

Halifax Field Naturalists Newsletter

DECEMBER 1983 - FEBRUARY 1984

No. 34

DID YOU REMEMBER TO PAY YOUR
DUES FOR 1984?

\$7 single; \$10 family; \$15 sustain-
ing ., to cover period from Jan.1
to December 31, 1984.

Mail your cheque or cash to:
Treasurer, Halifax Field Nat-
uralists, c/o N.S. Museum,
1747 Summer Street, Halifax, NS.,
B3H 3A6.

or bring along to the next monthly
meeting.

Halifax Field Naturalists

DECEMBER 1983- FEBRUARY 1984

No. 34

MEETINGS: First Thursday of every month at 8.00 pm in the Auditorium of the Nova Scotia Museum, 1747 Summer Street, Halifax.

FIELD TRIPS: are held at least once a month.

MEMBERSHIP: is open to anyone interested in the natural history of Nova Scotia. Memberships are available at any meeting of the Society or by writing to --- Membership Chairman, Halifax Field Naturalists, c/o Nova Scotia Museum.

Individual memberships \$7.00 per year
Family " \$10.00 " "
Sustaining " \$15.00 "

This covers our fiscal year - January 1 to December 31.

Members receive the HFN Newsletter and notices of all meetings, field trips and special programs.

EXECUTIVE
for 1984:

President	John van der Meer	(r) 455-1029.	(o) 426-8276
Vice-President.....	Edna Staples	(r) 868-2919	
Treasurer	Bernice Moores	(r) 422-5292	(o) 445-2500
Membership	Colin Stewart	(r) 455-6576	
Secretary	Michael Downing	(r) 823-2081	
Past-President	Doris Butters	(r) 463-0033	

Directors:

Projects John Brownlie
Program Co-ordinator. Filip Volckaert
Bill Freedman
Eric Malmberg
Aileen Meagher
Mary Primrose
Pierre Taschereau

NEWSLETTER Editor

Doris Butters	463-0033
Edna Staples	
Aileen Meagher	

MAILING Halifax Field Naturalists
ADDRESS: c/o N.S. Museum, 1747 Summer Street, Halifax, B3H 3A6.

HFN is a member organisation of the Canadian Nature Federation.

HFN is incorporated under the Nova Scotia Societies Act.

HFN NEWSLETTER is produced by courtesy of the Nova Scotia Museum.

*** Now that running a car is so expensive, it would be appreciated if those travelling in someone else's car on field trips share the cost of the gas. Thank you.

PRESIDENTIAL REPORT 1983

This is but a brief summary of HFN activities during what proved to be to be a busy year.

Membership increased to almost 200, and while we did have a fair turnout for most regular meetings, we have yet to fill the Auditorium to capacity every month! Our slide-talks were diverse, informative and very well received. Topics ranged from seed shrimp to pilot whales, bats to boojums, and we even 'travelled abroad' to Kluane, Indonesia and Arizona. Many thanks to all who gave of their time and efforts to make our meetings so varied and interesting.

Thanks are also due to those who arranged or led our field trips, making it possible for us to enjoy 19 outings of widely different types. Favourite spots were revisited, such as Cape Split, Smiley's, Conrad's and the Mapleton sugar-bush, balanced by trips to less familiar areas including Taylor Head, Clam Harbour, Tancook, Noel Shore, St. Catherine's River Beach, the "bat caves" at Maitland and an overnight trip to Kejimikujik at the time of the Perseid meteor shower.

Despite often uncertain weather we had a good turnout for most hikes; participants ranged in number from 11-35. One hike had to be called off - gale force winds and heavy rain making it impossible for us to take the Shore Bird and Waterfowl trip with Eric Cooke. However, this one is being re-scheduled for mid-April.

Four Newsletters were issued. We were gratified at the excellent support received from members in the way of articles, verse, sketches and field trip reports. Do keep it coming!

Refreshments - despite a few setbacks - always appeared at the end of our meetings. For that service we owe thanks to Lesley Butters and her team of tea-makers.

(Lesley and Linda are at present touring New Zealand and we hope for details and a slide-show when they return).

The Conrad's Beach Area Survey has been revitalised and it is hoped that members will assist by noting details of their findings whenever they visit the area, (forms are available for anyone wishing to help in this way). The N.S. Museum Science Department Director has asked us to continue our program of Area Studies as they are of considerable help to the painfully under-staffed Museum.

