabinet of Natural History. Prior to the 1852 publication of the better-executed second volume of the "Paleontology," frugal legislators had severed all appropriations for the paleontology project, except for engraving costs and a small stipend for drawings. For lack of adequate space, Hall and his growing entourage of paleontologists were forced to move to the Albany Institute, which served as their working facilities until 1857.

James Hall in his laboratory

Courtesy NYS Museum





James Hall at the International Geological Congress, Perm, Russia, 1897. This is probably the last photo taken of Hall.

Courtesy NYS Museum

propriating a handsome allocation for his "Paleontology." Hall reconsidered and remained in New York the rest of his life—a total of 63 years of public service. Even today, this distinguished and lengthy tenure is unmatched in the annals of science.

In 1857, Hall constructed a most commodious brick building for his research purposes. The building is still standing in Lincoln Park, appropriately within view of the Cultural Education Center which houses the new State Museum. To the "Lincoln Park" apprentice school flocked the student paleontologists of the day in order to learn and labor in the shadow of Hall's growing fame. Which way to Albany? became a common query for both aspiring and professional paleontologists—on an international scale—for some 40 years. Lacking artistic talent himself, Hall was forever in need of capable artists and lithographers to illustrate the fossils that he and his assistants were busily preparing and describing. Hall's collectors, assistants, artists came and went. Over all these, like a mother-hen, Hall exercised diligence, criticism, review; he taught his students not only the science but the art of fossil collecting.

As a collector, Hall was unsurpassed. He knew no duplicates; no two specimens of a species seemed precisely alike. When he collected, he collected all that there was to be had and he instilled this trait in his students. Among the long train of Hall's proteges were: Charles E. Beecher, later professor at Yale; Charles Calloway; Orville Derby, later with the Geological Survey of Brazil; John M. Clarke, Hall's successor at the State Museum; Ebenezer Emmons, Jr., probably Hall's most talented artist; Grove C. Gilbert, Ferdinand Hayden, later Director of the U.S.



Geological Survey; Fielding Meek, Carl Rominger, George B. Simpson. Hall's nephew; Richard Rathbun, Charles Schuchert, later professor at Yale; Charles D. Walcott, later Director of the Smithsonian Institution; and Robert Parr Whitfield, later chief paleontologist at the American Museum of Natural History. This list numbers some of the most highly trained geologists and paleontologists produced in the United States in the nineteenth century. For a time, Hall's two sons, James III and Charles (Ned) assisted their father in his work. The discord between Hall and his assistants is legend but he never compromised his high standards for a tranquil atmosphere.

In 1847, as noted, the legislature established the State Cabinet of Natural History to preserve and increase collections. John W. Taylor, John Gebhard, Jr. and Colonel Ezekiel Jewett became successive curators of the fossil collection. Jewett resigned in 1865 because of a conflict with Hall as to how the fossils should be curated. Thereupon, Hall assumed the curatorship and when the State Museum was organized in 1871, was appointed to the directorship. He now held both the reins of the collection and the whip of the position.

From 1865-1895 Albany became the busiest center in the United States for research on invertebrate fossils, and for once funding was generous—greatly exceeding present day allotments. During one year alone, Hall received \$83,000 for his "Paleontology" project—a lavish sum for science in those days. It should be emphasized that most of Hall's contributions appeared after he attained 60 years of age—a time when most men feel that the burden of life should be lessened. But he retained his youthful attributes by persistent work. When 86 years old and already showered with international honors, his mind was still keen, more ready to accept new ideas and to reject erroneous, though cherished opinions, than when he was but 30 years old.

Eventually the State Museum attained such proportions that administrative matters, real and trivial, were voraciously eating into research time. It was the forerunner of a later unwarrantable and cumbersome bureaucracy and a horrid phantasmagoria for the old savant. Surrounded by men hating him for his success, harassed by men anxious to reap the harvest which he had sown, his life became one continual anxiety. His political and professional foes concurred that Hall had done injustice to the world by living too long and thereby had received more than his share of accolades. But his friends were exceedingly loyal. Over the protest of the Regents, Governor Flower bestowed on Hall the statutory titles of State Geologist and State Paleontologist for life. James Hall occupied his eminent position as America's foremost invertebrate paleontologist for so long a period primarily because he refused to be displaced. He had injected into American paleontology the stimulus that it required in order to keep pace with progress in European paleontology.

Hall's personality was picturesque. He was self-reliant though anxious for enthusiastic aid. Whereas he was stingy in his written acknowledgement of others' assistance, he was orally complimentary of their achievements. He was domineering, yet with an attentive ear, irascible yet kind.

"But all his life," as John M. Clarke would note, "his [Hall's] nervous system was strung taut as an aeolian harp and mournful discords it gave out when the wind blew from the wrong quarter." Nevertheless his health remained excellent, his vitality remarkable. He was erect with a thick snow-white beard running high up on his ruddy cheeks. With spectacles somewhat askew on a moorish nose, chimney-pot hat, ever present cane, and knee-length coat buttoned to the neck, his rotund, somewhat pompous-looking figure cut a noticeable swath when touring the Albany streets in a disheveled carriage drawn by a not-so-young horse.



James Hall died on August 7, 1898, at Echo Hill, Bethlehem, New Hampshire while on vacation. His long career had spanned an era when science had traveled from the tentative gropings of the natural historians of the early 19th century to the established position it has in our lives today. Hall's accomplishments during his long life are staggering. He wrote over 300 scientific articles, introduced the concepts of geosyncline and isostasy into modern geology, helped found the American Association for the Advancement of Science (and served as its president in 1856), was first president of the Geological Society of America and was a charter member of the National Academy of Sciences. He was elected to membership in over fifty national and international scientific societies and received numerous honorary degrees and awards for his contributions to science. But Hall's crowning achievement still remains the "Paleontology of New York." He had successfully weathered his 60-year war for creditation of American paleontology. Certainly, he had answered Lyell's and Murchison's original challenge: he had more than adequately supplemented the original "District Reports." This then was the engineer who successfully nurtured the idea of the New York State Museum on its perilous journey to a vibrant reality. ☉

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Hunting the Quiet Way

by Fred Bear

THE whitetail deer has provided a source of recreation for people with varied wildlife interests including generations of rifle hunters. In more recent times however there are added thrills for the man who hunts with the bow and broadhead arrow. His is a weapon with a romantic past, the weapon of Robin Hood, the Redman, and the battles of ancient history. Even before that it was the weapon of primitive man. Such a weapon becomes almost part of the man. His muscles are the power behind the arrow and his eye directs its course. And if he misses, he still has the thrill of seeing the arrow's flight and the nearness of the miss.

The argument in favor of bowhunting is that it takes a high degree of skill to use the weapon effectively and, because of its comparative shortness of range, the bow provides a greater challenge of matching the hunter's skill against the wits or instinct of the wild animal. Many sportsmen have joined the ranks of the bowhunters to escape crowded gun hunting conditions, or because it affords them more pleasant times afield than they gain from the gun seasons alone. Many a sportsman has become a two-season hunter who prolongs his autumn pleasure afield by taking advantage of both the bow and rifle seasons. Within the limitations of his weapon, the bowhunter naturally has more odds stacked against him than the rifleman and thus the big game bow kill of deer is nowhere near as great. Bowhunting requires considerable knowledge of the natural environment if the hunter is to be consistently rewarded. To successfully hunt any animal, it is first necessary to know and understand some of its habits.

Deer soon learn where they can find

their preferred foods and make regular trips to these areas, establishing distinct and well-used trails. A good bowhunter scouts these areas before the season, checking on the times of day the deer visit certain spots and which trails they use. Scouting areas before the season opens determines where the best concentration is, but during a long season the bowhunter should be scouting for new areas every time he hunts. He can then spend more actual hunting time in the most productive area.

Binoculars are a great help in scouting a hunting area. To scout successfully, the observer must keep his distance so as not to alarm the deer. The normal routine is for the hunter to first take a walk through the proposed hunting area, keeping largely to high ground and out of places where deer might be concentrated. He looks for feeding grounds both where he is traveling and on distant hillsides. He watches for main deer trails and notes how much they are used. Once he knows the lay of the land he should have some idea as to the best feeding grounds. He should watch during the late afternoon and early morning hours noting where the deer come from and when they start moving in. If he sees only a few deer before dark, perhaps it would be wise to do some further scouting. By working out different areas in this manner, he will soon have a good idea as to where to expect deer and at what time they start moving.

Deer travel as much as several hundred yards to bed down, but sometimes they bed right in the feeding area, arising to feed from time to time throughout the day. They rarely range more than a mile or so from a given point. Larger bucks very seldom bed in the feeding area, and they tend to move to higher

ground as they move out. In hot weather, deer bed in stands of trees on ridge tops, or just below, where they can take advantage of cooling breezes. During early summer, bucks often run together, but later on they retreat from one another to rub the velvet from their antlers and to prepare for the rutting season. Trails usually connect various feeding areas or feeding areas to bedding sites and are normally used by the deer on a regular schedule. Knowledge of these facts is important to the bowhunter in planning a successful hunt.

Basically there are three ways of hunting big game with a bow. One is "still" hunting and is usually done by one hunter. With knowledge of the terrain, the trails, the feeding and resting habits of the deer, the still hunter walks quietly a few feet, then stops for several minutes before moving another short way and stopping again. Often a deer will stand and let a person walk by, but will become uneasy if that person stops and will try to sneak away. Still hunting combined with a close stalk is probably the most challenging way to hunt, since a bowhunter should be *within* thirty yards of his target with a clear shot before he releases an arrow. It is possible, but difficult.

Another method of hunting is the "drive" in which watchers are posted overlooking trails, and other hunters circle around the area, slowly converging on the watchers. Deer caught between, hearing the drivers, move unsuspectingly toward the watchers. Sometimes the deer become excited, furnishing only fast running targets for those hunters on watch. While effective in flushing deer from cover, drives do not allow a hunter to get deer in a relaxed and natural way.

Scouting the area

Wayne Trimm





Portable tree stand with climbing blocks

The third method of hunting is from a stand or watch, patiently waiting for the natural movements of the animal to bring it within range. Some stands are ground blinds usually composed of natural material to help conceal the bowhunter. The main problem with this method is that deer know every tree and stone in their area and anything strange or out of place is obvious to them. Since deer by nature are extremely alert, probably more of them see people in blinds than there are deer seen by people. One way to even the odds is the use of a portable tree stand. These are platforms temporarily placed on or in a

tree from eight to fifty feet off the ground on which the bowhunter can wait, his form and scent less easy for deer to detect. The wait may be hours long, so a safety line encircling both the tree and the archer's waist is important. In some instances deer will look up, spot the bowhunter and leave before getting within bow range. At other times they will walk almost beneath the archer, completely unaware of his presence. In the thinking of many, the stand is the best method of taking deer with a bow, since it provides a standing or slowly walking target at close enough range so the shot is apt to be reasonably ac-

Bow Hunting in New York State

Last fall more archers went afield for deer in New York than ever before — some 95,000 of them. They also took a record number of deer — 3,288. That amounts to about one deer for every 29 archers, a rather low success ratio compared with gunners, who got about one deer for each 6.5 hunters.

That says something about the recreational value of archery, for if gunners had that success ratio, many would quickly hang up their weapons. It also says something about what constitutes a "successful" hunting trip. If bringing home a deer was what it took to have a successful hunting trip, we wouldn't have a steady increase in the number of archers — a fact that the "anti-hunting" public might do well to recognize.

If it isn't venison or antlers that draw the archer into the field every fall, what does? One thing is the challenge of trying to outwit the wary deer in its own territory using a primitive weapon. This challenge is further enhanced by the fact that during the archery season there are not as many deer hunters tramping through the woods, keeping deer on the constant move. So, the element of luck is reduced and the element of woodsmanship is increased.

This year a new group of archers will have the opportunity to join the brotherhood — junior archers. The 14-15-year-olds are still ineligible for a big game license, but provisions have been made for them to get a junior archery license. The regular Hunter Training Program must be completed before applying for this license, and the junior archer must be accompanied — that means within sight or sound — by a qualified big game license holder. — Paul M. Kelsey

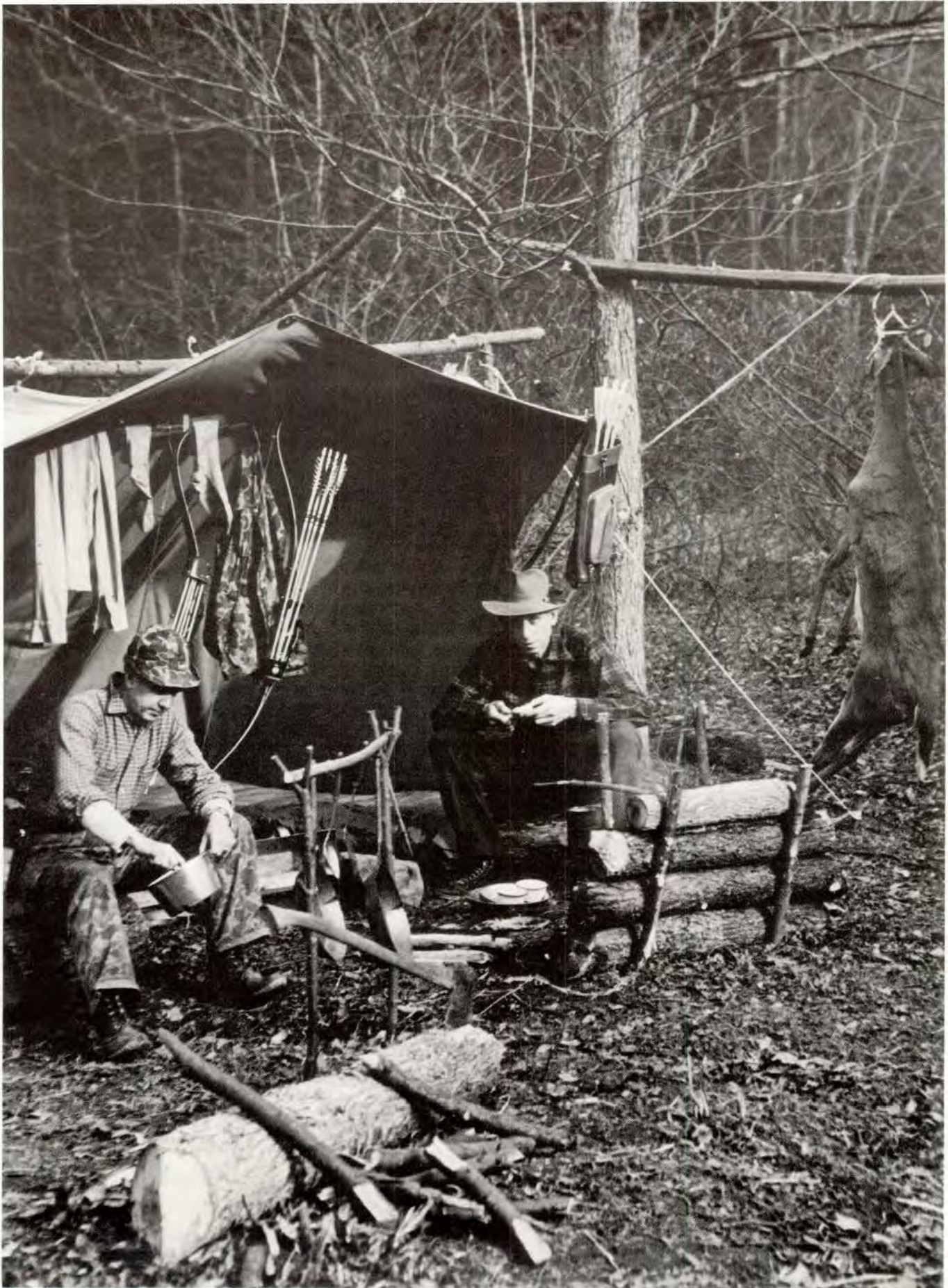
Editor's note:

The National Field Archery Association is sponsoring a nationwide program of bowhunter education consisting of hunter-game relationship, hunter-landowner obligation, background in game management fundamentals, basic techniques in hunting and the knowledge and efficient use of proper equipment. Many state conservation departments, including that of New York, are backing this program. For further information write: Mr. Bernard Heise, RD 1, Penn Yan, N.Y. 14527.

curate, and will result in a quick, humane kill. To the true bowhunter this is important, for he respects the game he hunts.

