

THE 1936 ANNUAL REPORT OF THE BOWDOIN BIOLOGICAL STATION

Bulletin No. 1 Bowdoin College, Brunswick, Maine February 1, 1936

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Directors

Alfred O. Gross
Donald B. MacMillan
Manton Copeland
J.S. Rockefeller
Sumner T. Pike
Edward N. Goding
Alger W. Pike

Field Director

W.A.O. Gross '37

THE BOWDOIN BIOLOGICAL STATION

Kent's Island, Bay of Fundy

Dominion of Canada

THE FIRST ANNUAL REPORT OF THE BOWDOIN BIOLOGICAL STATION

Bowdoin College
Brunswick, Maine
February 1, 1936

To the President and Trustees
of Bowdoin College and the
Acting-Directors of the Bowdoin
Biological Station

Sirs:

I have the honor to submit the first annual report of the Bowdoin Biological Station at Kent's Island and a report of the activities of the 1935 Bowdoin College Expedition to the Bay of Fundy.

The deed for the transfer of Kent's Island has been drawn up by Mr. Rockefeller, and the property now officially belongs to the College. Needless to say, the Station will be forever grateful to the generosity of Mr. Rockefeller.

It is with the greatest pleasure that I announce the acquisition of a forty-two cabin boat, the gift of Director Alger W. Pike. One of our greatest needs has been a suitable motor boat to carry parties and equipment over the treacherous waterway from Lubec, Maine to Kent's Island, and Mr. Pike's kind gift has solved this difficult problem.

THE STAFF

Since formal action has not yet been taken by the Boards of the College, a number of interested persons are serving as "Acting-Directors" of the Station during the interim. When the official directorate is voted upon, it is suggested that a suitable representative of the Canadian Government should also be included. The officials of that government have extended every kindness and cooperation. A great deal of our research is being carried on in connection with the Department of National Parks at Ottawa, and Commissioner J. B. Harkin has been most considerate in the way of granting us full permits.

The following group makes up the present Board of Directors:

1. Alfred O. Gross, Chm., Bowdoin College, Brunswick, Maine
2. Donald B. MacMillan, Provincetown, Rhode Island
3. Manton Copeland, Bowdoin College, Brunswick, Maine
4. J. Sterling Rockefeller, 25 Broadway, New York, N.Y.
5. Sumner T. Pike, 120 Wall Street, New York, N.Y.
6. Albert T. Gould, 1 Federal Street, Boston, Mass.
7. Edward N. Coding, 626 Tremont Building, Boston, Mass.
8. Alger W. Pike, Lubeck, Maine
9. W.A.O.Gross, Sec., Brunswick, Maine

The staff of the 1935 Expedition had a very successful season. It spent the entire summer in the field. This group numbered eleven men:

1. W.A.O.Gross, Field Director, Brunswick, Maine
2. George F. Cary, Surveying, Glenbrook, Connecticut
3. John A. Crystal, In-Charge-of-Bird Banding, Woodmere, L.I.
4. Robert D. Korss, Meteorology, Berkhamsted, England
5. George R. Cadman, Chief Radio Operator, Pleasantville, N.Y.
6. Latimer B. Hyde, Ornithologist, Turners Falls, Mass.
7. Howard B. Miller, Ornithologist, Turners Falls, Mass.
8. William Frost, Journalist, Pleasantville, N.Y.
9. Thomas Gross, Asst. Radio Operator, Brunswick, Maine
10. James W. Botsford, Commissary Officer, Buffalo, N.Y.
11. Ernest A. Joy, Warden, Little Wood Island, N.B.

Mr. Ernest Joy, a British subject and a native of nearby Wood Island, has been engaged as a full-time warden and is on duty at the island at the present time. The Station has an excellent man in Mr. Joy. He is a skilled naturalist as well as a good boat pilot and caretaker. The greatest confidence can well be placed in his competence and reliability. The following agreement has been drawn up between the Station and Mr. Joy:

"HEREAS, the Bowdoin Biological Station, a division of Bowdoin College, Brunswick, Maine has made a contract with the undersigned Ernest Albert Joy of Little Wood Island, N.B. to act as warden on Kent's Island, Bay of Fundy, New Brunswick, Canada.

"Now, THEREFORE, this agreement witnesseth:

"1. The undersigned is to act as warden and caretaker of the Station, the equipment on the island, and the wildlife on the island.