Prizes for natural history projects were awarded to two students who entered the annual High School Science Fair in April. Later, these two young ladies brought their projects to an HFN meeting and presented an excellent short talk on their work.

Several letters were sent to the Provincial Government appealing for the protection of nesting Piping Plovers at St. Catherine's River Beach; protesting against the damage caused by off-road vehicles at Crescent Beach, and also protesting the super highway proposed for the Salmon Lake region which would run to the Airport through an important nature and fishing area. A letter was sent to City Council and a petition signed against the erection of two towers overlooking the Public Gardens.

Finally, we owe a debt of gratitude to the Nova Scotia Museum for making available to us facilities for our meetings, providing a mail drop-off service, library shelf space, printing our Newsletters, identifying our unusual 'finds' and always going out of their way to give help whenever it is needed.

Doris Butters.

Halifax Field Naturalists
Statement of Receipts and Disbursements
For the Year Ended December 31, 1983

Receipts

Membership dues	\$1,032.00
Total receipts	<u>\$1,032.00</u>

Disbursements

Meetings expense	\$ 68.27
Publications and stationery	203.35
Postage	295.33
Dues - Can. Nature Federation	25.00
Donation - Can. Nature Federation	50.00
Bank charges	8.30
Projects - Science Fair prizes	45.00
	<u>\$ 695.25</u>

Excess of receipts over disbursements	\$ 336.75
Add - Opening balance, January 1, 1983	<u>1,164.72</u>
Surplus account balance, December 31, 1983	<u>\$1,501.47</u>

Consisting of:

Petty Cash Fund	\$ 25.00
Bank Account balance, December 31, 1983	176.47
Term Deposit - Bank of Montreal, 6 3/4%, 6 months maturing June 25, 1984	<u>1,300.00</u>
	<u>\$1,501.47</u>

Signed

Sernie A. Boers
Treasurer

Accountant's Comments

I have prepared the above Statement of Receipts and Disbursements of Halifax Field Naturalists for the year ended December 31, 1983, from the records of the Society and information supplied to me by its officers.

Halifax, Nova Scotia
January 28, 1984

A. W. Linton
A. W. Linton, F.C.A.



hfn news

PRESIDENT'S MESSAGE

The annual meeting is behind us for another year and a new slate of officers is in place (By acclamation, as usual!) There were no big surprises with a lot of familiar faces in new positions - sort of 'cabinet shuffle'. Doris Butters decided to step down as president so she could concentrate her energy as editor of the Newsletter. Thus it is that you find yours truly struggling to take up the reins. Fortunately I've been promised a lot of help. An ideal president of HFN would be a compendium of information about wildlife, and even better would have immediate recall of Latin binomials. I will not be that ideal president. I will however do my best to encourage the smooth functioning of our Society. In this connection we have already taken the first steps towards organizing the responsibilities of various members of the Executive so that no one person has an unreasonable work load. Hopefully we will soon have committees in place to look after everything from programme to refreshments. Don't be surprised if someone taps you on the shoulder and asks if you can lend a hand! Let's make 1984 another great year for HFN!!

John van der Meer.

FROM THE EDITOR -

A sincere "Thank you" to all who contributed during the past year towards the production of the Newsletter. Not only to those who submitted articles and art work, but the teams who helped with the collating, stapling and mailing, and especially to Edna Staples who does the very necessary job of correcting grammatical errors and typos, in addition to doing a super job of handling the lay-out and pasting-up of the Newsletter to produce camera-ready copy for the NSM printer.

BUT - there are three more issues to get out during 1984, so we still need your support nature articles, unusual or humourous anecdotes, first sightings, book reviews, helpful hints, poetry - original or old favourite related to natural history - and, of course, field trip reports. Pen-and-ink drawings are always welcome, especially those illustrating articles.

Doris Butters.

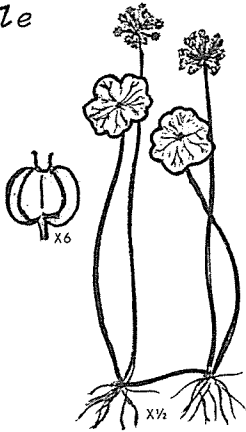
CORRECTION - to the Kejimkujik Field Trip Report in the last issue of HFN Newsletter -

In the November issue of the Newsletter, John Brownlie reported on the trip to Kejimkujik National Park (pg.9). He told of a special side trip to see the rare Water Pennywort. As we have a policy of giving scientific names for at least rare species, in typing the article Doris looked up 'Water Pennywort' in Peterson's A Field Guide to the Wildflowers.