To many hunters, particularly bowhunters, the pleasure of the hunt lies in being out and close to nature. Memories that live are quiet ones of chipmunks, clouds, chickadees and a pounding heart when a deer or rare bird comes into view. Actual killing of the game is only a small part of the total experience. However, if the archer scores a hit,

(Continued on page 38)



A good day's hunting

Fred Bear


State of New York, Department of Environmental Conservation

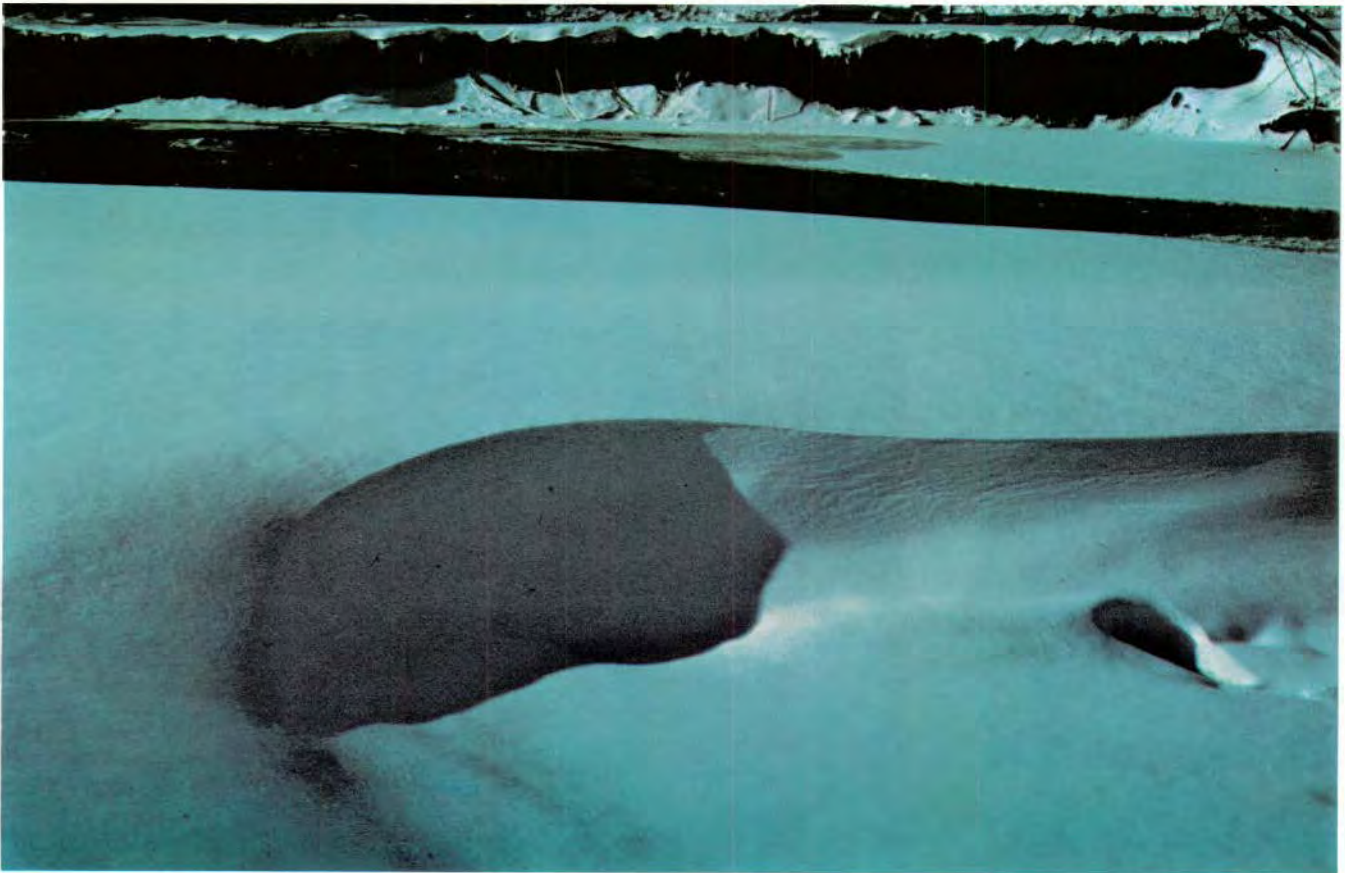


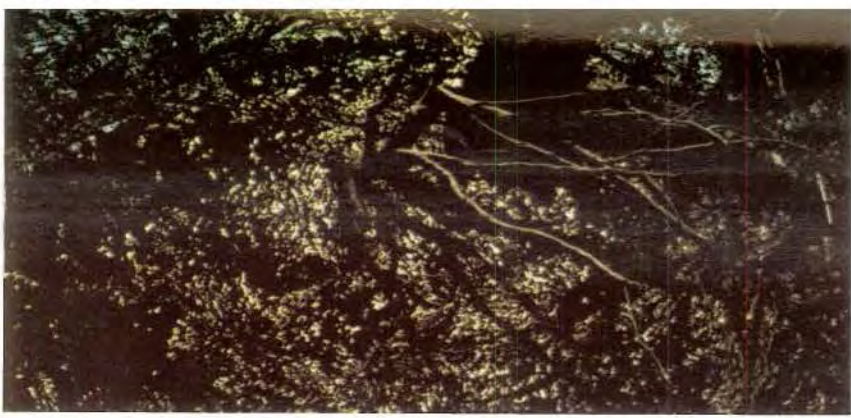
Along the Oriskany

Photos and text by Edward H. Dwight

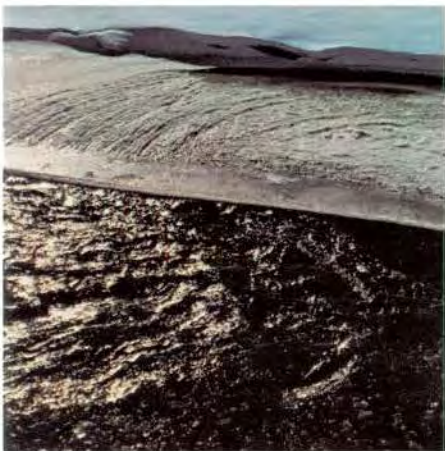


ALONG the Oriskany, except for an occasional fisherman in the spring and children swimming in the summer, I am usually alone. There are many birds along the stream; raucous kingfishers, nervous sandpipers, and song sparrows that nest nearby. In the mud and sand along the water's edge are the ubiquitous footprints of raccoons, muskrats and sometimes those of deer. In the fall when I would like very much to photograph along the stream, men are hunting pheasants that live in the bordering fields. Reluctantly I stay at home. But during the winter when the snow is deep I return to find everything changed and greatly simplified by the snow and ice beneath which the water continues to flow. Spring seems long in coming but when it does, I watch flocks of robins feeding in the fields along the stream while torrents of muddy water wash against the river banks. Each spring the river changes its course and trees that have grown near its banks are gradually undercut and finally fall across the water to make bridges for boys and their dogs. Because of the change in season and in the creek there are always new subjects to photograph and old ones to return to, and to see in different ways and to photograph again. 





Along the Criskany



Too Precious to Burn

by Ronald S. Wishart

Petrochemicals are chemicals and chemical derivatives made—as the name suggests—from petroleum and natural gas. Such manufacturing differs from the refining of petroleum and natural gas for fuel. Ninety-four percent of all our energy resources are used for burning, but this is a less preferred and less valuable use than converting petroleum and natural gas to petrochemicals. The distinction between these uses appears both elemental and obvious. But it is a crucial distinction, and one that has somehow eluded the vast majority of Americans. The widespread lack of information on this matter, due in part perhaps to the petrochemical industry's negligence, spells trouble for enlightened energy planning.

Petroleum and natural gas are burned as fuel both by stationary installations such as electric generating plants, office buildings, and homes, and by transportation vehicles such as buses, cars and trucks.

Petrochemicals, derived from petroleum and natural gas are the staple from which literally millions of today's products are made, products without which our nation could neither prosper nor survive.

In food distribution, it is petrochemically-derived plastic packaging that extends shelf life and reduces spoilage. Petrochemically-based insecticides save U.S. consumers a staggering \$20 billion in food costs each year.

In serving health needs, an almost inexhaustible number of pharmaceuticals, biologicals, medicinals and drugs are petrochemical in origin. Aspirin is derived from oil and gas. Antibiotics depend upon petrochemically-based solvents and their derivatives.

In transportation, the tires on almost all vehicles are made from synthetic rubbers. A total of 165 pounds of plastics are incorporated into the average American car: vinyl seat covers and roofs, foam padding, steering wheel, enamel, polish, cooling and electrical systems, fluids for power steering and brakes and hydraulic mechanisms, film-laminated safety glass, and antifreeze.

Without plastics, communications would be crippled. The absence of plastics in wire insulation would paralyze telephones, television and radio. Most of the above products and systems, moreover, directly or indirectly affect our national security.

The driving conclusion from this scant catalog of petrochemically-derived products is that not all uses of scarce petroleum and natural gas are equal in importance. Their value as raw materials far exceeds their value as fuel. As supplies of petroleum and natural gas diminish, the nation will have to face the reality that these

resources are too precious to burn.

Industries and consumers that do not truly require the unique chemical constituents of oil and gas hydrocarbons should be induced to substitute other forms of energy. Given reasonable time and sound incentives, stationary burning markets can use coal, shale, uranium and, in certain instances, solar and geothermal power.

The transportation market can also substitute, although to a more limited extent. This market relies upon mechanical motion, resulting from the rapid and controlled release of energy. Battery-powered electric motors and liquid fuels such as methanol or aromatics made from coal or shale can produce this motion, thus conserving precious oil.

Can the petrochemical industry itself substitute another raw material for the oil and natural gas which it now uses to make petrochemicals? Here the prospects for conversion are much more limited. Today there are no practical substitutes for oil and natural gas. Even in the foreseeable future, oil and natural gas must be the source of the raw materials for all existing petrochemical plants. But work on alternatives is progressing. Union Carbide has made significant progress in developing a process for making some petrochemicals using coal or other non-petroleum raw materials (even garbage), but the work is still very much in the research, test-tube stage. In short, if the unique chemical structure of oil and gas hydrocarbons is not present, petrochemicals today simply cannot be made, and use of other raw materials is only a distant and limited possibility.

Those markets that can adopt alternate fuels should convert. The federal government, by effective legislative and administrative measures, should facilitate and encourage such conversion. The continued availability of petroleum and natural gas raw material for the more than \$40 billion worth of petrochemical products that serve our seven basic human needs, and that affect virtually all manufacturing industries in the United States in some ways, is clearly contingent upon sound public and governmental policy.

As the public at large and our federal policymakers chart their energy-conservation future, these principles should be held prominently in view: the usage of petroleum and natural gas as a raw material is critically distinct from their usage as fuels; and, petroleum and natural gas should be conserved, as far as possible, for their more valuable raw material use.

The energy clock is ticking. Fuel conversion must be begun now. Conservation demands it. ♻️

(Overleaf)

The Raccoon

The raccoon is our most common small mammal and survives, even flourishes, in a wide variety of habitats including forested suburban tracts and even in wooded city parks. I once knew a pair who madenightly trips to our garbage cans and knew how to prize off the lids. Nocturnal creatures, they are best observed during a night walk in the woods with a flashlight, and it is not uncommon when driving your car along a country road in early summer to pick one up in your headlights (perhaps a mother with two young ones).

He gets his common name from an Algonquin word, arakun, meaning "he who scratches with his hands," for his forefeet, with five finger-like toes to each, are almost as flexible and adept as hands. He has a wide black band across his face like a mask, and black rings around a bushy tail. He may have an overall length of 40 inches and weigh up to thirty-five pounds.

The raccoon's curiosity is likely to overcome his shyness about humans; his fear is reserved mainly for dogs although with his back against a wall, a coon can give a hound a tough fight. His escape is into a tree which he can climb like a squirrel.

The coon will eat almost anything: nuts, fruits and berries, honey, crawfish, crabs, clams, oysters, frogs, fishes, insects and eggs of all kinds. Once the coon reaches adulthood his only enemy is the weasel, but the young are often victims also of eagles and owls.

The raccoon has a reputation for daintiness, and his Latin name, Procyon lotor, translates freely as a forerunner of the dog who washes his food. Observers concede the coon will wash his food if water is available but that he is no stickler for it.

In the North the raccoon sleeps part of the winter in a cave or hollow tree but during a mild spell will emerge for a while. Raccoons mate in February or March with the young, in litters of two to seven, appearing after sixty-three days.

Unless the fad for coonskin caps among the young Daniel Boone admirers or for coonskin coats among a new college generation is repeated, the raccoon has excellent prospects for continuing to multiply and replenish his kind.—Elaine Suss. ♻️





Insects and Spiders

—How They Spend the Winter

by John Serrao

Photos by author

As the days grow shorter and colder during New York's autumn, an amazing variety of insects and spiders seems to disappear from our woods, fields, and yards. During the summer months these animals are so omnipresent that one almost becomes numb to the sounds of crickets, katydids, and cicadas, and the sight of bees, wasps, and butterflies pollinating the flowers. Throughout the late fall and winter months, however, our many thousands of species of insects and spiders are, for the most part, lying dormant in some protected microhabitat, awaiting the return of warmer weather.

Spiders have devised a number of ways to survive winter's sub-freezing temperatures and absence of food. Many species remain dormant under logs or leaf litter, inside burrows, or beneath the bark of trees, usually in a half-grown stage. Examples include the huge fishing spiders, the wolf spiders, and some species of crab spiders. These are species that didn't emerge from their eggs until late summer and won't reach maturity until the following spring and summer. Jumping spiders spin a thick, silken cocoon in which they pass the winter attached under stones or bark, or inside a rolled-up leaf. Many spiders actively spend the winter in-



Black and yellow argiope

Black swallowtail chrysalis



doors, usually in dark cellars, closets, or neglected corners. These include the house spiders (cobweb spiders), funnel-web spiders, and long-legged spiders, and they generally find enough prey to carry them over the winter months. Finally, the grass spiders and large garden spiders, or orb weavers, pass the winter inside well-insulated egg sacs, each containing hundreds of eggs laid by the adult female in early fall. The female usually places the egg sac beneath tree bark or attaches it to vegetation, and then dies. The eggs often hatch soon afterwards, but the tiny spiderlings remain inside the sac until next spring, subsisting first on their egg yolk supply and then feeding on each other.

Insects have evolved even more mechanisms to insure their survival until the return of warmer weather and a plentiful food supply. A very few, such as the famous monarch butterfly, actually fly south to warmer regions, their offspring returning here in spring. Most insects, however, are permanent residents and are forced to endure the winter weather. Only a few of these can actually remain active, such as the nymphs of stoneflies, mayflies, and



Shoemaker spider



Black widow spider



Mourning cloak butterfly

dragonflies, which live beneath the ice in ponds and streams. In fact, some stonefly nymphs develop more quickly in colder weather, and a few species actually leave the water as adults in winter to mate on top of the snow near streams. After depositing their eggs in the icy waters, these insects die. Some species of tiny springtail insects, called snow fleas, are also commonly encountered hopping on the snow in winter, feeding on particles of organic matter. Beneath the soil, inside the wood of trees and logs, or even inside plant galls, beetle and wasp grubs, fly maggots, and ant and termite colonies can

obtain shelter and nourishment throughout the winter. They are often saved from freezing temperatures by a deep snow blanket which not only insulates the ground beneath it but also keeps its temperature remarkably constant. Large temperature fluctuations and alternate thawing and freezing often pose a greater mortality factor to wildlife than constantly low temperatures.

A colony of honey bees remains semi-active during the winter in a hollow tree, and keeps warm simply through the generation of body heat. This is made possible by the consumption of as much as 30 pounds of

stored honey over the winter months: the heat energy produced by the oxidation of this food is circulated around the hive by the wing-fanning of the worker bees. In this respect, honey bees differ from almost all other social bees and wasps in temperate climates, where the entire colony dies in winter, except for the fertile queens that overwinter and start new colonies in spring.

The great majority of insects neither migrate nor remain active during winter. They enter a state of dormancy called diapause, in which their growth, development, and activities are temporarily

Monarch butterfly





Praying mantid



Mantid egg case

suspended, and their metabolism is just high enough to keep them alive. In this state of suspended animation the insect can survive on whatever food it has stored inside its body, since its energy demands are almost nil. Unlike hibernating vertebrates, such as woodchucks and snakes, insects in diapause cease all growth processes and add no new tissues to their bodies. Scientists have discovered that it is the seasonal changes in daylength that cause an insect to enter its dormant state. As the days get shorter and shorter in autumn, the insect responds to this daily decrease in light by seeking shelter and entering a state of diapause. The reverse occurs in spring when daylength increases. If the insect relied on weather conditions to control its seasonal activities, it would often be "fooled" into becoming active during warm spells in winter when there is no food available. The change in daylength, on the other hand, is a process that never changes

from year to year, and is thus a completely reliable source of information for organisms to base their activities on. Plants, the main diet of most insects, also rely on daylength to control their activities, such as leaf-fall in autumn and leaf-growth in spring. Thus, diapause has evolved in insects as a major adaptation which insures that their periods of activity coincide with both a favorable climate and a ready food supply.

Usually, the stage in the insect's life cycle most resistant to cold is the stage which overwinters in some sheltered location. Insects enter diapause as adults (ladybird beetles, mourning cloak butterflies), as larvae (wooly bear caterpillars), in insulated cocoons (giant silk moths), as immature nymphs beneath the ground (grasshoppers, crickets), or in the egg stage (gypsy moth, praying mantid). Just as some plants will not fruit, flower, or germinate without first passing through a period of cold weather, many

insects will not emerge from diapause unless they first experience winter conditions. This is especially true for insects that pass the winter in the egg or pupa stage, and it is a further adaptation which insures that they don't hatch and become active during warm winter spells when there is no food around and spring weather is still far away.

An overwintering insect is at times subjected to extremely cold temperatures, and is remarkably resistant. The queens of white-faced hornets (*Vespula*) can survive temperatures of nine degrees below freezing in the leaf litter, and paper wasp (*Polistes*) queens often successfully withstand Canadian temperatures of 27 degrees below freezing as they lie dormant on ledges or corners of buildings. In the Arctic some insects can actually survive the winter frozen in ice! How they manage to survive is still not completely understood, but it has been found that many insects produce large amounts of glycerol in their bodies before winter. This substance acts as an anti-freeze by lowering the freezing point of their body fluids so that temperatures can go below 32 degrees F, and these fluids will not turn to ice. This is the same principle behind adding anti-freeze to one's car radiator in winter. Other insects survive sub-freezing temperatures by getting rid of all materials in the gut, as well as particles in the blood, so that there are no "nuclei" for the body fluids to freeze around (just as snow needs particles of dust to freeze around). Whatever method is used, insects are unquestionably well adapted to the unfavorable conditions of our northern winters, and when spring arrives we will once again become attuned to their infinite variety of shapes, colors, movements, and sounds.

True katydid

Wolf spider



Whaling and the Art of Scrimshaw

by Charles R. Meyer

"Jan. 23. The sky is clear, with fresh winds. We are now regularly cruising with not enough to do to keep a man off a growl. As this habit cankers the soul, I prefer to scrimshone. . . . In scrimshoning we carve and work much of the ivory of whales' teeth, and by inlaying with pearl some beautiful objects are wrought. Handsome canes are made of the white bone from the jaw of younger sperm whales; also from plates of black whalebone, heated and twisted."