"2. The undersigned will be required to perform any duties incident to the maintenance, construction, and operation of any of the buildings, boats, and various equipment of the Station. He will be required to perform duties incident to the care of the forest, sources of water supply, and shore of Kent's Island.

"3. The undersigned will be responsible for any and all of the equipment which may be left at the Station.

"4. The Station and the College will be responsible for no acts committed by the undersigned excepting those authorized by the Board of Directors of the Station or their agent.

"5. The Station and the College assumes no responsibility for any injuries or risks incident to the undersigned's position as warden of the Station. Nor are they liable to any suit that the undersigned may care to bring upon any provocation.

"6. In return for his services, the Station provides the undersigned with shelter throughout the year and board and various equipment from June until September of each year. The Station will pay the undersigned a sum, which is to be designated by the Board of Directors, in the fall and spring of each year beginning with the fall of 1935.

"Signed: ERNEST ALBERT JOY"

Mr. Joy is making records at the island of meteorological conditions and bird population changes. He sends frequent reports in the form of letters which are on file in Brunswick. His presence at the island provides the best kind of insurance and means that the wild life is being protected throughout the year.

THE DEED

"This Indenture, made this 30th day of January, One thousand, nine hundred and thirty-six, between J. Sterling Rockefeller and Paula Wätjen Rockefeller, his wife, residing in the Town of Greenwich, County of Fairfield and State of Connecticut, hereinafter called the grantors, and the President and Trustees of Bowdoin College, a corporation organized and existing under the laws of the State of Maine, with an office located at Brunswick, Maine, hereinafter called the grantees,

"ITNESSETH, that the grantors in consideration of the sum of One dollar (\$1.00) and other good and valuable considerations to them in hand paid by the grantees, the receipt whereof is hereby acknowledged, have granted, bargained, sold and conveyed and by these presents do grant, bargain, sell and convey unto the said grantees, their successors and assigns,

"ALL of that certain Island called "Kent's Island", located in the Bay of Fundy, and being the largest the three islands appertaining to the island of Grand Manan, lying between three and four miles southerly from Oxwards Point of the Southern Shore of the said Island of Grand Manan and containing one hundred and fifty acres, more or less, and being the same Island known as "Kent's Island", which was granted under

the Great Seal of the Province of New Brunswick, to John Kent of the Parish of Grand Manan aforesaid, by Grant, bearing date the third day of February, A.D. 1819, and from which said grant the above descriptions have been taken.

"Together with all the privileges and appurtenances belonging thereto; and all interest therein of the grantors, being the same premises conveyed to John D. Rockefeller, one of the grantors herein, by deed of Ralph Beal and Agnes Beal, his wife, dated July 14, 1930, and registered in the registry office for the County of Charlotte, New Brunswick, on the 26th day of July, 1930, as No. 27725, entered in Book 108, at page 396.

"This conveyance is made and accepted upon the express condition that the grantees shall use the said Kent's Island for scientific purposes only and shall maintain on the said Island a bird sanctuary and shall continuously employ a watchman thereon during the period from May fifteenth to September first of each and every year, and, in the event of their failure to use the said island for scientific purposes only or on their failure to maintain said bird sanctuary thereon or to employ said watchman for the period specified, the premises shall revert to the grantors and their heirs absolutely.

"TO HAVE AND TO HOLD the same unto the grantees, their successors and assigns, to the use of the grantees, their successors and assigns forever subject to the foregoing conditions.

"IN WITNESS WHEREOF, the grantors have herunto set their hands and seals the day and year first above written

J. STERLING ROCKEFELLER L.S.

PAULA WATJEN ROCKEFELLER L.S.

STATION EQUIPMENT

The gift of Director Rockefeller consists of Kent's Island itself, the numerous buildings including the new warden house, and a motor boat. The building, which was used as a house for the wardens employed by Mr. Rockefeller, has been converted into a laboratory and administration building. Since it is well-insulated with wall board, it also makes an ideal home for Mr. Joy during the winter months. An old barn was used for a mess hall and three of the wharf buildings housed most of the staff last summer. These structures are very crude and were used only by necessity and at the expense of considerable hardships. If a full staff is going to stay on the island next summer, it is imperative that funds be secured to

erect a dormitory building. A fund of only five hundred dollars would care for the expense of buying and transporting a suitable house of the "ready-built" variety. While the average student has not the ability to construct a satisfactory building from unprepared lumber, he can easily put together sawed-to-fit materials.