Unfortunately Peterson's only lists *Hydrocotyle americanum* under Water Pennywort. The plant in the Park is *H. umbellata*. To add to the comedy, Edna added as an illustration, the sketch of *H. americanum* from Newcomb's Wild Flower Guide, pub.1977.

To rectify this we are including a sketch of the correct species (*Hydrocotyle umbellata*) from Britton and Brown New Illustrated Flora.

Hydrocotyle
umbellata



Interestingly, *H. americanum*, which is a creeping plant, is described as common in Nova Scotia, but has never been found in Kejimkujik National Park.

Hydrocotyle umbellata is (in Keji) a floating-leaved plant. It has been found in five locations including one site about the size of a room. However, as the 'plants' are actually branches off a prostrate stem, with roots at the nodes, this room-size area may only be a few plants. Flowers are rare.

It is classed as an Atlantic Coastal Plain Flora species, and Nova Scotia is the north eastern extreme of its range. It is rare in Nova Scotia.

Colin Stewart.

NEW ENVIRONMENTAL COMMITTEE
FORMED -

The Nova Scotia Bird Society has formed an Environmental Committee consisting of eight members of the Society, to identify areas of environmental concern within Nova Scotia and to a lesser extent other areas, with a view to advising the Executive of the Society. This advice will be based on careful research and contact with members of the scientific and environmental community.

Input from the Committee will be used by the Executive in arriving at official positions to be taken by the Society in response to specific environmental issues. Although the prime area of interest is birds and the environment, the members of the Committee are well aware that any environmental threat is potentially a threat to all forms of life.

The N.S. Bird Society was founded in 1955, and today has grown to a membership of over 600. It publishes an authoritative and respected newsletter, administers (and owns) several small sanctuaries, conducts annual population censuses, and offers regular field trips for bird observation and study, among other activities. It is the largest naturalist organization in the province.

The Society and its new Environmental Committee welcome suggestions from anyone on matters of environmental concern. They can be reached by mail at:

N.S. Bird Society
Environmental Committee
c/o N.S. Museum
1747 Summer Street
Halifax, N.S., B3H 3A6.

INTERESTED IN SHELLS ? -

If you would like to know more about them, where and how to find them, how to identify them and what books are available on the topic, the Shell Collectors Association of Nova Scotia can help you.

The aim of the Society is to promote shell collecting in this province through collecting trips, swap shops and auctions. Its other aim is to promote an understanding of mollusks in general through research, exhibits, lectures and other means.

Should you be interested in learning more about the club, call Dr. Derek Davis, Science Lab, N.S.M. - 429-4610.

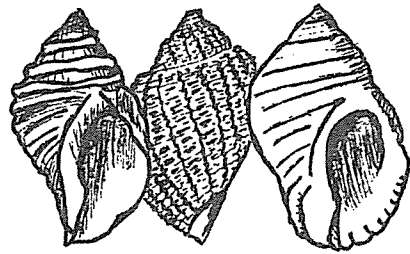
or contact the N.S. Museum at 1747 Summer Street, Halifax, B3H 3A6.

"MAN AND WILDLIFE IN A SHARED ENVIRONMENT" -

A 57-page booklet on the wildlife situation in Canada has been published by the Canadian Wildlife Service. Illustrated with beautiful and informative photos, the booklet presents a sobering analysis of the plight of our surviving native birds and certain mammals.

It contains a historical perspective, a report on the current situation and a look to the future. It has sections on the role and importance of wildlife; the nature of wildlife habitats and the threats to them; the role of volunteer groups and provincial and federal government departments; bird surveys and sanctuaries; wildlife areas and interpretation centres; the stories of three endangered mammals; and, how we can become involved. For a free copy contact:

Information Services, Regional Director General's Office, Environment Canada, Atlantic Region, 3rd floor, Queen St., 45 Alderney Drive, Dartmouth, N.S. B2Y 2N6.
or phone: 426-8374.