Capain William Morris Davis' "Nimrod of the Sea" or "The American Whaleman," 1874.



Courtesy NAHO



Charles Meyer

Contemporary scrimshander, A. Douglas Jacobs of Greenport, N.Y. scribing a sperm whale's tooth.

Engravings from "The Book of the Ocean," New York, The Century Company, 1898

THE composite picture of Yankee whalemens is radically different from that favored by romantic novelists and schoolboy texts. Away with all the delusions of grandeur and glory of Moby Dick, Herman Melville's perennially great white whale of allegory, spouting and perhaps measuring a frail whalemans hull from somewhere off her bow! To get a more accurate perspective on both whaling and scrimshaw, we must take a colder view.

The heyday of whaling occurred from about 1810 through 1870, when hundreds of Yankee ships carried over all the seas some 20,000 combinations of strange men from Cape Cod, Nantucket or New Bedford in Massachusetts; Narragansett in Rhode Island; and Sag Harbor, Cold Spring Harbor and East Hampton out on eastern Long Island, New York. These ships were the cradles of scrimshaw, carving and engraving on sperm whales' teeth and other substances—the pastime of lonely and often dispirited seamen far from home. In these



Chasing a whale. A typical scrimshaw theme, c. 1830.

From the Barbara E. Johnson Collection

unlikely circumstances, an enduring craft was born.

Few of the scholars and historians reading "Moby Dick" are concerned with scrimshaw or scrimshanders. But Herman Melville wrote about it after he sailed aboard the New Bedford whaler, *Acushnet*, in the early 1840's, drawing from that voyage the inspiration for his immortal book.

"Throughout the Pacific," he wrote, "and also in Nantucket and New Bedford and Sag Harbor, you will come across lively sketches of whales and whaling scenes, graven by the fishermen themselves on sperm whale-teeth, of ladies' busks wrought out of the right whale-bone, and other like scrimshander articles, as the whalemens call the numerous little ingenious contrivances they elaborately carve out of rough material, in their hours of ocean leisure. Some of them have little boxes of dentistical-looking implements, specially intended for the scrimshandering business. But, in general, they toil with their jackknives alone; and with that omnipotent tool of the sailor, they will turn out anything you please, in the way of a mariner's fancy.

"Long exile from Christendom and civilization inevitably restores a man into that condition in which God placed him, i.e., what is called savagery. Your true whale hunter is as much savage as an Iroquois. . . .

"Now, one of the peculiar characteristics of the savage in his domestic hours, is his wonderful patience of industry. An ancient

Hawaiian war-club or spear-paddle, in its full multiplicity and elaboration of carving, is as great a trophy of human perseverance as a Latin lexicon. For, with but a bit of broken seashell or a shark's tooth, that miraculous intricacy of wooden network has been achieved; and it has cost steady years of steady application.

"As with the Hawaiian savage, so with the white sailor-savage. With the same marvelous patience, and with the same single shark's tooth, or his one poor jackknife, he will carve you a bit of bone sculpture, not quite as workmanlike, but as closely packed in its mazes of design as the Greek savage, Achilles' shield; and full of barbaric spirit and suggestiveness as the prints of that fine old Dutch savage, Albrecht Dürer."

Melville was writing in retrospect when he endowed Ishmael, Queequeg, Starbuck, Captain Ahab and the remainder of the Pequod's crew with more lofty aspirations, nobility of purpose and dedication to their whaling craft than was common to sailors of the golden age of whaling.

In an excess of expository zeal, Melville and other writers of his day often went a mite overboard in describing the artistry involved in scratching out a piece of scrimshaw on a whaler's deck or below, in the fore-castle's gloom. In truth, most of yesterday's scrimshaw was pure junk, often pornographic junk, and thereby discarded quite as quickly as a great deal of the handicraft described as "regional folk art" today. A Rembrandt or da Vinci of the jackknife clan

was as rare among the whalers as an unsung genius buried among the commercial artists in a Madison Avenue advertising agency. An acceptable tooth, busk, jacking wheel, walking stick, swift, jewelry casket, toilet box, watch stand or splicing fid, was the exception rather than the rule. And only these exceptions were treasured and preserved so that we may see them today in museum collections.

Let us suppose you couldn't read or write, and that you were occupying the next three to five years floating about various oceans looking for whales. Or let us imagine that you're an officer aboard a whaling vessel, able to make phonetic entries in a daily log, but scarcely a devotee of abstract literature. You're dexterous with your hands and both skilled and clever with a jackknife and/or sailmaker's needle. You are immeasurably bored with your aquatic surroundings, and have plentiful supplies of whalebone, sperm whales' teeth or other ivories available for your use.

As an antidote to the soul-shattering monotony of the voyage, you become an ardent apostle of *scrimshawing*, *scrimshoning*, *scrimshorn*, *schrimsion*, *scrimshonting*, *serinshorn*, *skimshontering*, *squmshon*, *schrimpshong*, *skrimshonting*—spelling it phonetically by the way it is pronounced aboard your ship.

Where do you get your inspiration? There are aboard a few illustrations in periodicals and books. You change them slightly so that they are nearer the heart's

desire. There are catchwords and phrases like *greasy luck to whalers* or *a dead whale on a stove boat*. There are biblical scenes, if you happen to be religiously inclined. But, mostly, there's the thing you know best: rowing a whaleboat across a restless ocean and encountering a ferocious sperm whale, 100 barrels or more, bigger than Neptune himself, and threatening to destroy your cockleshell boat if the harpooner's lance can't find a vital organ in the monster first. And behind you, on the horizon, canvas full against the sky, there's your ship as she searches for her wandering brood.

Why the preoccupation with such violent death scenes? Why is this theme so universally popular that we see it depicted, with variations, over and over again in both scrimshaw and old whaling plates?

It's like the heroic defense by the Spartans against the Persians at Thermopylae, or Custer trying to ward off the Sioux at the Little Bighorn. Writers, painters, poets, and scrimshaw artists seek a classic scene of pan-

oramic scope, preferably with a message, as a subject for their finest work. Just as the composer of a tragic opera fashions a "death scene" finale, so a whalerman-scrimshander picked the ultimate disaster culminating a voyage, the day when the hunter became the hunted and the whale won. For the affected landlubbers with their fancy libraries and drawing rooms on the hills overlooking the Long Island and New England coast, this was scrimshaw portraying *what whaling was really like!* This would teach them of the back-breaking agony of pulling an oar; the wearisome days squinting from the masthead or pacing the deck, waiting, always waiting, the final and totally unjust reward under the flukes or within the jaws of a monstrous sperm whale.

Not so strangely, the concept was agreeably accepted by the folks back home. Their thought of something thrilling, worth preserving, was also the Captain Ahab-Moby Dick sort of confrontation with the battle lines clearly drawn.

But let Herman Melville, directly out of the pages of "Moby Dick," tell us where a scrimshander of the golden era might have found inspiration for a really good tooth:

"But, taken for all in all, by far the finest, though in some details not the most correct, presentations of whales and whaling scenes to be anywhere found, are two large French engravings, well executed, and taken from paintings from one Garnery. Respectively, they represent attacks on the sperm and right whale. In the first engraving a noble sperm whale is depicted in full majesty of might, just risen beneath the boat from the profundities of the ocean, and bearing high in the air upon his back the terrific wreck of the stoven planks. The prow of the boat is partially unbroken, and is drawn just balancing upon the monster's spine; and standing in the prow, for that one single incomputable flash of time, you behold an oarsman, half shrouded by the incensed boiling spout of the whale, and in the act of leaping as if from a precipice. The action of the whole thing is

Scrimshaw busks

Courtesy Mystic Seaport, Mystic, Conn.





Scrimshaw household implements

Courtesy Mystic Seaport, Mystic, Conn.

The Harpooner. Contemporary scrimshaw by A. Douglas Jacobs



Charles Meyer



Scrimshaw tray, 19th century

Courtesy Mystic Seaport, Mystic, Conn.

wonderfully good and true. The half emptied line-tub floats on the whitened sea; the wooden poles of the spilled harpoons obliquely bob in it; the heads of the swimming crew are scattered about the whale in contrasting expressions of affright: while in the black stormy distance the ship is bearing down upon the scene. Serious fault might be found with the anatomical details of this whale, but let that pass; since for the life of me, I could not draw so good a one.

“In the second engraving, the boat is in the act of drawing alongside the barnacled flank of a large running right whale that rolls his black weedy bulk in the sea like some mossy rockslide from the Patagonian cliffs. His jets are erect, and black like soot; so that from so abounding a smoke in the chimney, you would think there must be a brave

Courtesy NAHO

supper cooking in the great bowels below. Sea fowls are pecking at the small crabs, shell-fish, and other sea candies and macaroni, which the right whale sometimes carries on his pestilent back. And all the while the thick-lipped leviathan is rushing through the deep, leaving tons of tumultuous curds in his wake, and causing the slight boat to rock in the swells, like a skiff caught nigh the paddle-wheels of an ocean steamer. Thus, the foreground is all raging commotion; but behind, in admirable artistic contrast, is the glassy level of a sea becalmed, the drooping unstarched sails of the powerless ship, and the inert mass of a dead whale, a conquered fortress, with the flag of a capture lazily hanging from the whale-pole inserted into his spout-hole.”

Though we dwell long on the whalers,

those tall-masted ships forever cruising into a thousand sunsets, and though we speak of their crews, arduously and endlessly carving out their scrimshaw masterpieces during voyages long since completed, it is possible the very best scrimshaw is not yet begun. Having learned from the mistakes of his predecessors, today’s shorebound scrimshander probably does and will, in the future, do far better work.

It will be fascinating to see what examples of the scrimshander’s art are produced in our era. As the whales are ruthlessly hunted and perhaps gradually disappear from the sea, tomorrow’s scrimshanders may discover new materials and develop innovative methods of continuing this classic art. Already there are kits with plastic replicas of sperm whale teeth. ●

Giving chase



Book Reviews

Conducted by Joan Taylor

The Snowshoe Book, by William Osgood and Leslie Hurley, 163 pages. The Stephen Greene Press; Brattleboro, Vermont, paperback, \$4.50 (Second Edition, revised and enlarged).

Did you know that snowshoes have been with us for some 6,000 years and are not only holding their own but actually increasing in popularity in this highly technical age? Did you know further that there is no evidence to the effect that Eskimos (who apparently find travel easier over polar ice by foot) and early Norsemen knew of this mode of transportation? The Indians of eastern North America, however, would not have been able to settle their harsh winter forests without them; and the French, who moved in during the 1600's, appear to have been the first Europeans to incorporate their use. This was the only method of snow transportation until skis were introduced in North America by the Scandinavians in the 1800's.

It's all in the book—these findings and many more interesting facts. The historical research that went into the beginning of "The Snowshoe Book" is one of the aspects that separates this publication from the norm, making entertaining reading for even those not necessarily concerned about snowshoeing per se. But the history is merely the introduction to this "complete guide to the how, why, when and where" of snowshoeing, compact for the pocket and loaded with sketches, photographs and charts—probably *the* most complete report ever written on the subject.

As one would expect, the portions allotted to construction (both commercial and in your basement), maintaining and repairing of snowshoes is not neglected. All the known models and shapes, including the newer plastic and aluminum versions, are explained and their specific uses well covered. Explained, in minute detail, are the components—such as the webbing, which might consist of rawhide or nylon fabric with neoprene coating. The authors personally tested a variety of bindings, footgear and clothes, as well as the snowshoes, and present a wealth of constructive comments. They wrote many users, including a trapper in Alaska, to secure further opinions on various models and designs.

Tips on techniques and travel—uphill, downhill, body movements, etc. are

thoroughly covered as is the use of side tools of the trade, such as large diameter basket ski poles, crampons and the ice axe.

The authors recommended staying together in small groups, not only to benefit the most from the winter out-of-doors but for the sake of safety. And the latter heralds a most extensive chapter on rescue from avalanches, snow slides and just ordinary accidents. They even cite the odds on survival, based on statistics, from snow burial. For instance, it is claimed a person has less than a 50 percent chance of survival if he has been under two feet of snow for an hour.

The known snowshoe manufacturers, along with the addresses and product prices (as of the time of publication) are listed. In addition, snowshoe clubs (did you know they even existed?) are covered. In fact, anything concerning the sport not discussed, and in detail, probably was never "invented", and nothing can befall the snowshoer in the field that is not explained in this well-written second edition. — James W. Kelly

The Monkey Wrench Gang, by Edward Abbey, 352 pages, J.B. Lippincott Co., \$8.95.

Although Edward Abbey declines the role of guru of the Southwest's "eco-freaks," there is no denying that his rousing adventure novel, "The Monkey Wrench Gang," has drawn a large following among environmental activists—especially on college campuses.

The action—and is there action!—involves a Vietnam Green Beret and ex-Viet Cong medic, an Albuquerque surgeon, a young woman late of the Bronx named Bonnie Abbzug, and a jack Mormon with three wives, an old truck, rubber rafts for river trips and a deep love for the wilderness. All four share this love for a clean, undeveloped southwest canyon country.

Their goal: destruction of Glen Canyon Dam which flooded some of the most magnificent remote canyon country north of the Grand Canyon. Environmentalists will remember the futile struggle to preserve that priceless treasure now silted and flooded. Along the way, the four wreak havoc on bridges, trains, mining equipment, road building machinery and similar harbingers of industrial growth.

A resident of canyon country in Utah,

Abbey deplores the Southwest's deterioration into "a blighted land, criss-crossed with new power lines, sky smudged with smoke from power plants, the mountains strip mined, the range grazed to death, eroding away." His descriptions of the beauty of that wild land are moving and inspire in the reader a sympathy with efforts to save it.

Violence and destruction of property as an answer to industrial encroachment makes an exciting, taut book, one which I predict will be made into a powerful movie. It has all the ingredients. But one must question sabotage as an effective weapon to battle the forces bent on profit no matter what the cost to the environment.

Every time someone shoots insulators on a high power transmission line, it's your utility bill that goes up. It is folly to think the generating companies will absorb the cost. And it hasn't slowed down the rate of construction of transmission lines.

That should not deter the prospective reader. This is a book one reads long into the night, reluctant to put it aside. If the Monkey Wrench Gang blows up the power plant while you are reading, you will probably light candles to finish it. — Alvin S. Fick



Falcons' Return, Restoring an Endangered Species, by John Kaufman and Heinz Meng, 128 pages, Wm. Morrow and Co., \$5.95.

The peregrine falcon seemed doomed to extinction when birds in the wild could not successfully raise their young due to pesticides in the food chain. In 1946 Dr. Heinz Meng, a biology professor at SUNY, New Paltz, began attempting to mate captive peregrines with a view to reestablishing the wild population. The story of his failures and successes is told in this book. Fortunately for the peregrines and those of us who love them, the outlook is optimistic for their reestablishment.

"Falcons' Return" is more than an account of one man's efforts in behalf of a

declining species; the author collaborators have provided background material on the peregrine, a glossary and description of the sport of falconry, and, most valuable of all, 106 stunning photographs of the peregrine in action both in the wild and in captivity. And finally, there is the story of how, over a span of years, successful rearing and release of peregrines was achieved.

This is an ongoing saga of which all true environmentalists should be aware. We salute Heinz Meng for his work and John Kaufmann for sharing it with us in the promising account of the "Falcon's Return." — H.W.T.

Organic Plant Protection, ed. by Roger B. Yepson, Jr., 688 pages, Rodale Press, Inc., Emmaus, Pa. 18049, \$12.95.

A monthly newsletter from the U.S. Department of Agriculture uses the verbs *control*, *spray*, and *apply* with great abandon. The materials with which to do these things are listed precisely as new reasons for a chemical barrage are constantly presented. Newspapers, books and gardening programs of all kinds are engaged in a garden by chemical numbers game and the numbers spell trouble for the environment.

For a breath of pure, sweet air blowing across the gardening horizon, read Rodale's new plant protection book. The book is arranged in two parts. Section One is devoted to the basic strategies of remaining a poison-free gardener. Herbs such as tansy, borage, rue and wormwood are repellent to pests and many flowers such as feverfew (pyrethrum), nasturtiums, and marigolds may be used to deter bugs and also to add aesthetic appeal to vegetable gardens. The popular petunia when planted around apple trees repels ants and black aphids. Trap cropping, a tricky method of providing a cafeteria for the pests to lure them away from valued crops is practiced by cotton growers who plant strips of alfalfa to attract and concentrate lygus bugs. Resistant varieties or plants that protect themselves by color, fuzz, growth, taste and odors are discussed.

In contrast to resistant varieties, some plants can sit there and take it simply by regenerating tissue fast enough to remain healthy. They can withstand the chewing and still come through at harvest time.

Biological controls from ground beetles that love tent caterpillars, to nematodes which carry bacterial pathogens about in the soil, are described. Those naturally occurring predators and parasites discourage pests either by killing them, by affecting their reproduction and development, or by making them more vulnerable to other insects or diseases.

This is meant to be a reference book but I

found it difficult to stop reading and excitedly quoting wonderful information such as the merits of buttermilk as a spray. Four cups of wheat flour to ½ cup of buttermilk destroys a very high percentage of both adult mites and their eggs. It works by sticking mites to plants and enveloping them in the solution. Some of the sprayed mites appear to explode as the milk dries.

Section Two is an encyclopedia for quick reference to bugs and diseases. A fascinating ants in the house solution is to track down their entrance hole or crack and squeeze the juice of a lemon into the opening, then slice up the lemon and put the peeling all around the entrance.

An extensive section on lawns and their care will interest most people and perhaps stop the indiscriminate waste of commercial fertilizers and weed killers which are being lavished on lawns yearly.

If I seem overly enthusiastic about this book it is because I hope every serious gardener or sometimes sprayer and grower will grab this wonderful information and spend the winter preparing for a very different program of plant protection next spring. — J.A.T.