The laboratory has been painted and improvements have been made. A darkroom was built in the cellar and equipment for both developing and printing photographs was installed. Laboratory tables were built into the walls and book shelves erected. Four men found the attic to be satisfactory sleeping quarters, and this room will be finished off in wall board.

The electric light plant has been proving very successful. It provides sufficient power for both the radio transmitter and the electric lights. Since it is not economical to operate it for one man, the warden is without power for a radio receiver this winter. A wind-generator such as is used in rural sections should be secured next year to meet this need. The importance of being able to communicate with the island by radio during the winter and of providing the warden with radio entertainment during his long eight-months vigil is very evident.

A large number of good cages are available for keeping birds in captivity. These are proving a boon to the experimental research work. An attempt should be made to sell all of the other fencing on the island. This wiring was used for the sheep which were formerly kept on the island.

The spring was recovered by Mr. Morse and proved itself to be entirely adequate as a source of water supply. The flow of water in the spring is so great that it would require a powerful mechanical pump to empty. Every effort, however, will be made to dig a well near the buildings. The present source of water is located about 1000 feet from the main camp.

The Station now has a superb set of boats. The Pseudo, the motor boat that formed a part of Mr. Rockefeller's gift, was of very narrow beam and was woefully inadequate for the long trips to Lubec, Machias Seal Island, and Nova Scotia. The boat given by Director Pitt is a forty-two foot launch with a large cabin that has sleeping quarters for four men. The pilot house is fully enclosed and has every important navigation aid. The boat is equipped with two engines--an ideal arrangement because it practically eliminates the danger of an engine failure that would leave a single-motored craft helpless. A triangle sail is also available when needed. The gasoline tanks hold more than 100 gallons which is adequate for almost 800 miles of cruising. Additional equipment on board includes a sixteen volt lighting system, a suitable galley, lockers, searchlight, and a full quota of four electric running lights.

Other boats include a dory which is available for use in the winter as well as the summer. The dory finds extensive use in landing field parties on the various sea islands. A flat bottom skiff is used for tending the boats and for rowing or outboarding among the three islands.

The wharf is situated within the confines of a small tidal basin which is served only at high water. The main anchorage of Three Islands is served by two entrances: one between Kent's and Bowdoin Islands and the other between Bowdoin and Hay Islands. It is a splendid haven for even fairly large vessels. We should encourage yachtsmen to make the islands ~~an~~ an objective for a summer cruise as did Mr. Gould last summer. A yacht should, however, not attempt to enter the harbor until a pilot arrives from the Station.

The boat-mooring in the main anchorage should be replaced next year. It is important to have a mooring that will be safe to hold large boats. Present plans call for a 1000 pound granite block and a suitable length of chain.

Messrs. Radcliffe and Alger Pike have offered the facilities of their extensive wharf to the use of the expedition. The Station thereby has a supply depot that can easily be reached by automobile from Brunswick. Lubec has become the port of departure for all parties going to the island. Of interest to everyone going to the Station is the remarkable wild life sanctuary that is operated near Lubec by Director Alger Pike.

Mr. Don Potter of the Bowdoin College Department of Buildings and Grounds very kindly arranged to have the college truck transport our supplies and equipment to and from Lubec. Our thanks also go to Mr. Wilder of the Alumni office, Mr. Glenn R. McIntire of the treasurer's office, and Mr. Gerald Wilder of the College Library for innumerable kindnesses to the expedition.

Professor Noel C. Little of the Bowdoin Physics Department loaned the expedition his department's fine surveying equipment. His assistance in this regard enabled us to begin the task of mapping the island.

The cooperation that many prominent corporations have given to the Station in the way of discounts or actual gifts of equipment is acknowledged. It is sincerely hoped that our future expeditions will have the assistance of these generous business houses.

600 Gallons of Gasoline--Gift of Standard Oil Co. of N.Y.
30 Gallons of Motor Oil--Gift of Standard Oil Co. of N.Y.
Radio Transmitter (\$750)--Loan of Collins Radio Company
Short Wave Receiver (\$60)--Gift of the Hallcrafters Co.
Transmitting Tubes (\$50)--Gift of Raytheon Production Co.
Five pairs Headphones (\$30)--Gift of Trimm Company
Two Radio Microphones (\$26)--Loan of the Astatic Company

Johnson Outboard Motor (\$150)--Loan of Johnson Motor Company
Kilowatt Electric Plant (\$360)--60% discount from Kato Co.
Dinghy--440% Old Town Canoe Company
Equipment(\$200)--10% discount from Sears, Roebuck and Company

We also wish to acknowledge the kindness of Mr. Harold T. Pul-
sifer in presenting a very fine field glass of 18-power to the
Station as a personal contribution.