"VOYAGE OF THE ICEBERG" by Richard Brown -

To those who enjoyed Dick's slide/talk on Icebergs, on February 2, and who would like to get a copy of his book, Pair of Trindles in Historic Properties and the Classic Bookstore in Penhorn Mall still have a few copies. "Voyage..." is in short supply just now, having sold quite well in Metro and Upper Canada, but any bookstore will take an order. Price is \$16.95. (Free autographs to all HFN members - says Dick!)

DIRECTIONS TO POCKWOCK WALK -

Take the Bedford Highway to Hammonds Plains - 9 km. along that road there is a fire station on your left. One km. past that you come to a "Y" in the road; take the right hand fork. There is a "No Exit" sign on this road but don't worry, you cannot go over the end.

Six km. on this road, to your left is a fairly large modern house (a sick light brown with dark doors and butterflies). The walk runs along the side of the house - just a woods trail, similar to a logging road.

This is a beautiful walk at any time of the year, and the trails are well marked.

Ricki Garrett-Smith.

SUMMER SCHOOL - an Introduction
to MARINE BIOLOGY -

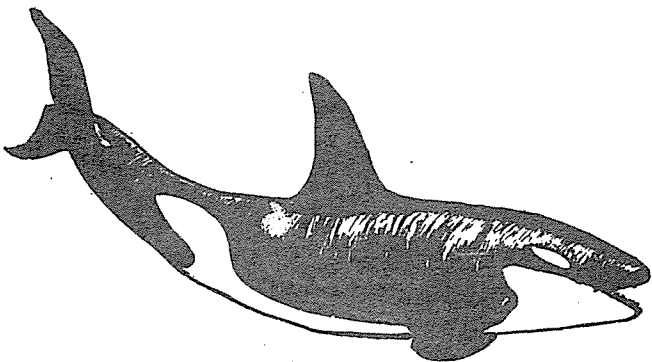
A 3-week introductory course in Marine Biology will be offered again this summer by Dalhousie University's Biology Department.

The course starts on July 3 and runs until July 25. Morning lectures will be followed by afternoon lab or field trips, and topics will cover:

Phyto- and Zooplankton, Algae, Crustacea, Molluscs, Echinoderms, Fish, Birds, Whales and Seals and include a field trip to an oyster farm to look at one aspect of Aquaculture.

The schedule affords an opportunity for study of marine life in its natural setting. Dalhousie Aquatron, lab space and technical assistance, and boats from Bedford Institute will be available. Chris Corkett, PhD., of Dal's Biology Dept. will conduct the course - for more information call Chris at his office 424-2565, or home 479-1134.

This is a half-credit course and the credit can be used towards an Honours or major in Biology at Dalhousie University. However, there is a class limit of 25 students so any interested person should contact the Registrar's office at Dal for the relevant forms as quickly as possible.



We regret to announce the death of DR. JOHN SLAYTER, who passed away suddenly at his home in Chester Basin, N.S., early in February.

A long-time member of Halifax Field Naturalists, Dr. Slayter had only recently returned from a 2-3 year stay in England and had resumed his kayaking and HFN activities. His quietly dry sense of humour will be missed on our trips.

A TREE -

(This notice has been posted in the forest reserves of Portugal for over 1000 years)

"I am the heart of your hearth on the cold winter nights, the friendly shade which screens you from the summer sun; and my fruits quench your thirst as you journey on.

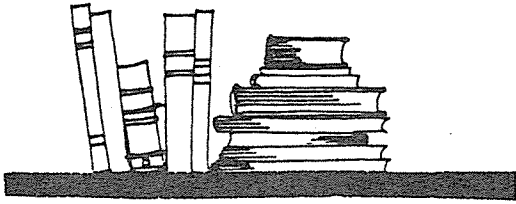
I am the beam which supports your house, the board of your table, the bed on which you sleep and the timber which builds your boat.

I am the handle of your hoe, the door of your home, the wood of your cradle and the shell of your coffin.

I am the bread of kindness and the flower of beauty.

You who pass by, please
listen to my prayer - 'HARM ME NOT'"

Lesley J. Butters.



ON THE SHELF

As usual, the latest newsletters from the Blomidon, PEI, St. John and Catherine Trail nature societies and the January issue of Nature Canada, can be found on the library shelf. And, also as usual, all contain articles of interest.

nature

notes

..... a note from Tim Randall on Seagull control - seagulls always lay three eggs, replacing if one or more are removed to bring the total again to three; a long thin wire inserted through the egg destroys the embryo, leaving the total number of eggs constant.