Frozen Snakes and Dinosaur Bones, by Margery Facklam, Harcourt Brace Jovanovich, black and white photographs, \$6.95.

This delightful fact-filled book does an exciting job of relating what might be considered a dull subject, the behind-the-scenes work in putting together a natural history museum.

Buffalo author Margery Facklam's fourth book shows these "storehouses of the earth's treasures" as more fascinating places than the average museum-goer ever imagined.

She takes the reader on archaeological digs for fossils, dinosaur eggs and mastodon bones (some within New York State); African expeditions for gorillas, trips to collect live insects and back again to the museum to freeze-dry snakes and build exhibits.

Intriguing chapter titles introduce various careers. "Ditchdiggers with Notebooks" are geologists. "Flat Plants" tell of the botanists' work. "Six-legged Science" means entomology, "Skeletons and Skins" are for zoologists and "Skinning the Cat" — who else but the taxidermist?

There are other jobs, of course. Included are the director, registrar, astronomer, designer, artist, craftsman, writer and photographer. All of them are described in a "you are there" context of how-to, lightened with amusing or interesting anecdotes and easy analogies.

One chapter asks "What Good are Ten Skunks?" and answers the question affirmatively. Later chapters explain satellite museums, tell of museum kids, and how the earth's treasures are protected. Future museums? They might contain nothing but three-dimensional "ghost pictures."

If you have ever wondered how all those dinosaur bones are reconstructed and held together, this book will tell you that and much more.

Mrs. Facklam draws on her education in the field of biology and her former job at the Buffalo Museum of Science to write a lively story especially for elementary children. But this Junior Literary Guild selection will interest the new or experienced museum-goer and all those others with inquisitive minds.

— Isabel K. Hobba

Books Received

The Living Earth Series, foreword by David Attenborough, 144 pages in each of 10 titles, Doubleday & Co., Inc., \$14.95 apiece. *Man And Nature*, Every Living Thing, by Malcolm Ross-MacDonald and Robert Allen; *Green Worlds*, Plants and Forest Life, by David Bellamy and Michael Boorer; *The Living Waters*, Life in Lakes, Rivers and Seas, by Gillian Standing and Peter Creedland; *Deserts and Grasslands*, The World's Open Spaces, by John Cloudsley Thompson and Eric Duffey; *The Web Of Life*, The Ecology of Earth, by John Oates, Derek Toomer and Alan Cane; *Planet Earth*, Earth's Atmosphere and Crust, by John Sparks and Arthur Bourne; *Earth In Danger*, Pollution and Conservation, by Ian Breach and Michael Crawford; *Frontiers Of Life*, Animals of Mountains and Poles, by Joseph Lucas, Susan Hayes, and Bernard Stonehouse; *Worlds Apart*, Nature in Cities and Islands, by John Burton and John Sparks; *Life In The Future*, Prospects for Man and Nature, by Malcolm Ross-MacDonald, Michael Hassell and Stuart McNeill.

The East/West Exercise Book, by David Smith, 208 pages, McGraw-Hill, hardcover \$10.95, softcover, \$7.95.

Dictionary of Geological Terms, revised edition, American Geological, 472 pages, Anchor Press, paperback original, \$3.50.

Wonders of Geese and Swans, by Thomas D. Fegely, 96 pages, Dodd Mead, \$4.95, younger readers.

Foxfire Book, 3 volumes boxed, ed. by Eliot Wigginton, Doubleday Co., \$13.95.

The Environmental Control Industry, by Jeffrey A. Klein and Kenneth Ch'Uan-K' Ai Leung, for the Council on En-

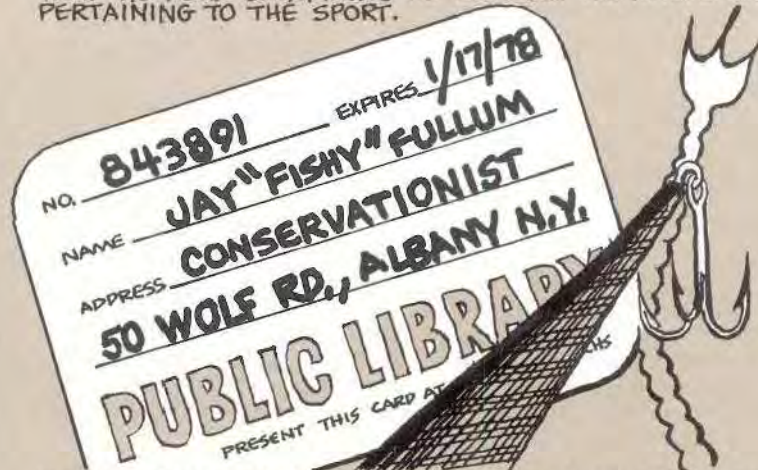
- Environmental Quality, 138 pages, Allanheld Osmun Co., 19 Brunswick Rd., Montclair, N.J. 07042, \$14.50.
- How to Cook Fresh Water Fish*, by Joan Cone, 16 pages, Box 242, Williamsburg, Va. 23185, \$1.
- The New Family Guide to Long Island*, by Louis Kruh, 130 pages, Hobbs/Context Corporation, 52 Vanderbilt Ave., N.Y.C. 10017, \$4.95.
- Fifteen Rabbits*, A celebration of life, by Felix Salten, 231 pages, Delacorte Press/Eleanor Friede, One Dag Hammarskjold Plaza, N.Y.C. 10017, \$7.95.
- The Man Who Loves Giants*, by David Shepherd, 163 pages, Charles Scribner's Sons, \$12.50.
- The Poverty of Power, Energy and the Economic Crisis*, by Barry Commoner, 314 pages, Alfred A. Knopf, \$10.00.
- The Lemming Condition*, by Alan Arkin, illus. by Joan Sandin, 58 pages, Harper and Row, \$4.95, young people.
- Camera Afield*, by Sid Latham, 224 pages, Stackpole Books, \$19.95.
- Man and Water*, by Norman Smith, 239 pages, Charles Scribner's Sons, \$12.95.
- Organic Flower Gardening*, by Catherine Os-good Foster, 305 pages, Rodale Press, Inc., Emmaus, Pa. 18049, \$12.95.
- Snow, Stars and Wild Honey*, by George P. Morrill, 227 pages, J. B. Lippincott Co., \$7.95.
- Living with Old Houses*, 109 pages, Greater Portland Landmarks, Inc., Station A, Box 4197, Portland, Maine 04101, \$7.50, 75¢ postage.
- Bibliography on the Natural History of an Urban Area: New York*, by Donald Loggins, Exchange Bibliography 990, Council of Planning Librarians, Post Office Box 229, Monticello, Illinois 61856, \$1.50.
- Wolf Country, A Wilderness Pilgrimage*, by Ewan Clarkson, 147 pages, E. P. Dutton & Co. Inc., \$8.95.
- The 1976 Prairie Garden*, Western Canada's Only Gardening Annual, Fruits and Vegetables, the Prairie Garden, P.O. Box 517, Winnipeg, Man., Canada R3C2J3, \$2.00.
- The Economic Superpowers and the Environment*, the United States, the Soviet Union, and Japan, by Donald R. Kelley, Kenneth R. Stunkel, and Richard R. Westcott, 335 pages, W.H. Freeman and Co., hardcover \$11.95, softcover \$5.95.
- Willy the Sand Grain*, by James S. Mellett, 32 pages, Carlton Press-New York, \$3.00, younger readers.
- Reading the Landscape of America*, by May Theilgaard Watts, 354 pages, Macmillan Pub. Co., Inc., cloth \$12.95, paperback \$6.95.

Fishing Facts

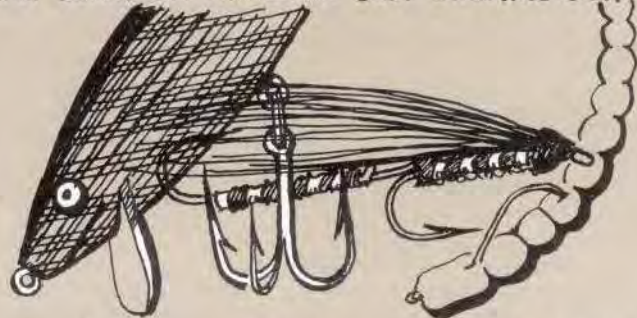
by Jay "FISHY" Fullum

I RECEIVE MANY LETTERS EACH SEASON FROM PEOPLE WHO ARE JUST GETTING INTO THE SPORT OF ANGLING. ALTHOUGH EACH LETTER IS WORDED DIFFERENTLY, THE QUESTION IS ALWAYS THE SAME, "HOW DO I LEARN HOW TO CATCH FISH?"

GENERALLY I SUGGEST THAT THE BEGINNER LOOK FOR HELP FROM ANOTHER MORE EXPERIENCED FISHERMAN AND THAT HE READ EVERYTHING HE CAN GET HIS HANDS ON PERTAINING TO THE SPORT.



IN PAST YEARS THERE HAS BEEN A FANTASTIC INCREASE IN THE NUMBER OF PUBLICATIONS PUT OUT ON THE SUBJECT OF ANGLING. MANY OF THESE NEW BOOKS ARE EXCELLENT, BUT FAR TOO MANY OF THEM ARE MUCH TOO TECHNICAL AND CAN SCARE OFF SOMEONE JUST STARTING OUT.



MUCH CAN BE LEARNED FROM THE BOOKS WRITTEN BACK IN THE 40'S OR BEFORE. THE OLDER BOOKS STILL DEAL WITH GOOD BASIC TECHNIQUES. I HAVE FOUND THE OLDER BOOKS TO BE A SUPERB SOURCE OF INFORMATION FOR THE BEGINNER OR EXPERT ALIKE. A TRIP TO YOUR LOCAL LIBRARY NOW MAY IMPROVE YOUR ANGLING SKILLS WHEN THE SEASON OPENS IN THE SPRING.

DO YOU HAVE A QUESTION ON FISHING ?

SEND THEM TO JAY "FISHY" FULLUM %
THE CONSERVATIONIST, 50 WOLF ROAD, ALBANY, NEW YORK 12233

Your Questions Answered

conducted by Paul Kelsey

Dried Meat

Is it possible to make "jerky" from deer meat? If it is, I am sure you would make a lot of hunters happy if you would tell us how.

Louis Eichner, Monroe

The word jerky comes from the Spanish word for dried meat—*charqui*. That is all that it is. In the southwest the Indians used to hang slices of meat on the bushes, and in that sunny dry climate they quickly got bone dry meat which would keep indefinitely. In New York we must resort to something besides the climate to make jerky. The basic rule is to use a low heat to dry the meat without cooking it. To insure that the meat will dry evenly, it should be cut in strips eight or ten inches long, an inch or two wide, and no more than ¼ inch thick. The strips should be cut with the grain of the meat, rather than across the grain as you would cut a roast. All fat should be removed before preparation, for it will prevent complete drying and will turn rancid. Under modern conditions the most convenient way to dry the meat is on the racks of your oven, set at about 150 degrees. The door should be left ajar to permit the moisture to escape. Left overnight in this manner, you will probably find that it is stick stiff by morning. If it still bends, it will take a little more drying. If you want to season the meat, add salt, pepper, oregano, marjoram, basil, thyme, smoke condiments, or whatever you have, and pound it into the meat before you dry it. Because drying lessens the effectiveness of the seasoning, use more than you think is necessary. The final step is to keep the jerky in airtight containers. This way it will store on your cupboard shelves and does not need refrigeration.

Elk in New York

The county historian has asked me when the last elk was killed in St. Lawrence County. I recall seeing elk in 1909 and 1910 near our place in Franklin County, but these were apparently released in the area several years earlier. I also know that some of our trigger-happy neighbors on Indian Carry could not resist the temptation to sample elk steak, so they did not last long. If you have any records on the last elk in St. Lawrence County, I would appreciate having the information.

Clarence Petty, Canton

Between 1893 and 1932 elk were released on several localities in five Adirondack counties, but not in St. Lawrence County. The last liberation was on the DeBar Mountain Game Refuge, about twenty miles from the St. Lawrence County line. George Buckley, the refuge caretaker, continued to see elk there regularly until 1945. The last one he saw in the vicinity was during the 1952-53 winter. Probably part of this same group was a bull elk shot by a hunter during the deer season in 1946 near Minerva. The last accepted record of a wild elk in New York was one reported seen by George

Buckley while trapping nuisance beaver at Marcy Dam. We have no confirmed reports of the DeBar elk moving into St. Lawrence County. That gets us back to the last of the native elk, reports of which are limited and conflicting. I find two "last elk," one killed on the Raquette River in 1837, and one killed in Allegany County in 1844. It appears that there are no good records on this, but it seems safe to say it was probably before 1840. If your historian friend's question was raised because of information found in some old letters or records, I am sure that Bill Severinghaus would like to see them.

Woodpecker Diggings

Enclosed are photos I took of damage to two trees on my property in Livingston Manor. The photo of the upper portion of the tree shows half a dozen cuttings measuring 6" to 40", all appearing to go in to the center of the tree. Around the inner portion of the holes are marks similar to claw marks or chisel marks running horizontally along the walls. The chips on the ground feel moist and soft like dead wood, and are approximately half the size of a slice of bread. No holes connect, therefore I don't believe they are nesting sites. If you tell me it is a woodpecker, he must have been using a chain saw instead of his beak. Any help you can offer in solving this mystery will be appreciated.

William B. Davis, Seaford

Those holes were made by a woodpecker all right, but he wasn't using a chain saw. In his search for carpenter ants the pileated woodpecker characteristically makes large rectangular holes like those you saw. The pileate is the largest of our woodpeckers, being about the size of a crow, and a very striking individual—black with a red crest, and flashing white on its wings in flight. Though the holes they make are very large, by the time they start work on a tree, the carpenter ants have already eaten the tree's heart out.

Osprey

In late April I saw an osprey on the Catatonk Creek in the Village of Candor where I grew up. All the other osprey that I have seen were on Long Island. Some friends told me they are migratory, and just passing through. How common are they in this area? Was this just passing through, or do they nest here?

Bob Risley, Ithaca

The osprey in New York nest in the northern part of the state from the St. Lawrence River across to Lake Champlain, and on Long Island and the lower Hudson. Elsewhere in the state it is a common migrant along the waterways in both spring and fall. My own observations in the Ithaca-Cortland area show the peak of the spring movement during the last week in April and the first week in May, which coincides with your observation. New York birders who are interested in the status of birds of the state are fortunate in having a

recently published book devoted to just this subject. "Birds of New York," by John Bull of the American Museum of Natural History, and published by Doubleday/Natural History Press, discusses the changes in distribution and population during the last 60 years of the 410 different species of birds which have been observed in New York.

Carpenter Bees

My problem is carpenter bees. Every spring they return to my house and "drill" holes about the size of a dime into the eaves fascia boards of my house and garage. They then bore left and right, creating nests. My gutters are having a difficult time staying up under the eaves. Since my house is two and a half stories high, it becomes impractical to use aerosol sprays. What would you suggest?

Marcel Dupre, Irvington

Carpenter bees normally attack only unpainted wood, so the key to preventing their attacks is painting the eaves and fascia boards. Prior to painting, however, you should spray each hole with one of the special bee sprays which shoots a stream of spray instead of a mist. Then using a dowel of appropriate size, plug the holes to prevent entry or exit. The best time to spray bees is in the cool of the evening when they are all in their chamber and relatively inactive.

Skinning Beaver

I recall a note in THE CONSERVATIONIST years ago about skinning beaver with compressed air. I can't find it now, could you track it down for me?

Kenneth Beck, Newfield

I finally tracked the note down under the title of "The Virtues of Inflation" in the Back-of-the-Book section of the February-March 1953 issue. In case you don't have that tucked away somewhere, this is the technique that Bill Willett of Saranac Lake is reported to have used. He had an eight-inch section of copper tubing which he attached to the end of the air hose in his gas station. This tubing was inserted under the hide through a small hole cut at the base of the tail. When he released the air, the beaver gradually blew up to about twice its normal size. This operation was repeated three times. Then when he skinned the animal in the normal manner, the time required was only about thirty minutes instead of the usual hour and a half, because the air pressure under the hide had broken down the tissue between the hide and the body.

European Hornet

I am sending under separate cover a large wasp or hornet which I discovered just beginning to build a nest in an abandoned chicken coop on our farm. I have never seen one like it before, and wondered if you could identify it for me?

Wallace C. Rich, Medina

The wasp and nest you sent arrived in excellent condition, a tribute to your packing ability, for most insects arrive as a jumble of broken parts. It is an imported European hornet, *Vespa cimbio*, which was first observed in New York in about

1840. No one knows exactly how or when it arrived in this country. They are now living from about Massachusetts, south to Virginia. The site where you found this one is typical, though they may also go inside walls. By fall a good healthy colony may have as many as 1,000 individuals. The adults collect insects and place them in the comb with the larva for food, but as adults their food is primarily nectar from flowers and juice from ripe fruit. Generally these are not considered to be very aggressive as far as humans are concerned.

Bagworm

Enclosed is a little moth and the case from which it emerged. As a larva it was dragging this case around on the side of the house, withdrawing into it for security. When it became inactive, I collected it and held it in a jar to see what would develop. Can you tell me what it is?

Mrs. Nancy Zieber, Schenectady

Your specimen and description looked as though it ought to be a bagworm, so I checked with Carolyn Klass, an Extension Specialist in Entomology at Cornell, and she confirmed that it was. This particular species, *Fumaria casta*, is believed to have been introduced from Europe, being first seen in 1931 near Boston. Since then it has spread to several adjacent states. The larvae gather tiny pieces of vegetation and cement them to a portable silken case which they carry around with them as protection from birds or other predators. When they are ready to pupate, they simply attach the case to some structure with more silken threads, form a pupa inside, and wait to emerge as adults.

Hickory Gall

Across the road is a large hickory tree which has recently lost many leaves. Each leaf is disfigured with one or more light green swellings, usually along the center vein. We opened one and found it somewhat hollow, but could see no insect or egg in it. I looked through past issues and could find nothing about such things. Enclosed is a specimen. Can you tell me what it is, and if there is anything which can be done about it?