COMMISSARY DEPARTMENT

Cooking and kitchen duties were shared by the expedition mem-
bers during the past summer. Few fresh vegetables could be ob-
tained so that most of the supplies were canned foods. An ef-
fort will be made to raise a certain amount of green vegetables
on the island this year for next summer's consumption. It was
found that seal meat made an excellent addition to the larder,
and regular seal hunting excursions will be arranged so that
a supply of meat will always be on hand.

The cooking was done on gasoline stoves of the camp type. The
kitchen was set up in a corner of the barn. These circumstances
naturally did not permit of a good means for preparing food.
An excellent mess table with built-in seats was made by Mr.
Morss--this piece can, of course, be transferred to a new build-
ing. The average cost of food for each man at the island is
about fifty cents a day. The use of fresh vegetables and seal
in greater amounts should effect a decrease in this cost.

Mr. James W. Botsford of the 1955 party served as commissary
officer and was in charge of the buying of foodstuffs. He al-
so did the bulk of the cooking. Next year a student who has
had cooking experience in a summer camp should take over the
entire execution of the cooking and dish washing. To rest the
responsibility for this work on one man is much more satisfac-
tory than dividing it among the entire group.

Supplies were obtained mostly in Canada, but a number of food
packing firms made very generous contributions to the exp-
dition. We wish to extend our hearty thanks for their contri-
butions.

Nineteen cases each of Baked Beans, Brown Bread, and Codfish
Cakes--Gift of Burnham & Morrill Co., Portland, Maine.
Five cases of Evaporated Milk--Gift of Borden's Sales Co.
Four cases of "Aunt Jemima Pancake Flour"--Gift of the Qua-
ker Oats Company through Mr. J. E. Esson.
Four cases of Baked Beans--Gift of H.C. Baxter Company, Brun-
swick, Maine.
Seventy-two pounds of "Buffalo Brand" Peanut Butter--50% dis-
count from the F.L.Hoyt Company.

RESEARCH PROJECTS

1. A complete survey of the island's bird life will take several years, but Dr. Olin S. Pettingill, Jr. is preparing a report on the birdlife of Grand Manan as a contribution of the Station. The work done by Mr. F. Burton Whitman in 1934 will serve as a nucleus for this and future studies of bird populations in the region. An effort will be made to take a census of the Herring Gulls on Kent's Island. Their number has been estimated as high as twenty thousand pairs.
2. Life History of the Herring Gull: The economic importance of this bird makes it worthy of very intensive studies. A very thorough investigation culminating in the publication of a monograph of the species is to be carried on during the next four years.
3. Life History Studies of Nesting Birds: Life history investigations will be made of all of the birds nesting on the island which have not been studied in detail by Ornithologists. The present program is as follows: 1934--Leach's Petrel; 1935--Black Guillemot, Black-backed Gull; 1936 Black Guillemot, Black-backed Gull, Razor-billed Auk, Savannah Sparrow; 1937--Atlantic Puffin, American Eider; 1938--Not Planned. The publication of these studies will usually occur about one year after the research is done. Any special information regarding any phase of the life of any of these species is solicited--due credit will be given for any assistance derived.
4. Olfactory Experiments: Experiments concerned with the sense of smell in birds are being carried on with Leach's Petrel and the Herring Gull.
5. Temperatures: Graphs showing temperature variation in young and adult birds will be made of as many species as possible.
6. Invertebrates: Mr. Charles Poizat of Clark University is compiling a list of the littoral life at the island. He plans to supplement his 1935 study with another visit during the coming season.
7. Botany: Professor David Potter of Clark University has prepared a preliminary list of the plant life at Kent's Island. This list may be found elsewhere in the annual Report.
8. Surveying: A base line was laid out by Messrs. Morse and Cary cooperating with the Bowdoin Physics Department. The surveying should, if possible, be continued in 1936. Studies should also be made of the soil erosion changes in the island's contour during the last century. Every effort should be made to have aerial photographs taken of the islands. (The 1936 personnel is in sore lack of a member

who has had surveying experience, and applications from such men are very welcome.)