.....the unusually cold weather brought a Red Squirrel from Shubie-Park onto the porch of Dorothy Morris's house to eat breadcrumbs put out for the birds.

One of particular interest to HFN can be found in the October issue of Parkscan. It concerns the old Wood's property encompassing the tip of the Port Mouton Peninsula between the bays of Port Mouton and Port Joli, located 25 km southwest of Liverpool. Expropriated by the province in 1974, it is now to be turned over to Parks Canada for development as a coastal adjunct to Kejimikujik National Park. Steps have been taken to protect the site pending negotiations of terms and conditions for the transfer of the land to Parks Canada. Hopefully, the Piping Plover population will be able to nest successfully again this year.

.....Early in December, Fulton Lavender spotted four Whistling Swans on Bissett Lake and sent out a 'rare bird alert'..... in mid-November he noticed a little Brown Bat behind the Capital Store on Portland Street, Dartmouth, around the air-conditioning unit..... and at Russell Lake, behind the old piggery, Fulton noticed among the tracks of a 'resident' family of Deer, the fresh tracks of a calf or cow Moose..... a pair of River Otters wintering at Russel Lake (what will happen to this wildlife rich area when the new housing development goes in?)

... a report from Mrs. Stella West of Conrad's Road, of a flock of Red-breasted and Common Black and White Mergansers, male and female, mating early because of the unseasonably mild weather.

field trips



AN AFTERNOON OF WINTER FESTIVITIES

- Place: Kejimikujik National Park
Date: Sunday, January 22, 1984
Participants: HFN'ers - 8 (2 from Bridgewater)
 Blomidon Field Nats. - 14
Leaders: David Lawley (X-Country Ski leader)
 Jim Wolford (Snowshoe group leader)
Weather: Glorious! bright and sunny with clear blue skies
 temperature between -5 and -10°C.

Our meeting place for this outing was a different one from the usual. We made our vehicle arrangements prior to the trip and met at the Kedgie car park at 11 a.m. Several Halifax members went down the day before and stayed overnight at a nearby Bed-and-Breakfast house.

We divided into two groups - one for cross-country ski-ing led by David Lawley, the other for snowshoeing led by Jim Wolford of the Blomidon Field Naturalist club. I can attest to the cross-country ski-ing, which was wonderful, on well-groomed trails in the fresh snow. A perfect time for identifying animal tracks - the ones spotted are listed at the end of this report.

Interesting plant sightings included a clump of Dwarf Mistletoe at the top of a White Pine; galls on a Red Maple at a point opposite Peel Island; and on Peel Island itself, some of the oldest trees in the park - Ash and Maple; and an Ironwood tree (also known as Hop Hornbeam). We were told that lichen in the park is being closely watched for evidence of damage by high levels of SO₂ in the air.

The snowshoers reported signs of at least two species of birds - a Viriole nest and large holes pecked out in trees by Pileated Woodpeckers. Birds spotted include a Raven (distinguished from the Crow by its fan-shaped tail), a Blue Jay, shy Boreal Chickadees and the more brazen Black-capped Chickadee.

Both groups were out for almost two hours before taking a lunch break in a cozy shelter at Merry-makedge where water was already boiling on the stove. Here one HFN'er (me) made use of a little skating rink cleared on the lake by the Park staff.

The afternoon of ski-ing and snow-shoeing ended about 4.30 p.m. Driving out of the Park in the dusk we saw five deer on the main road - not exactly 'in the wild', but no less exciting.

It was a wonderful day on all counts, and looks like a 'natural' for a regular outing - providing we can be as lucky with snow conditions! We certainly enjoyed meeting and spending the afternoon with the Blomidon Field Naturalists. Our thanks to David Lawley for extending the invitation to the two groups, and to Jim Wolford for 'volunteering' to lead the snowshoers.

Tracks observed: Shrew, vole, deer-mouse, otter, weasel, Spruce Grouse, rabbit, porcupine, buck and roe deer, and bobcat.

Nancy Sherwin.