Evelyn Waite, Tuckahoe

The specimen that you sent me for identification was of a plant gall. There are some 1,500 different types of galls, each the reaction of a specific type of plant to the action of some specific organism, usually the laying of an egg by an insect. Hickories have quite a few different kinds of galls, most of them caused by gall midges. I was unable to pin down the one you sent with information I had at hand, but if it follows the general pattern, it probably has a name something like "hickory midrib gall." Galls are not normally harmful to the plants on which they grow, so there is no need for concern. In the February-March 1964 issue of THE CONSERVATIONIST there is an article "Some Plant Galls of New York," by Prof. Richard B. Fischer, which will give you a broad picture of these interesting growths.

Swallow Stones

In Longfellow's "Evangeline" I came across these lines: 'Oft in the barns they climbed to the populous nests on the rafters, seeking with eager eyes that wondrous stone, which the swallow brings from the shore of the sea to restore the sight of the fledgling—bricky was he who found that stone in the nest of the swallow.' Do you have any information on this most interesting bird story?

Hazel Webster Holland, Burlington, New Jersey

Thanks to the reference librarians at the Cornell University Library, I find that Longfellow was referring to an old French fable which told of a stone the swallows sought in the sand by the sea to bring to their nest. This stone had the power to heal even blind eyes. The fable had its origin in ancient Greece, where the swallow stone, a small white oval stone, was claimed to heal eyes. It appears to have been strictly faith healing, for there is no known medical support for its powers. As this legend moved along the Mediterranean through early Roman and Spanish cultures, and then up into western Europe, many variations evolved. The Germans, for instance, had red and black swallow stones, but only the red ones worked. Another version had the swallow stone starting in the stomach of a fledgling, and if the bird returned to the same nest for seven years, it left the stone in the nest.

Blood suckers

While trout fishing in the Genesee River upstream from Belmont, I saw some little creatures swimming close to shore that looked like eels. They were black and about 6-7 inches long. I hope they were not young lamprey.

Rudy Benes, Lackawanna

The parasitic lamprey of the Great Lakes could not get above the falls in the Genesee River to get to Belmont. The brook lamprey are nocturnal and only are in a free swimming form for a relatively short time, so even if they were there, the chance that you would have seen them is remote. Probably what you saw were large blood suckers. There are numerous varieties, all of which are graceful swimmers, and several of which could easily be six or seven inches long while extended to swim.

Chestnuts

In a wooded area near our vacation home on Long Island there are some chestnut trees. They have spiny pods usually bearing three fruits identical with the chestnuts that can be bought at the local market. When do you pick these nuts and how do you cure them? Are there any conservation bulletins relating to this subject?

V. J. Sabella, West Hempstead

Since the American chestnut was virtually wiped out by blight during the first three decades of this century, all current publications about them deal with the possibility of developing a blight resistant strain, how to collect seeds from trees that have grown large enough to produce fruit, and how to plant these seeds. The enclosed

reprint "How to Plant American Chestnut" was originally published in THE CONSERVATIONIST in the Oct.-Nov. issue, 1966. If any of the seed producing trees are over 10 inches in diameter at 4½ feet above the ground and show no sign of blight, I believe that the Northeastern Forest Experiment Station of the U.S. Forest Service in Upper Darby, Pa. would like to know about them.

The seeds mature in September and October, and can be eaten immediately though I understand they sweeten if left to cure and chill a short while. If kept too dry they wither, and too moist, they mildew.

Since you indicate these trees are fairly common, and your description could also be that of horse chestnuts, I would check the identity of the trees. The seed pod of the horse chestnut is rather leathery and covered moderately with coarse spines, while the American chestnut pod is densely covered with needle-sharp, branched spines. The horse chestnut has a palmately compound leaf, with 5-7 leaflets all emerging from the end of the leaf stem. The American chestnut has a simple, smooth leaf about 6-8 inches long, each one arising from its own stem on the woody twig. If it is a horse chestnut, enjoy the flowers in the spring, but forget about eating the nuts.

High peak traffic

During the last few years I have watched the trails in the High Peaks area being torn to shreds by the increased number of hikers. I have pondered numerous different methods of controlling this, and the idea I favor most would involve some system which would control the number of hikers on the trails each year. I hope that some management program can soon be developed which will permit the recovery, and insure the preservation, of the quality of these trails.

Carol Hert, White Plains

In September 1974, the High Peaks Wilderness Area Advisory Committee was established to study this and related problems and to make recommendations for their solution. Your letter was turned over to the Chairman of the Committee, Jerome W. Jensen, Assistant to the Director of Lands and Forests, and here reports that the committee is already considering this concept, along with several other studies, such as those of the erosion on existing trails and camping areas; the carrying capacity of trails and camping areas relative to the physical capability of the land to support them within the wilderness concept; the loss of vegetation in high use areas; prevention of litter and solid waste accumulation; the diversion of hikers and campers to other areas of the Forest Preserve; and the education of hikers and campers to an improved woodsmanship ethic. The committee's findings to date indicate that much of the environmental deterioration attributed to overuse can be reduced by combining trail improvements, trail relocations, and changes in hiker patterns of use and care of the wilderness. The greatest benefit can probably be gained through better education of the High Peaks users so they will accept their obligation to protect the natural

resource system. These same good woodsmanship practices will also increase the enjoyment gained from a wilderness experience. If these suggestions do not do the job, more drastic control measures, possibly to the point of permits may be required.

Fish and the falls

Do any fish negotiate Niagara Falls?

Robert Kleinstuber, Port Jervis

Up no, down yes. The falls were an effective barrier to upstream movement of fish from Lake Ontario to Lake Erie, but in 1833 the opening of the Welland Canal made possible the passage of such fish as the lamprey upstream around the falls. Since the lamprey have been brought under reasonable control and trout restocked in the Great Lakes, there is evidence showing that rainbow trout stocked as far away as Lake Huron have moved downstream into Lake Erie and survived the falls, to finish their lives in Lake Ontario. It is likely that other species of fish may also be able to survive going over the falls. ●

Hunting the Quiet Way

(continued from page 18)

he should wait for at least a half-hour (an hour is better) before following the game. A compass reading of the direction the deer traveled is often valuable. An arrow kills by causing extensive internal bleeding which can occur in a matter of seconds, occasionally with the deer unaware that it is vitally hit. When correctly hit in the lungs, a deer should rarely go more than 200 yards and, in most cases, will be down within half that distance. Once the downed animal is spotted, it should be approached from behind. Many big game animals, supposedly dead, have suddenly come to life and injured approaching hunters.

To be successful the bowhunter must have proper legal equipment in good condition and must be able to use it efficiently and with mature judgment. Bowhunting is useful to game management and is recognized as an effective and humane way of taking game animals. It is an excellent outdoor recreation and serves a special purpose in closely inhabited areas where the use of firearms is restricted, in areas where only a small total take of game is desired, or in situations where maximal recreational use of an area without depletion of the game is an object in itself.

Bowhunting is both demanding and rewarding. Serious bowhunters are advised to read "Advanced Hunting" by Francis Sell and "The Deer of North America" by Taylor, both available at most complete hunting stores. These volumes should add useful knowledge to the skills and awareness required of the bowhunter. ●



1975 BIG BUCK

Deer taken by Steve Denton
November 22, 1975 at Roaring Brook,
Green Mountain, Essex Co.
Score 160 2/8

For more information about the annual big buck competition send a self-addressed envelope to N.Y.S. Big Buck Club, 90 Maxwell Road, Caledonia, New York 14423



Big Buck Club
official belt buckle
designed by Sid Bell



LETTERS

Christmas prelude

Grandfather and the mountain

As a subscriber for perhaps 20 plus years, congratulations on your May-June 1976 issue. Especially "My Grandfather and the Mountain" and "Nessmuk."

Keep up the good work. We here in York State are so rich in history we should spend more time (and pages) informing our people of what we are and were, where we have been and where we are going.

Milton Weinkrantz, Farmingdale

I've just enjoyed an early morning interlude with the May-June issue of *THE CONSERVATIONIST* and my overall impression is that the magazine is now really professional as opposed to the more naive and amateur feeling it used to evoke. I see this as progress!

The emphasis on canoeing, is especially appealing to us and I appreciate the different slant of each article. Mr. Newgold's story of his grandfather's folly and the account of the country auction are of general interest and round out the magazine nicely.

Judith Aredisian, Rochester

Bicentennial quilts

Our library is one of the very many organizations and groups who are working on quilts as a Bicentennial celebration. This morning while we were busy stitching, a neighbor brought her house guest to see our production. The interesting coincidence is that it developed in the course of our conversation that we had both used the same inspiration as our point of departure—the great Hudson River quilt which you featured in your October-November 1972 issue! I doubt that any quilt could be as beautifully conceived and developed as that one. However, I thought that we in Otsego County and members of the Genesee Valley Quilt Club in Rochester had been

equally influenced by your report and photographs and article.

L.B. Armstrong, Librarian
Milford Library, Milford



This is a picture of the Bicentennial quilt for Onondaga County. Its twenty small blocks represent the wildlife and flowers indigenous to the county. These blocks were designed by Sue Sherlock and embroidered by myself and several other women. From left to right they are: bluebird, swan, apples, Queen Anne's lace; wood duck, maple leaf, blue jay, pears; chicory, rose, trout (brown), walleyed pike; orange spotted sunfish, black-eyed Susan, cat fish, truck farm vegetables; peaches, Onondaga white fish, primrose, strawberries.

Jean P. Nightingale, Skaneateles

Nature's riches for all

I am forty-eight years old and have been in love with nature all my life. It distresses me to see the way it is mismanaged. To participate actively

in hunting and fishing is becoming less and less possible in our state. Private lands increase and public accessibility diminishes at an alarming rate. I was looking forward to the trout season and fishing with my sons and all I see is those "Do Not Trespass" signs, with chains across the streams.

Do not the sportsmen and taxpayers stock these streams with public funds? These trout run in streams past private property. Why are some owners able to cut off everyone just because they bought a piece of land and hung up a sign? I own a little piece of Sullivan County and respect the right of the man that pays the taxes. But to own this property does not mean that I also own the fish that other people pay taxes on, too.

I want to preserve our woods and streams as much as anyone but I also like to get out of the city and enjoy the woods and streams. Who are these privileged few that deny me that right? There's something very wrong in this pattern. I never will be rich but I feel the riches of nature are mine as well as the man with the big house and big car. We should all be able to enjoy what God has put on the good earth for all of us.

Herbert Mayer, Whitestoue

Nessmuk

My first and only introduction to Nessmuk took place many years ago through Horace Kephart's book "Camping and Woodcraft." It was dedicated to "The Shade of Nessmuk in the Happy Hunting Ground." I was, therefore, pleased to read William Verner's article in your May-June issue.

Who was Sairy Gamp's namesake? One of Charles Dickens' most brilliant creations—from the pages of *Martin Chuzzlewit*. Was she "light and limber? Let Dickens describe her: "She was a fat old woman, this Mrs. Gamp with a husky voice and a moist eye, which she had a remarkable power of turning up and only showing the white of it. Having very little neck, it cost her some trouble to look over herself, if one might say so, at those to whom she talked. . . . The face of Mrs.

Camp—the nose in particular—was somewhat red and swollen; and it was difficult to enjoy her society without being conscious of the smell of spirits. Like most persons who have attained to great eminence in their profession (nursing) she took to hers very kindly; inasmuch that, setting aside her natural predilections as a woman, she went to a lying-in or a laying-out with equal zest and relish.”

Sairy was a survivor—as was Nessmuk’s canoe of the same name.

Harold Freeman, Little Neck

Your May-June '76 issue was excellent, particularly the guideboat and Nessmuk articles. I have a deep appreciation for both types of boats, owning a 15-foot guide boat and an 18-pound fiberglass “Nessmuk” canoe built by Bart Hathaway. It is ashamed that the guideboat has disappeared as a working boat and is found for the most part in museums instead of on the water where it belongs. The art of boat building is still alive as Carl Hathaway of Saranac Lake builds authentic boats as well as repairing boats that have survived from that era.

While the guideboat is the ultimate way for two people to see the northwoods, a “Nessmuk” canoe with “one-fool power in the middle, gets over the water like a scared coon” is perfect for the solitary paddler. Why canoeists struggle with 80 pound canoes and heavy gadget ridden packs over the carries is beyond me when all they really have to carry is 40 pounds of boat and duffle. Maybe Nessmuk’s prediction will come true: “I hope at no distant day to meet independent canoeists, with canoes weighing twenty pounds or less, at every turn in the wilderness, and with no more duffle than is absolutely necessary.”

Dick Rybinski, Minoa

Against hunting

I can't believe how you people, and the people who correspond with you, can sit and discuss hunting in such abstract terms. You are so detached from the reality of it all. It's not as if the hunted creatures are mere targets or trophies—those animals are alive. They eat, sleep, breathe, breed, and feel. And the reality is that bullets hurt.

First the hunter—who somehow thinks it's great fun and even a sport, like tennis or bowling, to blow some creature's brains out—kills off the natural predators like mountain lions, wolves, and foxes and then proclaims he has to kill off the prey in order to maintain a natural balance. Great self-serving logic that is.

I think it is entirely possible to control animal populations by other and more humane means—either by the reintroduction of predators or by biochemical methods.

Even if it were deemed absolutely necessary for some animals to be killed to insure the survival of others, I don't see why this should be done by a guy who just came from a sporting goods store or worse yet, from a tavern.

Hunting is a cruel and crude activity. There is no sporting contest possible between a creature as

benign as a deer and a high-powered rifle. The gun always wins.

Donn Adams, Palenville

Dolphins

Albert C. Jensen's closing paragraph in the article “Cousin to Man” (May-June '76) states that the ancients believed that “twice in mankind's history, dolphins have approached to establish a bond with humans.” I was wondering if any explicit incidents are recorded, and if so where?

Bob Mackenzie, Arlington, Mass.

• The statement was based on a remark in a writing by Aristotle and like so many translations of ancient writings, the specific incidents to go with the remark are not included. Below are listed some recent books on dolphins that you may find of interest: “Dolphins: the Myth and the Mammal” by Antony Alpers, Riverside Press, Cambridge, Mass.; “Lilly on Dolphins: Humans of the Sea” by John Cunningham Lilly, Anchor Press/Doubleday, New York, N.Y.; “Mind in the Waters” by Joan McIntyre, Charles Scribner's Sons, New York and Sierra Club Books, San Francisco, CA.—Albert C. Jensen.

Selfish bird

The sparrow on the ground warns the other that his find, a seed, is not to be compromised.

Best wishes for continued success.

My father who died in 1968 was past president of the Wildlife League of Albany in the 1940's. Clayton Seagers, your former director, was one of his fondest hunting companions.

Richard H. W. Grunwald, North Java



Critical note

Being a subscriber to THE CONSERVATIONIST for many years I feel I must write regarding your leaning to almost complete environmental and conservation articles and editorials. I am a hunter and fisherman and miss those articles on hunting and fishing. I am also a Hunter Safety Instructor with the Department of Environmental Conservation

and find that I can hardly recommend your magazine anymore to my students.

Why has the policy of this magazine changed so much in the last few years? Surely the loss of hunters and fishermen who subscribe to your magazine will destroy this magazine. Trying to interest ten or twenty thousand college students and losing the interest of three and-a-half million hunters and fishermen is a bad policy. I hope my views will be taken as constructive criticism.

Anthony Peluso, Howard Beach

• THE CONSERVATIONIST contains many features on hunting and fishing. The magazine also contains environmental and conservation articles. Does Mr. Peluso believe that hunters and fishermen are unconcerned about the environment? The fact is that hunters and fishermen were among the first to recognize the threat to the environment and today as ever they support this magazine's crusade to conserve, protect and enhance the environment.—Editor.

Homer print

Your May-June 1976 issue holds so many interesting articles and beautiful color prints.

I cut out the Winslow Homer print and framed it. It is so free and clear and true and exquisite. The water, glassy and emerald green as I well remember it when my father took me boating on Seventh Lake, Fulton Chain, an age ago!

Thank you for giving us all, young and old, such a fine magazine in every respect.

Erna Gray, Nunda

Starlings and bluebirds

In the “Letters Department” of the March-April issue of THE CONSERVATIONIST, Worthington Rider of Kingston wrote about the starlings getting their heads into the entrance of bluebird houses and destroying the eggs. We have a number of houses set up for tree swallows. Bluebirds and wrens have also used them.

I would think a starling would need a perch from which to get his head into the entrance hole. Bluebirds and swallows require no perch.

Late in the season of 1974 I saw four bluebirds momentarily perched on top of one of the bird houses. I had seen a pair in the spring. Then no more until the one sighting of the four in the fall. We have starlings.

Lewis R. Wheeler, N. Petersburg

Misuse of land

I subscribe to THE CONSERVATIONIST. I must thank you and your entire staff. Your magazine does appeal to the average citizen—me.

I am a homemaker. My family and I live in Queens, New York. Eight years ago we purchased land in a development in the Poconos. We had only a shell erected. My husband and the entire family literally built our home. It became a labor of love for the family. As our home grew the community did also. The problems now confronting us are huge. We have to deal with a developer who has unlimited funds and hundreds of thousands of acres. It seems they have fifteen hundred acres adjoining our development. The developer has decid-

ed to sell permanent campsites under another corporate name. A permanent camp site is one lot, usually three lots per acre. The lot owner is allowed to put any form of living quarters on this lot as long as it is not permanent. Thirty families to the acre is not true camping. This is exploitation of the land for profit. This seems to be the pattern. Develop a small area for eight to ten years, move to the next small area and develop it in the manner most profitable with no consideration for the environment. Everyone makes money on the land. The banks, the lawyers, merchants and small town officials and local taxes.