9. Meteorology: Little progress was made because of lack of proper recording instruments. However, temperature, wind, and rainfall records are being made this winter. An application for a government weather station at Kent's Island will be made--the Weather Bureau to supply the equipment and the Station to supply the services of an operator and radio communication.

PUBLICATIONS

Clippings of articles concerned with the work of the Station are on file from the following newspapers and magazines: New York Times, Boston Herald, Boston Post, Boston Globe, Portland Press Herald, Boston Sunday Herald, Portland Evening News, Portland Evening Express, Bangor Daily News, Buffalo Sunday Times, Portland Sunday Telegram, Brunswick Record, Maine Weekly Magazine, Lewiston Journal, Bowdoin Orient; and the following periodicals: Bowdoin Alumnus, Bird Banding, Natural History, Bird Lore, Mid-Week Pictorial, Whispering Pines, Auk,

The Secretary collects clippings only from the New York Times, the Boston Herald, the Portland Press Herald, and the various publications of the College and scientific societies. Any notices from other organs will be very acceptable for the scrap books.

The results of the Leach's Petrel investigations were published in the October issue of the Auk, Vol. LII. Natural History Magazine will publish a 6000-word illustrated article about the 1935 Expedition to Kent's Island in the next issue. The New York Times Mid-Week Pictorial devoted a page to a display of Kent's Island photographs. Mr. William Frost, the journalist of last summer's party, has published a general article with three illustrations in the fall issue of the Bowdoin Alumni Association's Whispering Pines.

Scientific publications will be sent to members of the Board of Directors, and a limited number of separates are available to fill requests. As soon as a sufficient number of papers have been published, they will be bound in book form.

A large collection of photographs of the island has been prepared. These may be examined at Brunswick and enlargements secured. A two thousand foot 35 millimeter motion picture film has been showed on a number of different occasions including the Toronto meeting of the American Ornithologists Union. This film will be supplemented by a 16 millimeter film that will be shown next summer.

LIST OF KENT'S ISLAND FLOWERING PLANTS '35
(By Dr. David Potter)

POLYPODIACEAE

Thelypteris spinulosa var. *americana*

OSMUNDACEAE

Osmunda cinamomea

EQUISETACEAE

Esquisetum arvense

SPARGANIACEAE

Sparganium diversifolium

NAJADACEAE

Zostera marina

JUNCAGINACEAE

Triglochin palustris

GRAMINEAE

Calamagrostis canadensis

Agrostis alba

Deschampsia flexuosa

Festuca rubra

Puccinellia pumila

CYPERACEAE

Eleocharis tenuis

Eleocharis palustris

Eleocharis ovata

Eriophorum angustifolium

Scirpus atrovirens

Carex leptolea

Carex maritima

Carex scoparis

Carex grisea

Carex setacea

Carex Oederi var. *pumila*

Carex trisperma

Carex canescens var. *disjuncta*

Carex stellulata

Carex stellulata var. *ormantha*

ARACEAE

Acorus Calamus

JUNCACEAE

Juncus articulatus

Juncus effusus

Juncus filiformis

Juncus bufonius var. *halophilus*

Juncus bufonius

LILIACEAE

Smilacina trifolia

Streptopus amplexifolius

IRIDACEAE

Iris versicolor

Habenaria obtusata

BETULACEAE

Alnus crispa var. *mollis*

URTICACEAE

Urtica gracilis

POLYGONACEAE
Polygonum prolificum
Rumex acetosella
Rumex crispus

CHENOPODIACEAE
Suaeda maritima

CARYOPHYLLACEAE
Stellaria borealis
Cerastium vulgatum
Stellaria media
Sagina procumbens
Spergularia rubra

RANUNCULACEAE
Ranunculus acris
Ranunculus Cymbalaria

CRUCIFERAE
Cakile edentula
Capsella Bursa-pastoris

DROSERACEAE
Drosera rotundifolia

ROSACEAE
Rubus idaeus var. canadensis
Potentilla Anserina
Potentilla fruticosa

LEGUMINOSAE
Trifolium repens

OXALIDACEAE
Oxalis montana

EMPETRACEAE
Empetrum nigrum

BALSAMINACEAE
Impatiens biflora

HYPERICACEAE
Hypericum virginicum

ONAGRACEAE
Epilobium
Circea alpina
Epilobium palustre

UMBELLIFERAE
Ligusticum scoticum

CORNACEAE
Cornus canadensis

ERICACEAE
Ledum groelandicum
Kalmia angustifolia
Moneses uniflora
Chamaedaphne Calyculata
Vaccinium oxycoccus