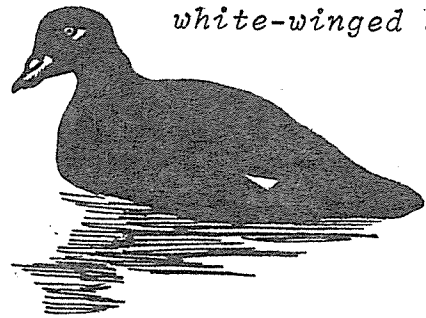
A FALL VISIT TO CLAM HARBOUR

Date: Sunday, 30 October 1983 Place: Clam Harbour, Eastern Shore
Participants: 24
Weather: Cool (10°C) with clear to slightly overcast skies - wind, brisk southwesterly.

At this particular time of the year, the attraction of Clam Harbour is its beauty and its cranberries, which form at times dense beds along the lower reaches of the dunes and on some of the drumlin slopes. Judging by the many footprints, tens of kilograms of berries must have been picked before our visit. Moreover, despite cold hands several of us managed to dig a few buckets of clams. Having just spawned they were a little bit thin or "spent" as they call it.

Exploration of the park resulted in sightings of a Loon, a few Herring Gulls and White-winged Scoters on the water. Myrtle Warblers were still searching in the woods for late insects; 8 Robins and Black-capped Chickadees inspected the local scenery. Three Black-bellied Plovers, a Greater Yellow-leg and a few "peeps" probed the mud flats for worms and crustaceans.

The park has a very rich growth of lichens, such as Old Man's Beard (*Usnea* sp.), *Xanthoria* and others. Fascinating are the variety of habitats in the park:



white-winged scoter

salt marsh and mud flats, exposed and sheltered rocky shores with overhangs and crevices, dense green forest, willow stands, grey and white dunes and exposed beaches. As in so many places along the Eastern Shore, the sea here is transgressing and eroding the headlands.

Bernice's discovery of a half-decomposed Angler Fish (*Lophius Piscatorius*) was fascinating..... the fish gets its name from a long outgrowth on its head which lures prey into its huge mouth.

Pleased to discover such a nice place, we headed home in the later afternoon.

Filip Volckaert.

Mary's report on the Cranberry Connection' aspect of the trip -

On October 30, a sunny day greeted about 24 members of the Halifax Field Naturalists who turned up for a trip to Clam Harbour Beach. There was some wonderment as to who was leading this trip, the others all looked at me because on the flier advertising this outing it was noted that I knew where the best cranberries grew. The Primrose Path is the only path I know, but the others followed along anyway. Who needs a leader when there are mussels to be plucked, clams to be dug and cranberries so plentiful I didn't even need to point a finger!

Everyone was on their own to do what pleased them, some went for a long walk along the beach and returned at the end of the day to tell us about the birds they had seen and the mussels they had found. A few happily dug clams, then joined the rest of us who were picking cranberries.

A man - who appeared to be the caretaker of the park - told us old tales about the many who had come to pick cranberries there. He also told us that cranberries sweat; his mother used to spread them out on



newspapers under their beds until they were needed for cooking - no freezers then!

After we tired of picking cranberries, not that we couldn't find any more, we walked along several of the beaches and ended up finding more cranberries, bigger than the ones we had been picking, so we had to pick a few more.

It was a most enjoyable day. The only question I was asked the whole day was "When are we going to eat?" and with great authority I said "Now!"

Mary Primrose.

***** THINK IT OVER *****

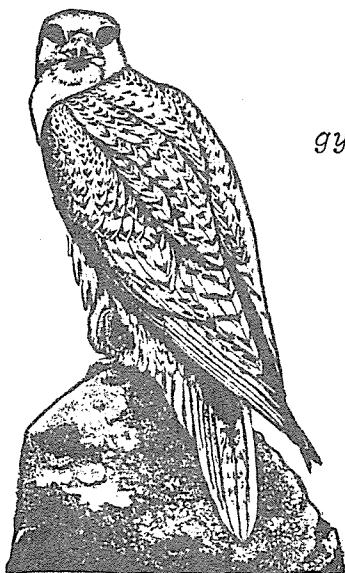
Someone has said that membership in any association is made up of four kinds of bones. There are wishbones who spend all their time wishing someone else would do the work. Then there are the jawbones who do all the talking but very little else. Next come the knucklebones who knock everything anyone else tries to do. Finally, there are the backbones who get under their load and do all the work.

WHICH ONE OF THESE ARE YOU?????

SATURDAY AFTERNOON - FEB. 11, 1984 -

Off to hunt gyrfalcons in Grand Pre!