(Name withheld), Queens

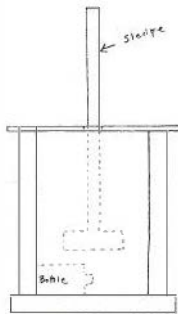
Champlain coalition

I am presently involved in proceedings concerning the proposal to regulate Lake Champlain by means of structures on the Richelieu River in Quebec. We in Vermont have formed the Champlain Coalition which is an alliance of environmental groups and citizens concerned with protecting Lake Champlain and the basin's resources. Regulation of the water levels of the lake would adversely affect the wetlands, wildlife and fisheries. So the Champlain Coalition is developing a plan for flood control by non-structural methods such as floodplain management, zoning, flood insurance programs and other ecologically and economically sound alternatives. We feel that the International Joint Commission (I.J.C.) which oversees all projects concerning boundary waters between the U.S. and Canada has virtually ignored such alternatives.

Anyone interested in more information may write me at 76½ Hayward St., Burlington, VT 05401.

Mary Dudley, Chairperson

Bottle smasher



I recently made what I call a "non-patented bottle smasher" to reduce the bulk of glass bottles before delivering them for recycling or to the dump. The gadget works wonderfully.

I made it out of a 2 inch x 10 inch x 6 foot board cut into four 14 inch lengths for sides and ends and a 15¼ inch bottom. The box is held together with 10 penny (3") common nails. For a top I used a piece of half inch plywood 10½ inches x 15½ inches with a 1¾ inch hole in the center. The resulting box is 16½ inches high, 9½ inches wide and 12¾ inches long.

To smash the bottles I use a six pound sledge with the handle extending up through the hole in the top. Of course, the top is not fastened since it must be removed to fill and empty the smasher.

William Wirt Mills, Esperance

For children too

I have received your magazine for a good many years and have always looked forward to its coming. I enjoy every article in it and think there is no other like it. I have given my son and grandson subscriptions to it and advised others to subscribe also. When I finish each issue I pass it along for the children's room in our local library.

Ellen R. Foster, Blauvelt

Dissent

Contents and format have changed in recent years and while we are not adverse to change, we feel that these changes have not improved the magazine. In fact, they have diminished the value of it to people whose concern and interest were better represented in the old magazine.

Richard B. Cordes, Sidney

Big trees

The article "Giants in the Earth" (August-September 1973) by John Nellis, prompted my brother and me to measure a few trees in our area. A beech tree on the Neshaminy Creek, Bucks County, Pa., has a circumference of 21 ft. 9 in. We would like to check other sizes of trees with the National Champions. Your article mentioned the American Forestry Association having a social register in book form. It did not give an address where this book may be obtained.

We in Pennsylvania think your magazine is one of the best publications on the market. Keep those interesting articles coming.

John F. Bailey, Bristol, Pa.

• American Forestry Association, 1319 18th St., NW, Washington, D.C. 20036.

Rabbits

The article "So You Want To Raise Rabbits," in the October-November 1975 issue provoked some lively exchange in our family. While neither of us are vegetarians, the prospect of taking young rabbits and devouring them would drive both of us to lettuce, carrots, and spinach.

Mr. Kelsey's article reminds us of a quote by Samuel Butler: "Man is the only animal that can remain on friendly terms with the victims he intends to eat until he eats them."

Barbara and Alan Via, Delmar

Wider knowledge

You may classify me among the silent majority since I never write letters to the editor. But since I have the line open, I would appreciate your passing along my high regard for the content and aims of THE CONSERVATIONIST.

No doubt there is some bias in my regard since I have fished and hunted over wide areas of New York State. Now, in retirement, I reminisce with articles on waterways and hiking paths I traveled

way back and wonder at the narrow view some people have of what conservation is all about. For me it requires an ever widening knowledge (education) of what this old world needs to keep itself in balance with the human element.

Charles M. Dean, Mass.

Useful articles

May I compliment you on the quality of THE CONSERVATIONIST. As a teacher I find I make use of many articles year after year.

Mary L. Troeger, New Paltz

I have been a subscriber to your excellent magazine for many years and would like to take this opportunity to tell you how grateful I am to receive your magazine. I am a teacher in the Hannibal School system and make each copy available for any student that cares to look at it. I also attempt to promote the sale of your magazine.

William W. Hornung, Red Creek

Although I am not a resident of New York State, I have to let you know my feelings. Being a subscriber of your magazine for a number of years, I can truthfully state that it is the most informative, educational and rewarding editorial received in our household. When other magazines, commercial or not, are no longer welcomed in our house, THE CONSERVATIONIST will always be welcomed in the mail and still be there, ready to read. Although I am a fisherman and hunter, it seems there are many people in this country that find it hard to believe that I am as much concerned about conservation and the ecology of our great land as they are. Keep up the fine work you are doing in trying to impress upon these people that one goes along with the other. Conservation, ecology, hunting, fishing and accurate information.

Al Swami, Fairfield, Conn.

Swimming buck

On a marvelous morning in June, we went trout fishing at Hemlock Lake. We arrived shortly before sunrise, and began to prepare our fishing equipment. When the golden sun was coming over the horizon, we threw our lines into the water waiting for a bite.

After about fifteen minutes, we suddenly perceived, in the middle of the lake, a dark shape slowly moving to the shore and directly toward the spot where we had our fishing lines. The form was coming closer and closer. We stood motionless waiting for the mysterious swimmer.

Only about one hundred yards from our fishing lines we saw the swimmer—a buck with stately horns! We whistled short and loud, surprising the majestic hemlock forest inhabitant and he reacted by making a slight turn, and swam back to the opposite shore.

Distracted by this picturesque sight on that summer morning, we forgot all about the tugs on our fishing lines.

Aleksandrs Vilks, Rochester

Doodles on

Barn Decorations

by Nancy

Photos by



Ames, N.Y.



Cooperstown Junction, N.Y.



Near Seward, N.Y.



Near Seward, N.Y.

Elk Creek, Otsego County, N.Y.



Natural landmark, historic building, or written account tells so much of rural man's existence as does the barn — that often bleak and neglected structure which, if examined more than casually, might reveal more of a man's past, his hopes and purpose for life, than can be imagined.

In a time when one's whole being was intrinsically tied up with the struggle to conquer the land, a man's barn signified his worth and his identity.

It is doubtful if eighteenth and early nineteenth century farmers had the time or the need to fancify their barns for purely decorative reasons. But as the nineteenth century progressed, domestic farm architecture developed beyond mere functionalism. The Greek and Gothic Revival and the exuberant forms of "Victorian" architecture began to exert an influence on farm buildings. Cupolas, intricately sawn barge boards, dormers, and windows, although always functional, began to appear. It was during this latter half of the nineteenth century that painted ornamentation of farm buildings and village carriage houses began. Never frivolous, ornamentation confined itself mainly to doors — more of a pointing out of architectural detail rather than a random decoration. The custom of decorating barn doors with a simple design in contrasting paint is a well developed tradition in portions of central New York State. Otsego, Schoharie, and Delaware Counties, in particular, have many noteworthy examples. It is interesting to note that often a particular design is found exclusively within a single community. More than likely, the design is the creation of a single individual. The "dripping pendant" design found in the Charlotte

The Landscape:

Central New York

C. Hage
author



Sharon Springs, N.Y.

Valley near the Butts Corners-South Worcester-Charlotteville area seems to be an example.

Barn decorations, of course, do occur in other states and in Canada. Designs identical to many of those found in central New York are also located in Pennsylvania, the Shenandoah Valley of Virginia and Quebec Province, Canada.

Combinations of circles, crossbars, diamonds, and triangular shapes are the most commonly found, along with various outlining designs which often employ ogee and other graceful curves.

In many cases the designs were incised or scratched into the wood before being painted. On the Rev. James McFee barn in Ames, New York the painter made several false starts before achieving the near-perfect Maltese Cross. His imperfect incisions can still be seen scratched deeply into the wood!

Some designs were apparently the object of pride and are often found in conjunction with the name of the builder-owner and the date of erection. The C.M. Boorn carriage barn in Seward, New York still bears, in the original paint, an intricate design, both signed and dated.

Many of the designs are painted in the common red and white often found on area barns. The farmer put all the remnants of paints into one pot, added linseed oil, dry red pigment, stirred it up and painted. The C.M. Boorn carriage house and the barns of the Tipple farm, Schenevus, New York are examples. In more recent years even brighter hues have been used and the buildings reflect man's never ending love of color and design. They are almost an unconscious "doodle" on the farm landscape. 🍷



Cherry Valley, N.Y.



Charlotteville, N.Y.



Sharon Springs, N.Y.



Varying Hare

(continued from page 3)

quality of such habitat. *Rhododendron* "jungles" provide a suitable substitute for conifers in some areas of the Catskills.

Occupancy by the hare of most of its current range outside the Adirondacks and Catskills is the result of man's helping hand. Of course its absence from these same areas also came about from man's actions. Prior to arrival of the white man the varying hare was ubiquitous where the necessary dense coniferous ground cover characteristics occurred. As the homesteaders arrived huge areas were cleared for settlement; extended woodlands became woodlots; others were denuded of their conifers for building timbers and tanbark. Consequently, by early in the 20th century the varying hare was virtually eliminated from the state except for the two major mountain areas.

At about this same time settlers of the hilltops and steep slope areas that characterize much of New York State had discovered their mistake in thinking that they could profitably farm and exist in such locations. Their abandonment of these lands was accelerated and financed by the Federal Resettlement Program which simultaneously put many large tracts of land in public ownership. This, in turn, set the stage for ensuing large scale reforestation programs in the interest of erosion control, watershed protection and wood production.

By mid-century the sum of all these happenings was a restoration of expanses of predominantly woodland habitats made up of interconnected woodlots, overgrown fields and large blocks of conifers, now adequate again to sustain varying hare populations. However, natural immigration to these regenerated habitats was blocked. The valley areas remained in open farmlands, roads, and habitation representing impenetrable barriers to recolonization by varying hares.

Recognizing the potential as well as the basic problem the Bureau of Wildlife undertook a hare reestablishment program. After studying the situation and testing pilot methods a highly successful trap and transfer operation was instituted and carried out each winter for several years. In fact the program is still functional, but operates only sporadically inasmuch as almost all suitable areas have by now been stocked. Continued land abandonment and reversion to woodland coupled with on-going reforestation occasionally bring new areas into a condition suitable to sustain a hare population—at such times the program again becomes active.

Today, as a result of this program, 18 counties from which hares had been totally eliminated again have resident, self-sustaining populations. In nine they are sufficiently abundant and widespread to hold annual hunting seasons thereby providing recreation that would not otherwise have existed in these areas for thousands of hunters. The map compares current range with that existing as the stocking program was getting underway.

Recreationally the varying hare provides quality hunting with and without a gun (field trials). They are generally hunted with beagles or larger fox or coon hounds. Because of the density of cover they inhabit and use for travel lanes and their perfect camouflage of white against the snow they are an extremely elusive target. More often than not they run well ahead of the hounds, moving silently, and the hunter must be alert and a swift shot if his hope of a hasenpfeffer dinner is to materialize. Because they seemingly can come out of nowhere and disappear just as quickly, they have been referred to as "white ghosts" or "white lightning."

Between 50,000 and 60,000 hunters spend 300,000 to 400,000 days hunting this hare and harvest 175,000 to 300,000 annually. Because of remoteness and difficulty of access only a small portion of occupied range in the Adirondacks and Catskills is hunted to any significant degree. Under the controlled conditions that exist, hunting has no effect on hare abundance or range occupied even though in the primary Adirondack region the open season is five and one-half months long.

The varying hare is one of the most under-utilized hunting resources we have in the state and as I think back to my most pleasurable hunting forays some have to be those in the deep woods, with a new snowfall building on to the two-foot depth underneath my snowshoes, the sound of hounds driving towards me and the exciting frustration of trying to look simultaneously at three widely scattered small openings in the undercover through which the hare might burst if I was lucky enough to pick the right stand.

If you have never hunted this challenging quarry my advice is to try it. Even if you are not fortunate enough to bag a hare, the beauty of the winter woodland, the music of the hounds and the glimpses you may get of a hare on the run will be reward enough. And if you do connect, at meal time you are in for a bonus. And unlike its other predators, you will have the conscious satisfaction of knowing your action will in no way have affected the status of the hare population or the ecological community of which it is a part.

OUTDOOR TIPS

Hasenpfeffer

Hasenpfeffer is the traditional way of preparing the bounty of a rabbit hunt, so I was surprised when coffee table discussion revealed that many of my colleagues had never eaten this tasty dish. For others who have never had their rabbit hunting experience completely fulfilled, here are some simple instructions for preparing this ultimate rabbit dish.

Hasenpfeffer recipes always start with "first get a rabbit," either cottontail or snowshoe will do. Cut into small pieces, severing the legs at the joints, and discarding the rib cage. Put these in a crock or plastic container which can be sealed tightly. Cover with a marinade made of one cup each of water and vinegar, to which have been added a diced onion, 10 whole cloves, 3 bay leaves, 2 teaspoons of salt and $\frac{3}{4}$ teaspoon of pepper. Refrigerate for a couple of days. When ready to cook, remove meat from marinade, dry, roll in a mixture of flour, salt and pepper, and brown in shortening or suet. Add $\frac{1}{4}$ cup of the strained marinade, plus a cup of water, and let simmer for about an hour. Before serving add a cup of sour cream and heat, but do not bring to a boil. If you would rather use wine than vinegar, try this for your marinade: two cups of white wine, to which you have added onion powder, garlic, salt and pepper.—Paul Kelsey



Varying hare

Note

Readers who were interested in Almy Coggeshall's "A New Dimension in Mountain Scenery" in our September-October issue should be aware of a discrepancy in the map on page 17 of that article. The route number is listed as Route 73. It should be Route 74 as is stated in Mr. Coggeshall's article. Those who plan on hiking into the area and have obtained a U.S. Geological Survey topographic map of the Paradox Lake Quadrangle (as recommended in the article) should note that this map also lists the road as Route 73.

DEC's Regional Offices

Regional staffs of the Department of Environmental Conservation are your good neighbors. They specialize in quick, first-hand information and help with such environmental problems as air and water pollution, land and forest use, and fish and wildlife law enforcement. If you have a problem, call, write or visit YOUR regional office.

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Donald Middleton, Director
Building 40
State University of New York
Stony Brook, N.Y. 11790
(516) 751-7900

Region 2

Carolyn Konheim, Director
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Region 3

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New Paltz, N.Y. 12561
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Region 9

William Friedman, Director
584 Delaware Avenue
Buffalo, N.Y. 14202
(716) 842-5824

Pond Clam



PAPERSHELL clams, *Anodonta grandis*, are large mollusks—they get to be as big as the tongue of a sneaker—that just seem to sit on the pond bottom doing nothing. But next time you see one, watch it closely instead of grabbing it. You'll see that this creature is doing something quite interesting. There are tiny hairlike cilia inside the two shells, which beat constantly to circulate a stream of water through two openings, or siphons, pictured above in top view. Water containing tiny plants, animals, and debris flows in the larger siphon, which is lined with fleshy fingers to keep out larger pieces of material. A system of mucous membranes then traps the organic matter and transports it to the mouth, buried deep in the interior of the clam.

The mollusk gets rid of wastes and water through its smaller siphon, which the specimen in the photograph has closed. Especially in dense populations, pond clams play an important role by clearing water as they feed: aquatic vegetation grows better since sunlight can penetrate deeper, and these animals remove particles which otherwise may clog the gills of fish.

Freshwater clams have a fascinating life history, and their activities affect many other inhabitants of their environment. Strange as it seems, they spend part of their life as fish parasites. During their breeding season, a female produces large quantities of eggs in a specialized "brood pouch" in her gills; males merely release their sperm into the water. If by chance a female takes some sperm in through her siphon, the eggs are fertilized and begin to develop slowly. After carrying embryos almost a year, the female ejects clam-like glochidia, each only one-fiftieth of an inch long, which settle to the pond bottom. These immature clams violently snap at the slightest disturbance, because each glochidium must clamp onto the gills, fins, or body of a fish to survive and mature. Since a glochidium's chances of grabbing onto the right species of fish is very iffy, it is indeed fortunate for clams that a single female produces as many as three million eggs in a single season.

The fish grows a layer of tissue over each glochidium after it attaches; this not only relieves the irritation to the fish, but also protects the parasitic clams. There is little evidence, however, that glochidia harm their host to any great degree. After two to three weeks, glochidia have formed at least the beginnings of most adult organ systems, and drop to the bottom to finish developing.

Although papershell clams can live up to fifteen years, some river species have been known to exceed the half-century mark. But catfish, muskrats, mink, otters, raccoons, and turtles usually take their toll before the majority of mussels live ten years. — Woodward S. Bousquet

About this issue

Joe Dell's piece on the varying hare and Eric Fountain's on the Canada lynx plunged our staff into a discussion of cycles in wildlife population. The discussion generated our very striking cover by Wayne Trimm, details from which illustrate each of the two articles. The hare is more familiar to our readers than is the lynx but the abundance of the hare, even if it does not reestablish the lynx in our northern mountains, provides the prime ingredient for hasenpfeffer stew for human consumption and provender for bobcats and foxes.

Out of the discussion came agreement that we should seek a qualified author to survey the entire wildlife spectrum and write for us a comprehensive article on cycles in nature, including the grouse whose periodical abundance is most impressive. Coming soon, we hope.

In the midst of our discussions came a phone call from Hope Ryden whose articles on wild horses, coyotes, and beaver have appeared in the most prestigious national magazines. Informed of our interest in wildlife cycles she commented that a paradoxical pattern was observed among coyotes in the West. A severe winter was hard on ungulates, such as deer and elk, but the coyotes flourished, fattening on those that died of hunger and cold. A mild winter favored the ungulates, kept them alive and healthy and the coyote population diminished markedly. Which incidentally confirms what our own biologists have told us—that the coyote is more the

scavenger than the predator of our deer herds.