PRIMULACEAE
Trientalis americana

BORAGINACEAE
Mertensia maritima

SCROPHULARICEAE
Euphrasia americana
Rhinanthus Christi-Galli

PLANTAGINACEAE

Plantago Rugelii
 Plantago juncooides var. glauca
 Plantago juncooides var. decipiens

RUBIACEAE

Galium trifidum

COMPOSITAE

Seriocarpus asteroides
 Solidago sempervirens
 Achillea borealis
 Matricaria suaveolens

BIRD BANDING

(by John A. Crystal)

During the summer of 1935, 7,101 birds were banded. Most of this work was done on Kent's Island, but the Razor-billed Auks were secured at the Yellow Murr Ledge, the Arctic Terns on Machias Seal Island, and many of the Petrels at Eastern Green Island. Because of the large number of Gulls banded, our recoveries have been almost confined to this bird. These returns are spread over an area which extends as far west as the Dakotas, as far south-west as Texas, as far south as the southern coast of Florida, and as far north as Newfoundland. One interesting record is of a bird that was killed in mid-air by an airplane--the record was sent in by Francis M. Weston of the U.S. Naval Air Station at Pensacola, Florida. The dispersal of the Herring Gulls is proving to be an interesting study, and it is well worthwhile to continue to band them. The recovery of the Razor-billed Auk provides further evidence that this species has a short annual migration. A record of all recoveries to date is included together with a proposed banding schedule for 1936:

1935		1936	
Herring Gull-----	6804	Herring Gull-----	10000
Leach's Petrel-----	96	Leach's Petrel-----	100
Black Guillemot-----	57	Black Guillemot-----	50
Barn Swallow-----	55	Barn Swallow-----	50
Tree Swallow-----	37	Tree Swallow-----	50
Savannah Sparrow----	18	Savannah Sparrow----	25
Razor-billed Auk----	11	Razor-billed Auk----	25
Spotted Sandpiper----	11	Spotted Sandpiper----	10
Robin-----	3	Cliff Swallow-----	115
Arctic Tern-----	2	Arctic Tern-----	1500
Eider Duck-----	1	Eider Duck-----	5
Flicker-----	6	Least Sandpiper-----	100
#Black-backed Gull----	1	Black-backed Gull----	25
		Puffin-----	500
<hr/>		<hr/>	
Total	7102	Total	12000
Total Recoveries	60	Total Species	14
Total Species	14		