Liz Townsend and I met with some others led by Fulton Lavender, who had been there all morning. In the warm, damp, grey day, over acres of muddy and slightly snowy fields, we plied our field glasses and one 'scope. Liz and I had already seen one Rough-legged Hawk, with his snowy breast and mottled stomach, on our way in to meet with the rest. These raptors like to sit, unmoving and almost invisible, on fence-posts, able to spot any possible prey moving over the fields.



gyrfalcon

When we met up with Fulton, we moved on a bit, and saw a stubbly cornfield chock-full of pheasants feeding on discarded cobs. Up in an elm nearby was a beautiful Bald Eagle, its white head and yellow bill and feet, clearly visible. He flew off after a while, with slow strong steady wingbeats. More eagles were seen in the trees on the way to a spot nearer the dikes and the sea. Here also were flocks and flocks of Snow Buntings - flashing, dipping and wheeling.

Now began the long walk - stalking a bump on a distant fence post. Fulton had previously reckoned a female gyr's flight path and territory, so he knew there was a good

chance that it might be her. Along the dikes and over the muddy, snowy fields we went, often stopping to check our prey's position with the glasses and 'scope. Finally we came close enough to ascertain the gyr finishing off some entrails clutched in her talons, perched on her fence post dining table. Much preening took place after she was finished, and her distinctive long, pointed wings were easily seen as she brought them forward and down to reach her back. We went no further, but left her in sated peace.

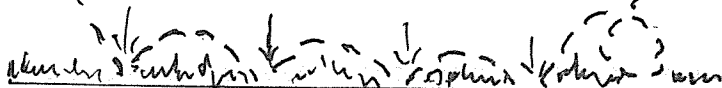
Back to the cars, and on the way, a sighting of two rather old crow kills in the gyr's field (wings and scapulae); and then - a post topped with down, and on the ground around it, pheasant feathers, legs, wings, and oddly enough, the intact stomach. Animal tracks, either fox or raccoon, were there and the blood and meat on the legs were very, very fresh. It was even possible to piece together the path of the attack as many feathers had been left behind in a straight line through the bare scrub nearby. My seven-year old, Stephen, took the blue legs for good luck!

Altogether it was a most satisfying day. I had never before seen any of these birds live in the field and, miraculously, the rain only began just as we got in our cars for the ride back to Halifax!

Stephanie Robertson.



NEXT DEADLINE ---
25 April 1984 for
the May issue.
Mail contributions
to N.S. Museum OR
phone the Editor at
463-0033.





reports

BUYING BINOCULARS

(This article is a condensation of Charles A. Bergman, "The Glass of Fashion", Audubon, November 1981, pp.74-80. More detail can be found in the original article)-

Most birdwatchers and naturalists find binoculars an indispensable tool for pursuing their hobby or profession. The following is intended as a guide to binocular specifications and what to look for when choosing a pair of binoculars.

Magnification. A primary feature of binoculars is that they magnify and allow us to see detail not otherwise apparent to the naked eye. All are labelled with a formula: 6x20, 7x35, 8x40, 10x50, etc. The first number - 6, 7, 8, 10 - is the degree of magnification. That is, a 6-power binocular makes the image appear six times larger, or six times closer, than when seen with the naked eye. However, magnification alone may not make detail more distinguishable because binoculars magnify hand tremor as well as the image. Conventional wisdom suggests 7 is the most all-purpose power, but birders find 8- and 10-power works better for their purposes.

Brilliance. The higher the magnification, the more light required, as the magnification refers only to the linear measurements of an object. While magnifying an image sevenfold results in an object one inch square becoming 7 inches tall, the area increases 49 times. The total area that needs to be illuminated is thus found by squaring the power.

The illumination power of the binocular is given by the size of the objective lens, that is the second number of the formula given. For example, in a 7x35 binocular the second number, 35, describes the size of the objective lens in millimetres. Because magnification and illumination are related, the brightness of a pair of binoculars is found by dividing the second number, the size of the objective lens, by the first, the magnification. In our example this ratio is 5. This number is termed the "exit pupil", which indicates how much light is transmitted through the binoculars to the eye. The exit pupil should correspond to the size of the pupil of the eye. Since the pupil is variable, about 3mm in bright light expanding to 7mm in dark, an exit pupil of 5 is well-suited to most viewing conditions from twilight to noon. However, if you plan to use binoculars primarily at night, you would need one that has an exit pupil of about 7, e.g. 7x50. However, be aware that such glasses are not better for day as well, since light entering past the pupil of the eye is wasted light, falling on the iris instead.