If the bear cycle is on an upward or downward trend, the department is in a position to have the facts, as Steve Clarke's article in our EQ supplement demonstrates. If our personal observations are significant, the trend is up, for our orchard in northeastern Essex County last spring was spotted with bear scats, and on one country road we surprised a medium sized bear who trotted off into the woods as we approached.

In any case, there is no shortage of raccoons which we feature in a very frameable painting (see centerspread) by Wayne Trimm, with comment by Elaine Suss.

Aside from our animal stories (paraphrasing Ernest Thompson Seton, we might call this "Wild Animals You Should Know") our feature article is on New York's new State Museum located in the Cultural Center of Albany's Empire State Plaza. After more than ten years of preparation, the museum opened on July 1st as part of Albany's American Revolution Bicentennial celebration. Staff artist Ed Kenney's drawings have captured the excitement and hard work involved in exhibits preparation, and with photos of some of the major new exhibits, the story we think is both informative and attractive. Our special thanks to Ken Hay and Verna Ezard of the museum staff for their help. The new museum is truly a beautiful place, and our readers are urged to make it a point to visit. There is no admission charge and the museum is open every day.

We also felt that no story on the museum would be complete without a profile of James Hall, the museum's first director whose spirit we would like to feel still hovers over the institution he helped found and whose destinies he guided during its turbulent early years. Don Fisher of the Museum's Science Service consented to do the story on this remarkable man. Following is a list of our contributors:

G. CARROLL LINDSAY (*Man and Nature in New York*) is director, Museum Services of the New York State Museum. A native of Pennsylvania, he graduated from Franklin and Marshall College and received his M.A. as a Winterthur Fellow in Early American Culture. In 1955 Mr. Lindsay went to work for the Smithsonian Institution where he was successively assistant curator of ethnology, associate curator of cultural history, curator and later director of the Smithsonian Museum Service. He also served as acting secretary of the Smithsonian Associates before he assumed his present position with the New York State Museum in 1966. Mr. Lindsay is the author of articles on decorative arts, architecture and museum practice. He is former vice president of the American Association of Museums and is presently chairman of the Association's Professional Relations Committee. Since 1968 he has served as secretary of the New York State Association of Museums. Mr. Lindsay lives with his wife Edythe in Menands, N.Y.

DONALD W. FISHER (*James Hall*) is a geologist and paleontologist by

profession and since 1955 has been State Paleontologist for the New York State Museum. A native of Schenectady, Dr. Fisher holds both undergraduate and graduate degrees from the University of Buffalo and a Ph.D. from the University of Rochester. He is a member of Phi Beta Kappa and Sigma Xi and holds membership in numerous professional societies including the Geological Society of America, the Paleontological Society of America and since 1957 has been a Fellow of the American Association for the Advancement of Science. He is the author of over 70 professional papers and coauthor of the soon-to-be published "Geology of the Niagara Frontier." In his spare time Dr. Fisher grows roses, collects stamps and trolley memorabilia and works on antique cars.

CHARLES R. MEYER (*Whaling and the Art of Scrimshaw*) is a field editor and freelance writer-photographer. He has written script for, directed and photographed documentary films and has contributed over one thousand articles and photographs to such publications as *Sports Illustrated*, *True*, *Argosy*, *Field & Stream*, *Outdoor Life* and *Boating*. An experienced fisherman, Mr. Meyer holds the International Game Fish Association light tackle record on mako shark—a 261 pounder taken on spinning tackle with a 12-pound test line. While not busy traveling in the United States or abroad, Mr. Meyer lives in Southold, New York. Mr. Meyer's article is excerpted from his book of the same title, published

WISHART

SERRAO

FISHER

DELL

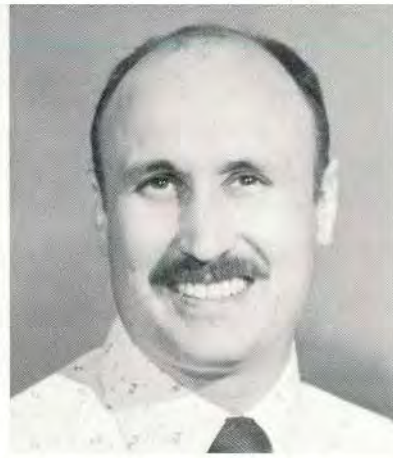




LINDSAY



BEAR



CLARKE

by David McKay Co., Inc., \$17.95.

JOHN SERRAO (Insects and Spiders) has been interested in entomology ever since his childhood in Brooklyn and Queens. While receiving his M.S. in environmental education at Cornell, he minored in insect taxonomy. Presently he is director-naturalist of the Greenbrook Sanctuary in Alpine, New Jersey. For the past four years he and his wife Felicia have lived in Cornwall-on-Hudson where his hobbies include nature photography, camping and long-distance running. Mr. Serrao has published articles and photographs in Adirondack Life, Curator and is a contributing editor for Hudson Valley magazine.

NANCY C. HAGE (Doodles on the Landscape) teaches fourth grade at Worcester Central School, Worcester, N.Y. A graduate of Hartwick College, Oneonta, Ms. Hage lives in Schenectady, N.Y. with her husband Bob and two sons. They live in an early 19th century stone house that they are struggling to restore. ERIC FOUNTAIN, JR. (The Canada Lynx) was born in Saranac Lake, brought up in Annapolis, Maryland and graduated from Cornell in 1975 with a degree in wildlife science. He now works as a senior research technician in enzymology at Duke University in Durham, North Carolina. He also works as a volunteer with the Animal Protection Society of Durham and numbers photography, hiking and entomology among his pastimes.

FRED BEAR (Hunting the Quiet Way) was born in Pennsylvania's

Cumberland Valley in 1902. He inherited a love of the outdoors from his father. In 1927 he became interested in bowhunting and shortly thereafter founded the Bear Archery Company, which has since become the world's leading manufacturer of archery equipment. His Fred Bear Museum, opened in 1967 near Greyling, Michigan houses mounts of the many big game trophies collected by Bear in his worldwide hunting trips, plus the country's finest collection of archery artifacts. Mr. Bear has produced many films on archery and bowhunting and has lectured and written extensively on these subjects. A life-long supporter of conservation, he founded the Fred Bear Sports Clubs in 1972. He is widely recognized as one of the outstanding sportsmen of this century.

RONALD S. WISHART (Too Precious to Burn) was born in Brooklyn and graduated from RPI with a degree in chemical engineering. He joined Union Carbide in 1948 and since then has held a variety of managerial positions with that firm including division president of the midwestern silicones division, president of the coatings and intermediates division and group manager for chemicals and plastics. In 1973 he was appointed director, feedstock and energy policy. Mr. Wishart is currently director of the National Petroleum Refiners Association, a member of the executive advisory committee of the natural gas survey of the Federal Power Commission and executive representative to the Petrochemical

Energy Group.

EDWARD H. DWIGHT (Oriskany Creek) is Director of the Museum of Art, Munson-Williams-Proctor Institute in Utica. Describing his career in photography Mr. Dwight says, "In my youth I photographed family and friends; later I photographed birds, spending many hours in a blind near a bird's nest. In 1950, while working at the Cincinnati Art Museum, I began making black and white photographic abstractions, influenced by abstract art and by the photographs of Edward Weston and others. I began taking color slides while director of the art center in Milwaukee. Fortunately my art museum career has kept me constantly exposed to the visual arts and allowed me time to take photographs. Since working in color I have been increasingly interested in photographing nature." Mr. Dwight has exhibited his photographs at such museums as the Museum of Modern Art, New York, the Delaware Art Center, the Davidson Art Center at Wesleyan University and the Weyhe Gallery in New York City. Mr. Dwight currently lives in Clinton, New York.

JOSEPH DELL (The Varying Hare) is a principal wildlife biologist and leader of the Impact Analysis Section of DEC's Bureau of Environmental Protection. A native of Utica, Mr. Dell graduated from Cornell where he worked on the famous Connecticut Hill Ruffed Grouse Study. After military service in World War II, Mr. Dell came to work for the department's research lab at Delmar

as an assistant game research investigator and leader of the varying hare project to which he later added studies of the cottontail rabbit, the European hare, the coyote, and the fox and habitat improvement studies. In 1958 he became supervisor of the wildlife research program. Mr. Dell is past vice chairman of the Northeast Section of the Wildlife Society and first president of the New York chapter of the same organization.

STEPHEN H. CLARKE (The Black Bear in New York State) is an associate wildlife biologist with DEC's Bureau of Wildlife. For the past three and a half years he has been leader of the Big Game Project which conducts research and coordinates management of New York's white-tailed deer and black bear. Previously he worked as a regional wildlife biologist out of the Olean office. Mr. Clarke and his wife Nancy, also a professional biologist, have two children and number hunting, fishing and wildlife photography among their pastimes.

In addition we have a long-awaited report on the recommendations of the Tug Hill Commission by former staffer SANDY MARVINNEY, now with the Wilderness Society, a short article (Hydrostructure in the Sea) by JOHN C. FINE and regular features by field editor PAUL KELSEY and JAY "FISHY" FULLUM.



LAGE



MEYER



DWIGHT



FOUNTAIN



The Betwixt and Between Season

Lewis, N.Y. (1957)

CHAUNCEY BLINN, our township superintendent of roads, sat in the hall on election day and squinted through the window at the gray clouds. "They say it'll be a tough winter and I believe it," he said.

Leamon Cross, a farmer from over towards Stowersville, nodded glumly. "Can't have it open every winter," he said.

The mood of Chauncey and Leamon is typical of this season in the Adirondacks. It is an attitude of cheerless resignation and is as inevitable at this time of the year as the shortening daylight and the long angle of the sun.

For here we have not four but five seasons. The fifth is the brief period after election day when autumn has departed and winter, with no doubt in her mind as to the certainty of her coming, is content to be vague about the exact date.

There are frosty mornings when the thermometer on my woodshed registers four or five degrees below freezing. But it is not the stimulating, nippy chill of autumn. There is a foreboding dampness about it. The mist which gathers around the peaks of Hurricane and Jay will leave their upper slopes white with snow and there will be flurries before noon if the sun doesn't break through.

But because it is not yet winter, the clouds will usually part, the frost will melt and everyone (whistling by the graveyard) is saying what a fine day it is.

Of course it can't be a fine day for very long, either. This isn't October; it is well into November. The hope of an Indian summer which beguiles football fans and gay drivers of convertibles a couple of hundred miles to the south, isn't for us. That hope vanished from these parts with the last golden leaf of the aspen in our meadow.

So preoccupied are we with preparations for winter, that we are seldom conscious of the somber beauty which hangs about the mountains, forests and meadows.

The flaming colors are long gone but there is a suggestion of red and gold still in the brown leaves on the forest floor or along the roadside. A ray of sunlight pushing now unopposed into the depths of the woods will lift this color into the atmosphere.

This is the magic moment for the paper birches, and their white bark shines more brightly than at any other time of the year.

In the woods, the limbs of all but the evergreen conifers are bare, and it is now possible to locate the nests of the songsters which eluded you last summer. Near the farm houses, only the tough old apple trees are clinging to their withered leaves. Almost everywhere, the color scheme is brown, but it is a warm brown which remembers, if it does not reflect, the hues of autumn.

There are partridge and grouse in the woods, but around the house the chickadees are taking over. Although there is still food in the woods, they now come each morning and noon to your bird-feeding stations for easy-to-get suet or sunflower seeds. You can take them or leave them now, but in a few short weeks they will be the only sign of life in the vast, white winter.


In the village, the human chickadees who don't go south for the winter, are pursuing their tasks purposefully if not cheerfully.

The village streets are quiet until three o'clock when the school buses roll through with homeward-bound children. The town comes to life again at five when the final mail of the day is distributed. For a few minutes there is commotion around the post office as cars drive up. Greetings are exchanged without enthusiasm. Someone may mention that it's getting colder. But there is no prolonged chatting in the post office lobby.

The temptations of hunting no longer war with the obligations of husbandry, and if the woodshed hasn't yet been filled, the rains or snows which make mountain roads impassable will make you regret your tardiness.

As spring is the season of hope, this, then, is the season of premonition, of a sense of impending hardships. It is a time for unending chores, for labor, for resignation.

The mood of the residents will continue through the increasing cold and the countless brief flurries until that magic morning when we awake to find the whole countryside white with the first big snow of the season. The air will be clear and cold. As a people, we will stamp our boots, briskly rub our hands, and smile at each other with a cheerfulness we haven't known in weeks.

"Isn't it a fine day?" everyone will say. — Robert F. Hall. 

Reprinted from "Tavern Lamps are Burning,"
edited by Carl Carmer.

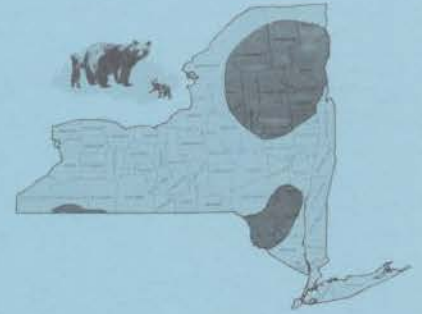
Wayne Trimm





The Black Bear in New York State

by Stephen H. Clarke



Bear range in New York

Black bears are creatures of extensive forested lands. The second largest population of black bears in the eastern United States resides in New York; only Maine has a larger population. Approximately 4,000 bears live here, occupying three separate bear ranges which vary considerably in habitat quality and quantity, human land uses, and the number of bears occupying each range. Each range perhaps has a different future.

The black bear, *Ursus americanus*, is the only species of bear that occurs in the eastern United States. They are a fascinating contrast in physical appearance and behavior. Black bears may exceed 750 pounds in weight, presenting a formidable appearance. But they are usually shy and flee at the approach of a human. Black bears are omnivores, eating plants or animals, alive or dead, and devouring whatever is readily available. Bears can hardly be faulted for feeding on bees and honey when an apiary is set up in a bear's home range, or for scavenging food at dumps, or even for rummaging through a camper's pack or cabin when attracted by improperly disposed trash or carelessly stored foods.

Two-week-old black bear



S. H. Clarke

Bears in such situations often begin to lose some of their natural fear of man. They may appear tame because of their tolerance to human approach but this is deceptive. Black bears are wild animals, a fact that should always be realized. Even small bears are strong and potentially dangerous. Adult female bears average 150 pounds; adult male bears are considerably larger, averaging 300 pounds.

Historically, black bears have long been a part of New York's wildlife legacy. When colonists arrived during the seventeenth century, most of New York was blanketed with mature forest. As the colonists cleared the forest, the number of bears declined. By the late 1800's almost 75 percent of the land had been cleared of forest for farming. With most of their habitat removed, the situation for black bears must have been rather bleak.

Black bears undoubtedly survived best in the Central Adirondacks where, despite heavy logging, the marginal fertility of farm land discouraged agriculture and the habitat did not change. As abandoned farm land increased throughout the state in the late 1800's, large areas reverted to forest. This provided a suitable habitat for bears,

and populations redeveloped in three areas, the Adirondacks, the Catskills and Allegheny, our present bear ranges. Since then human activities and land uses have dictated the condition of both the habitat and bear population for each of the three ranges.

The Adirondack range, about 9,300 square miles with extensive unbroken tracts of forest, is the largest and, because of limited human encroachment, probably the best. Virtually all of the Adirondack Park falls within this range. Current estimates place the bear population in this area at about 3,500. Bear-human conflicts here result most often from human carelessness, but occasionally may be related to the failure of some seasonal foods causing bears to move widely in search of food.

The Catskill range, consisting of about 1,270 square miles, is occupied by about 300 bears. Actually this range is presently comprised of two sub-ranges, northern and southern. Extensive tracts of unbroken forest in the Catskill Forest Preserve (40 percent of the range) and high peak country characterize the northern Catskills, while the southern range, with lower elevations, is comprised of large tracts of privately owned wooded land. The 200 to 250 bears residing in the northern range are apparently isolated from the 50 to 100 inhabiting the southern range. The smaller sub-population in the south provides an opportunity for bears from the larger populations in Pennsylvania to disperse into New York. The Catskill range, particularly in the south, is more densely populated by people than the Adirondacks. During the 1950's and 1960's there was a decline in the size of the Catskill bear population; however, since 1970 it has been relatively stable.