.B. #B.B.Gull was a captive bird

RECOVERIES OF YOUNG HERRING GULLS Banded AT KENT'S ISLAND DURING 1935

Number	Banded	Recovered	Place of Recovery	How Recovered
35-548130	8-1-35	9-8-35	Grand Manan Is., N.B.	Found Dead
35-548145	8-1-35	10-13-35	Sydney, N.S.	Found Dead
35-548377	8-1-35	10-24-35	Perrin, Virginia	Shot
35-548438	8-1-35	10-22-35	Crosby, N. Dakota	Shot
35-548965	8-1-35	10-20-35	Green Run, Va.	Found Dead
35-549212	7-22-35	9-23-35	Centerville, N.S.	Found Dead
35-549331	7-22-35	9-7-35	Grand Lake, N.B.	Captured & Rel.
35-550005	8-10-35	9-9-35	Hermitage Bay, Nfd.	Killed
35-550233	8-1-35	10-2-35	Cheticamp, N.S.	Captured
35-550728	8-1-35	10-24-35	Bay Chaleur, N.B.	Found Disabled
35-550791	8-1-35	10-28-35	Canso, N.S.	Found Crippled
35-551042	8-1-35	9-1-35	Freeport, N.S.	Found Injured
35-551118	8-1-35	8-10-35	Manudie Marsh, N.S.	Killed
35-551136	8-1-35	9-4-35	Friendship, Maine	Caught
35-551236	8-1-35	9-25-35	Sahonnet Light, R.I.	Tied to a Gull
35-551506	8-1-35	11-1-35	East Lynne, Conn.	Dead
35-551695	8-1-35	9-16-35	Glace Bay, N.S.	Found Injured
35-551812	8-1-35	8-19-35	Beach Haven, N.J.	Captured & Rel.
35-552442	7-29-35	9-27-35	Liverpool, N.S.	Fish Hooked
35-552669	7-29-35	10-2-35	Freeport, N.S.	Caught
35-552798	7-29-35	9-23-35	Trinity Bay, Nfd.	Caught on Hook
35-550942	8-10-35	9-20-35	Addison, Maine	Found Dead
35-551033	8-1-35	10-1-35	Campobello, N.B.	Broken Wing
35-549445	7-22-35	12-1-35	Shelburne, N.S.	Found
35-548796	8-1-35	12-7-35	Vicksburg, Miss.	Found
35-549092	7-22-35	11-9-35	New Castle, N.B.	Found Dead
35-550561	8-10-35	9-18-35	St. Pierre	Killed
35-551933	8-1-35	11-16-35	West Newbury, Mass.	Found Dead
35-552795	7-29-35	11-27-35	Ponce Landing, Me.	Found
35-548934	8-1-35	11-28-35	New Haven, Vonn.	Found Dead
35-549468	7-22-35	10-3-35	Terrance Bay, N.S.	Found Dead
35-551580	8-1-35	11-25-35	Gulfport, Miss.	Found Injured
35-551663	8-1-35	8-30-35	Port George, N.S.	Dead in Fish Net
35-548855	8-1-35	10-20-35	Starboard, Maine	Found Dead
35-548931	8-1-35	1-1-36	Canarsie, N.Y.	Found Dead
35-550803	8-10-35	12-26-35	Golden Meadow, La.	Found Dead
35-551284	8-1-35	12-26-35	Bayou La Batre, Ala.	Found Dead
35-555162	8-25-35	11-29-35	Wilmington, N.C.	Injured, Killed
35-555268	8-25-35	9-29-35	Palmer, Virginia	Found
35-555262	8-25-35	12-19-35	Bronx, N.Y.	Found Dead
35-555317	8-25-35	12-?-35	Grand Isle, La.	Shot
35-555495	8-25-35	10-27-35	Casco Bay, Maine	Found Dead
35-555621	8-25-35	11-28-35	Clanton, Ala.	Found Dead
35-555730	8-25-35	12-15-35	Bayonne, N.J.	Found Dead
35-555868	8-25-35	11-28-35	Red Bank, N.J.	Found
35-555894	8-25-35	12-8-35	St. Gabriel, La.	Found
35-555998	8-25-35	12-15-35	Jena, Florida	Captured
35-556228	8-27-35	11-15-35	Richmond, N.Y.	Shot
35-556295	8-27-35	9-29-35	North Perry, Maine	Found Dead
35-556312	8-27-35	11-29-35	Brooklyn, N.Y.	Found Dead

35-551775	8-1-35	1-3-36	Pensacola, Fla.	Killed by Air Plane
35-556406	8-27-35	10-7-35	Barnettville, N.B.	Caught & Rel.
35-556435	8-27-35	11-4-35	Shediac, N.B.	Caught in Net
35-552997	8-30-35	12-15-35	Palacios Bay, Texas	Found
35-552208	7-27-35	1-3-36	Cedar Key, Fla.	Found Dead
35-548418	8-1-35	12-12-35	Rochelle, N.Y.	Found Dead
35-551481	8-1-35	12-9-35	Dauphin Is. Miss.	Caught
35-551417	8-1-35	12-10-35	Digby, N.S.	Shot
35-548700	8-1-35	12-26-35	Deal, N.J.	Injured, Killed

It has been noted sixty recoveries have been made, fifty-nine of these being from the 6804 Herring Gulls that were banded. This means that on an average, we can count on the recovery of nearly ten birds for each thousand banded after a period of six months since they were banded. The only other return is from the Razor-billed Auk:

35-403411 7-26-35 10-30-35 North Cobasset, Mass. Shot

It is proposed to band 5000 more birds in 1936 than during the last season. We will have more trained men in the field and we will be in a better position to order the correct number of bands. It is also proposed to band several thousand of the adult Gulls because the young birds apparently never return to breed on the same islands upon which they were bred.

In closing this report on banding operations, I want to thank Mr. Frederick C. Lincoln of the United States Biological Survey for his very kind cooperation in these projects.