Larger objective lenses weigh more, so a compromise must be made between weight, power, and brilliance. Naturalists might choose 7x35, 8x40, or 10x40, while backpackers might choose 6x20, 8x30, 10x35.

Resolution. Resolution or clarity is defined by the smallest double-line pair that can be distinguished through the glasses. The resolution will depend on the quality of the optical glass, the presence or absence of striae (ridges or streaks in the glass) and the accuracy of the polish. Resolution is also affected by how well the lenses correct for various aberrations. All binocular lenses are now 'doublets', i.e. a second lens is cemented to the converging lens to correct for chromatic (colour) aberrations. This eliminates coloured haloes that would otherwise flare in the image.

To test for optical quality, focus on an object with many fine lines, such as a brick wall or a tree trunk (do not do this while looking through a glass window). The edges will have a slight curvature even in the best lenses. Slowly move the image from the centre of the lens to the edge, watching for distortions. In excellent binoculars, the change is slight; but will be noticeable in poor binoculars.

Another test is to move the binoculars out of focus. In the highest quality binoculars, the image resolves well even when slightly out of focus. Poorer binoculars slide quickly out of focus, blur easily, and must be focused very precisely to be clear. Excellent resolution over a wide range is an obvious advantage to a birder following a non-stationary bird.

Testing can be deceptive since the human eye will make corrections for defects in poorer binoculars. But this means the eye is working harder. If the binoculars are used for long periods, the eye muscles will become strained and fatigued. Although testing offers some information to the buyer, the safest procedure with regard to choosing optics is to trust the reputation of the manufacturer.

Field of View. The field of view is measured in terms of yards or feet seen at a distance of 1,000 yards or feet. Field of view decreases as magnification increases. Although some binoculars are advertised as 'wide angle', it is rarely a bargain because of the optical work involved, and is generally not needed.

Eye Relief. The retina of the eye must be positioned at the proper distance from the ocular lens to see the full field of view. Called 'eye relief', this distance is usually one half-inch. Since most eyes automatically accommodate slight variations of eye relief, this is usually an issue only for eyeglass wearers. Eyeglasses constrict the field of vision by lengthening the distance between the ocular lens and the retina. This problem has been solved more or less satisfactorily by retractable eyecups - although some brands are more effective than others.

Alignment. To ensure that the two lenses produce one image, focus on a fairly distant horizontal line. Gradually extend the binoculars away from your eyes, until two circular images of the line are formed, one in each barrel. The line should still appear perfectly continuous.

Criteria for Choosing Binoculars. When choosing a pair of binoculars, examine for the following features. Focus on an object with fine parallel lines, but do not look through a window when doing so.....

Brightness. Is the image bright? The lenses and prisms should be 100% coated on all glass-to-air surfaces.

Resolution. Defects to look for include:

- How sharp are the margins (edge of field)? They should be as sharp as possible. Edge-of-field defects are an easy guide to the relative quality of the optics.
- Do parallel lines crossing the image appear to curve slightly toward the centre?
- Does a flat surface appear concave (bowl-shaped)?
- Is sharp focusing difficult?

Range of Resolution. Excellent optics will seem to go in and out of focus slowly, implying a wide range of resolution. This is more useful and less aggravating in the field.

Alignment. The images formed by the two barrels should merge imperceptibly into one unified image. Watch especially for a shadow down the centre of the image and for vertical misalignment (described above).

Eye Relief. If dark shadows blot part of the field of view, eye relief is at fault. Eyeglass wearers should rigorously test the retractable cups for eye relief. Quality in eye relief for eyeglass wearers varies considerably.

Axis Hinge. The hinge should be strong and work smoothly. Avoid double hinges as they may be tiring to hold for long periods of time and it may be difficult to maintain the proper alignment.

Focusing Mechanism. A centre focus mechanism is more convenient than one on each barrel. It should be conveniently located, easily reached without looking for it, and smoothly adjustable.

Balance and Comfort. Size, weight and balance should result in a comfortable-feeling binocular.

Some Recommended Brands -

Good but expensive - Leitz, Zeiss

Next best and cheaper - Bausch and Lomb, Swift, Bushnell, Nikon, Pentax

Expect Prices to range from \$300 to over \$1000.

Leigh Mazany

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