Allegheny State Park with nearly 100 square miles, mostly mature forest, is the focal point of the small and marginal quality Allegheny range. Outside the park, agricultural lands have been abandoned over recent decades resulting in some of the best deer range in the state, but it is not good bear range. Instead of extensive



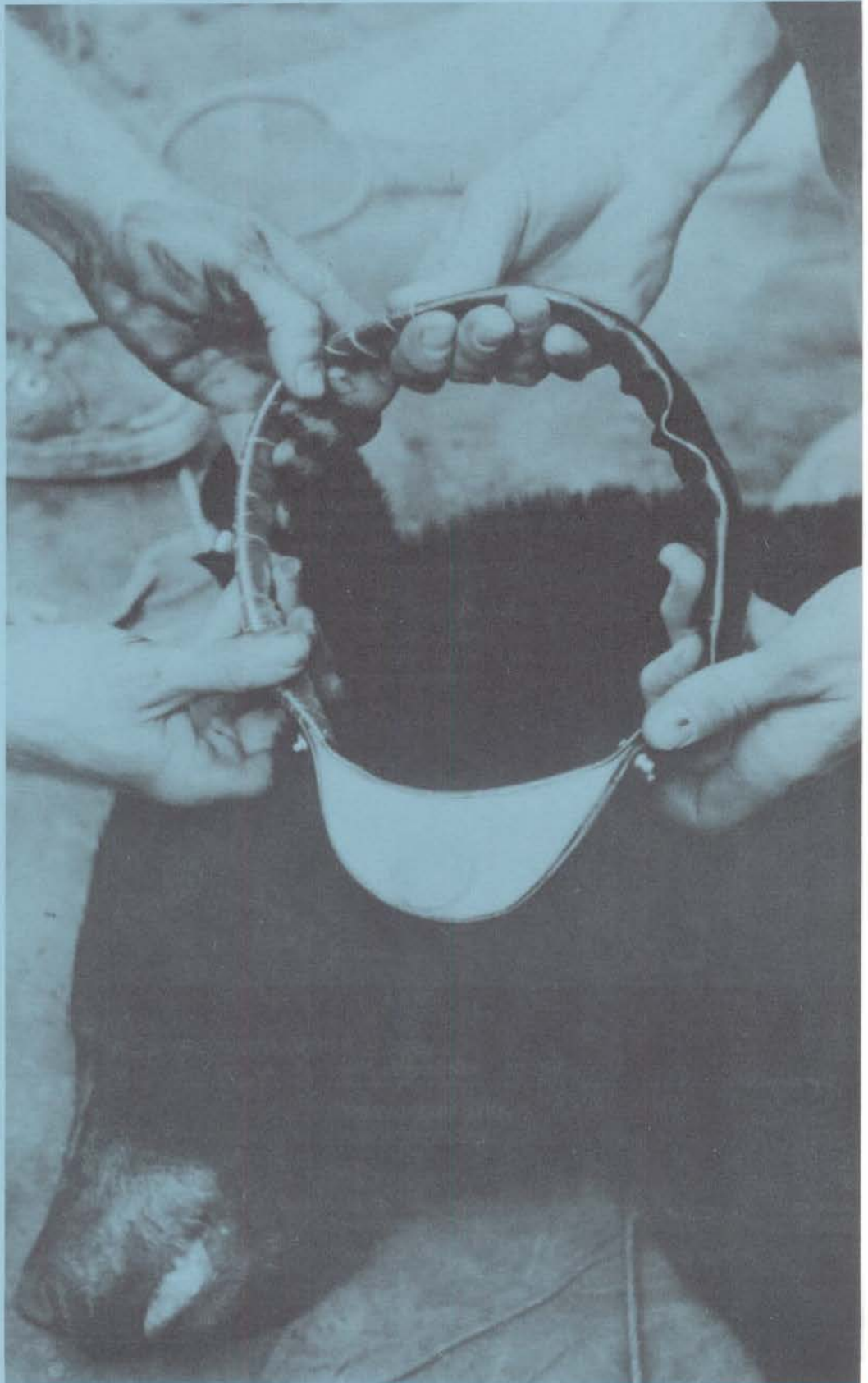
forests, there is a patchwork of farms reverting to old fields, shrubs and trees of varied ages. Humans populate the area throughout and their land uses are not consistent with bear habitat. Estimates of 50 bears and 500 square miles for this range are probably high. While there has been documented bear reproduction in this range, additions to the population also come from bears annually dispersing northward out of a large bear population to the south in Pennsylvania. The Allegany range may best be described as the fringe of a major bear range. Their number appears to have remained at a relatively stable low level for the past ten years.

The objective of the New York State Department of Environmental Conservation is to maintain bear populations at levels producing a maximum sustained yield of bears for hunting, while keeping their numbers at levels compatible with range carrying-capacity and human land uses. Since bears are long-lived and free of natural predators, hunting is the only effective way of controlling their numbers. Without hunting, bears would become an intolerable nuisance to people in the region.

Maintaining an optimally large bear population requires a knowledge of bear population and range characteristics as well as human land uses. Pioneering research conducted on Adirondack bears during the 1950's and 1960's helped DEC develop techniques for accurately determining a bear's age and sex. In addition, we obtained valuable knowledge on reproduction, home ranges and basic biology. Examination of the sex and age of bears taken by hunters during each year's hunting seasons allows DEC's wildlife biologists to monitor the status of the population. The research and data are needed for setting sound hunting seasons. The large Adirondack bear population supports hunting during an early bear season opening in early September followed immediately by an archery season through late October when the firearms season opens and continues through early December. The early bear season has grown in popularity in recent years. In 1975 over 11,000 licensed big game hunters purchased early bear season permits. Most bears taken during the archery and regular big game seasons are harvested in the course of deer hunting. The continuation of the early bear season in the Adirondacks has been necessary to control the bear population and maintain it at a level resulting in a minimum of nuisance conflicts.

The Catskill population has received the focus of the department's bear research since 1970. In preceding years, the population appeared to be declining, prompting

M. Stickney



Placing radio collar on bear



wildlife biologists to initiate an intensive study to identify limiting factors, and to develop a management plan. The study was completed in 1976. Bears were trapped, tagged and released in an effort to estimate population size and distribution. Biologists examined all bears taken by hunters to collect detailed biological records. As a result, new and refined techniques have been developed. For example, all bears trapped for tagging are now immobilized with the tranquilizing drug M99. It is relatively fast-acting, immobilizing a bear in 8 to 12 minutes. The bear can be fully aroused within a couple of minutes by using an antagonist drug, M50-50.

The trapping-for-tagging work is now finished. Sixty-six bears have been tagged, 35 of which presumably still exist in the wild since they have not been recovered by hunters. Work that remains is to determine the capability of the range for supporting bears. Radio-telemetry is also being employed in the northern Catskills to document seasonal habitat preferences and home range size and configuration. By placing a radio-collar on a released bear, it may be located from ground or air by picking up the radio signal. Considerable data have been collected through early July of 1976 on ten telemetered bears, six (four females, two males) of which are still alive with active radios. The radio-location information is being used in conjunction with current land-use analysis data to define total bear range and its capability for supporting bears. This information will provide an important basis for setting the population size objective to manage future populations.

Current research also includes experiments to determine the maximum tolerable population levels. The Catskill bear hunting season will be closed in 1976 and 1977 and opened again in 1978. By allowing a controlled population increase to occur, DEC wildlife biologists can determine acceptable population levels. Attitudes of Catskill residents and visitors toward bears will be sampled now and during the period of population increase. Alternative programmed computer predictions of the 1978 population will be examined to see which conforms most closely when the season is reopened and sex and age data are collected again. All of these methods will greatly aid in completing the long range management plan in the shortest time possible so that an optimum number of bears can be maintained in the Catskills in the future.

Biological data are collected annually from bears in the Allegany range, and in the future, collection of population and habitat information may be intensified. However, the marginal quality of most of the range does not appear to provide room for more

bears than presently exist. Annual hunting seasons have maintained an apparently stable situation.

A rewarding diversion in the Catskill bear research occurred last winter. On February 4, a hunter pursuing varying hare in Ulster County accidentally displaced a sow from her den. The sow had three two-week-old cubs which she abandoned, not unusual behavior for a female with very young cubs in an exposed, surface den. The hunter turned the cubs over to Environmental Conservation Officer Howard Wendler, who in turn gave them to the Big Game Project. After a fruitless effort to reunite the cubs with the mother, we made a decision to attempt to foster the cubs onto one or more of the current four radio-collared adult female bears.

During the next three weeks, the very small but very loud cubs were well cared for by Mrs. Marcia Kent at Berne, New York. Meanwhile, we accelerated our examination of the dens already prepared for the winter by the radio-collared bears. Only one of the females had cubs. The opening to her den was too restricted to see inside so we made tape recordings, but it was not certain whether she had one or two cubs in the den.

After three weeks the abandoned cubs had grown from an average weight of 1.8 pounds to just over four pounds. Winter was rapidly waning and so too the dened sow's lethargic condition. At five weeks of age we prepared the cubs for release. The cold weather we hoped for which would induce lethargy returned a week later and on March 4 we placed two of the cubs, a female and a male, in the den. We believe this is the first time an attempt had ever been made anywhere to introduce bear cubs to a foster

mother in the wild. The unknowns of the venture provided several breathless moments for myself, project biologist John O'Pezio and project technician Charles Hackford.

Our calculated risk paid off: the sow accepted the cubs. A time-lapse camera placed near the den recorded the emergence of the sow and cubs from the den in early April. The bears departed from the den on April 18. The sow has been radio-located frequently since leaving the den and on three occasions she was observed from the radio-tracking aircraft accompanied by three cubs. Perhaps she had but one cub of her own originally and the other two cubs we have seen are the foster cubs.

Only time will tell for sure. Each cub carries a lip-tattoo and if captured in the future, the marks would confirm the success of the fostering experiment.

Increased human use of forests in New York does not necessarily mean that bears will diminish in numbers and distribution. Sensible forest management practices on both public and private lands will improve habitat conditions today and also for the future. Most important, protection of the habitats from destruction through development provides at least a relief from the displacement effects of man on wildlife. Land use regulations are not popular but future generations will see them as a blessing. Maintenance of healthy bear populations will always require hunting. But the people who choose to live in bear country or use the land must realize that bears and people can coexist. However the burden is entirely on the side of man. The black bear in New York State is a legacy that deserves to be passed on to future generations.

Tagging a black bear



F. Bromley



Final Report of Tug Hill Commission

by Sandy Marvinney

The Temporary State Commission on Tug Hill has presented its final report to the Governor and the Legislature. The conclusions and recommendations embodied in this report are the outcome of nearly three years of study by the commission, which was appointed in April 1973 in response to growing concerns over the future development of the region.

The commission's greatest single effort has been to develop a suitable approach to land use planning and to provide technical and program support to a pilot effort by nine towns working together to prepare land use plans.

Throughout its investigations and deliberations, the commission and its staff actively sought the views, recommendations and close cooperation of Tug Hill's residents. "We believe," stated Commission Chairman George E. Carle in presenting the report to the Governor, "that the findings reported here provide a satisfactory balance between the knowledge and wishes of the local citizenry and the broader concerns of New York State as a whole."

One sentiment voiced frequently at a series of eight public forums was "Keep Tug Hill the way it is." This wild, wooded, rugged plateau lying between Lake Ontario and the Adirondacks had been a long overlooked area of the state that was beginning to feel the pressures of development. To Tug Hillers, keeping their region "the way it is" means preserving the lifestyle, the beauty, access to hunting and fishing, maintaining farming and lumbering as a basic of the economy, and retaining the freedom to be independent and decide their own future.

These goals became the commission's theme, encompassing all of the following major recommendations of the report:

- Prepare a Land Use Capability and

Development Plan, including implementing programs and controls, for the Tug Hill Region. The proposed approach builds the regional plan from the town level up.

The region would be divided into sub-regions containing groups of towns with common interests. Town plans would be coordinated to produce subregional plans. These, in turn, would be combined to form the regional plan. A continuing commission would provide technical assistance and coordination.

- Pursue economic development efforts to maintain the health of agriculture and forest related industry. Encourage moderate growth of commercial and industrial business consistent with the nature and character of the region, and in ways that strengthen the villages which serve surrounding communities.

- Determine the long-term effects of acid precipitation on Tug Hill's plant and animal life. Determine the sources of acidity so that action can be taken to curb damaging effects.

- Protect Tug Hill's streams, wetlands and unique gorge areas through a combination of joint town action and state law. The designation of selected stream sections as "unique stream areas" is recommended for adoption by local governments working in concert.

- Stabilize the use of land for agriculture through local planning, property taxation, reform and the agricultural district law.

- Maintain Tug Hill's forests for timber, fish and wildlife, and recreational use through sound land use planning and control and through innovative taxation and forest management programs.

- Develop trails and facilities for hiking, cross-country skiing, snowmobiling, hunting and fishing, and other low-intensity

recreation. Do this in ways that will not degrade the environment and the nature of Tug Hill communities.

Through planning, ordinances and law enforcement, reduce such problems as noise, litter and trespassing that recreation can impose on farmers and other land-owners.

- Reform property taxation policies and procedures to make them more consistent with land use goals and to eliminate inconsistencies in the taxation of state land.

- Provide technical and financial assistance to enable local government to carry out its mission in today's increasingly complex society. Improve interaction between governing bodies at all levels.

Although the report recommends that a permanent Tug Hill Commission be established, Benjamin P. Coe, Executive Director of the temporary commission, has indicated that legislation for the permanent body was not proposed this year as the costs were too great to consider in view of the state's current fiscal situation.

"The temporary commission has been extended for another year," Coe stated, "and our primary effort will be directed towards working with additional groups of towns to organize joint town planning boards, and to initiate pilot programs in providing technical assistance to local governments."

A major goal of the commission will be to build greater understanding and acceptance for the proposed approach to regional planning. "We look now on our work as a kind of laboratory for rural planning and development," Coe emphasized, "and we are testing a number of concepts that might be useful in other places if it can be shown that they will work here."



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1. This summer's oil spill in the St. Lawrence River was

- a) only locally significant
- b) a major spill affecting critical wetland habitat
- c) a larger spill than the 1972 spill off the California coast near Santa Barbara

2. The only bobsled run in the Western Hemisphere is located at

- a) Whiteface Mountain, N.Y.
- b) Sun Valley, Idaho
- c) Mt. Van Hoevenberg, N.Y.

3. The toxic chemicals, PCBs (polychlorinated biphenyls) have been found in

- a) recycled paper
- b) telephone pole capacitors
- c) fluorescent lights
- d) the Hudson River
- e) all of the above

4. DEC's mobile testing service to motorists has demonstrated that a well-tuned car will probably

- a) save gasoline, but pollute the air
- b) waste gasoline, but emit little pollution
- c) save both gasoline and the air

5. A disease which infects Christmas tree plantations in the North Country, called Scleroderris, kills red and Scotch pine trees when

- a) deer browse heavily on young trees
- b) plantations suffer from poor growing conditions
- c) forest fire clears the undergrowth



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EQ News Briefs

A plan to preserve endangered wetlands while at the same time allowing owners to retain title to them is the novel feature of the proposed Platte River National Wildlife Refuge in Nebraska. The new refuge would involve segments of remaining wetlands in ten counties on a 180-mile stretch of the river. Several years ago the U.S. Fish and Wildlife Service had proposed to buy a solid block of 15,000 acres of river bottom, but this proposal met with opposition from local landowners. Noting that many farming practices are not incompatible with waterfowl use, the landowners suggested some alternatives. Since the main purpose of the refuge is to preserve threatened habitat rather than to manage it, a unique combination of fee purchase and easements was developed, based upon a "willing seller" program. The easement will protect wet meadows and sandbars from conversion to other uses while at the same time allowing landowners to retain fee title and carry on normal farming.

...

A record 44 million Americans spent close to \$300 million on state hunting and fishing licenses in 1975 according to figures released by the U.S. Fish and Wildlife Service. Both figures are record highs and they show that Americans continue to find hunting and fishing major pastimes. One out of every five Americans enjoys the outdoors this way. The figures represent an increase of \$26 million in state sales and 600 thousand in license holders since 1974. Since some states do not require licenses for ocean fishing, children under 16, or senior citizens, these figures are considered conservative estimates.

...

Over 63 percent of the conservation stamps sold by the Colorado Division of Wildlife to support nongame wildlife programs are bought by hunters and fishermen according to the Wildlife Management Institute. Colorado inaugurated the \$5 stamp program in 1974 assuming that the state's bird watchers, backpackers, campers and nature photographers would be its most ardent supporters. But that hasn't been the case. "They're hardly supporting it at all," said John Torres, the division's nongame supervisor, "so what it amounts to is that the people who complain most about the status of nongame animals in Colorado are being hypocritical in the sense that they're doing the least to help those animals." Only 2,069 of the stamps have been sold since 1974.

habitat is killed off, when the homes of undersea creatures are destroyed, then the certain fate of marine life is irreversibly sealed.

To combat this depletion and destruction, man can take an active and constructive role, giving nature a hand by furnishing the sea with prefabricated submarine accommodations.

Applying the practical knowledge that fish gather to feed and live around shipwrecks, reefs and underwater obstructions, the United States government has made a number of old liberty ships available to the states for sinking as artificial underwater reefs. Some state conservation departments have begun seeding the ocean and Gulf Coast floor with ordinary scrap items that provide the base for the development of underwater sanctuaries. Wrecked car bodies, refrigerators, old rubber automobile tires, imperfect concrete pipe and cast cement pylons all provide sources for the construction of artificial underwater environments.

The Australian government is conducting experiments to determine which type of reef-building material is best suited for use underwater. Preliminary tests reveal that concrete lasts longer and thus is ideally suited as base material either in the form of pipe mis-molds or pylons cast specifically for use underwater. Japan reports significant success with projects concentrating on "farming" the sea.

Hydrostructure is in its infancy. In fact perhaps with this coinage, the word may come to represent an era of building in the sea for the betterment of mankind tomorrow.

Hydrostructure in the Sea

by John C. Fine

In the oceans there are vast reaches of barren space; sandy bottoms over large areas devoid of habitation because there is no place for marine life to attach and build on. The key to survival in the sea is *Lebensraum*. This is where the tragedy of water pollution, dredging and pesticide spraying have taken their toll, for where the marine

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Editor

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Sketchbook Look at a Touch of Winter

Ice storms coat all branches making normal perches ice slides.

a surprised chickadee



Heavily loaded limbs often break under the weight of ice and snow. The downed branches furnish temporary food for some wildlife. The new growth on the tree will be fuller and denser due to this natural pruning.

Snow-heavy branches near the ground create shelters for small wildlife.

In the autumn, water collects in crevices in rocks.

More moisture comes as snow. As the weather becomes colder the water in crevices freezes.

The frozen water expands, opening the crack a little wider. With each thaw and freeze the gap is opened until the rock splits and falls. This is known as

"plucking" and

is common near glaciers where bowls or part-circles are created in mountain country. There are several good examples in the Adirondacks.

In early times rock quarrying was done by a similar method. Holes were worked into the stones with harder rocks.

Then dry pegs were driven tightly into the holes. Once in place the pegs were soaked causing them to swell and split the rock.

Ice storms are very hard on tree browsers. Both deer and grouse have a difficult time.

Ravens like the high and rugged mountain country of the Adirondacks.

a bird that is increasing in N.Y.S. is the raven. Larger than a crow, the wedge-shaped tail of the bird in flight together with occasional soaring, make the species easier to identify.

One thawing spring day I found this grouse where it had become trapped under an icy crust and smothered.



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