LIFE CYCLE OF THE BLACK GUILLEMOT (CEPPHUS GRYLLE)
(by Lathier B. Hyde)

The excellent colonies of Black Guillemots on Kent's and Bowdoin Islands served as a basis for a Life History Study of the species. The nests were found among the rocks from the edge of vegetation to within four feet of the high tide mark. Forty nests were found on Kent's Island, and a total of fifty-four nests counting those found on Little Wood Island and Bowdoin Island were under observation. Out of these 54 nests, 49 had two eggs, 3 nests never contained more than one egg, and two nests had three eggs. In the instance of the latter, there is every reason to believe that the three-egg sets were laid by one female. A total of 107 eggs were weighed and measured. The following eggs exhibited at least one extreme in these weights and measurements: (extremes are in parentheses)

Long	Short	Weight	Long	Short	Weight
(65.5)	x 39.5 mm.	48.6 gr.	55.5	x (49.5)mm.	44.3 gr.
(51.5)	x 38.0 mm.	35.5 gr.	58.8	x (35.0)mm.	47.4 gr.
65.0	x 41.0 mm.	(57.2)gr.	57.0	x 38.5 mm.	(35.0)gr.

The background color of the eggs is white or often a greenish or bluish tinge. Large spots and marks appear around the large end and smaller spots are generously distributed all over the shell. The largest spots are about 12 mm in diameter. These markings were umber, fuscous, rufous brown, or pale lavender in color.

The eggs of a few nests were weighed at regular intervals. The eggs were found to lose weight regularly as incubation proceeded. The decrease averaged .7 grams daily.

It is very difficult to determine when incubation actually begins. In certain instances an egg may go without incubation for as long as five days. The longest periods of apparent incubation recorded are one of 27 days, one of 23 days, one of 21 days, and one of 19 days. A.C. Bent reports the period to be about 21 days (Bull. 107, U.S. Nat. Mus.), but our observations would lead us to believe that a longer time is required.

Hatching takes place over a period of nearly four days. 1st day: Egg is cracked but not punctured. 2nd day: Egg is pipped. Hole is about 5 mm in diameter. 3rd day: Size of hole is 7 x 20 mm. 4th day: At 1:00 am the chick under observation in this particular series emerged from the egg. During the last six hours, ~~after~~ hatching activity is most pronounced. At 6:00 pm the hatching work by this particular chick was carried on chiefly by the use of the egg tooth. At 10:00 pm the hole had become enlarged and one wing was extended. At 11:15 pm the tarsus protruded from the hole and was used as a lever to break the shell. Shortly after 1:00 am the chick freed itself from the shell. It was able to move about, its eyes were open, and it was generally alert and active.

Crows and excessively high tides are the chief destructive elements with which the Guillemot contends on Kent's Island. Of the nests under observation, crows succeeded in locating and destroying three. One pair of birds did not desert their nest after a crow had destroyed the eggs--another clutch was laid and this time they were more successful. A high tide accompanied by a storm washed out eleven nests on Kent's Island alone.

The activities of the Guillemots at the nest and in the water were observed from a blind built on a rocky promontory. The birds lost all fear of this structure and would even run around under the floor birds while it was occupied. Both birds incubate the eggs. They take turns on the nest of upwards to four hours. After the young are hatched, the parents bring food to the nest--usually rock eels (*Gunellus gunnellus*) or an occasional small red sculpin. The young remained in the nest for forty days. Once off the nest, they left the island entirely. While feeding the young or while sunning themselves on the rocks, they utter a weak but shrill-sounding whistle

that is almost "mouse-like" in tone. This noise is made with the bill wide open displaying the coral red lining of the mouth.

Daily measurements were made of the growing chick. A chart showing the progress in the growth of the major body and feather parts is presented below:

Age(days)	1	4	8	12	16	20	25	29	36	40	Adult
Wt. gr.	55.4	92.0	125.	191.	245.	291.	335.	360.	400.	376.	461.
Length mm	130.	167.	184.	200.	220.	240.	275.	280.	300.	319.	345.
Extent	122.	154.	223.	270.	324.	370.	430.	460.	520.	520.	565.
Wing	25.	30.	35.	56.5	64.	95.	109.	115.	140.	156.	165.
" Body	45.	63.	85.	115.	129.	150.	180.	195.	225.	230.	245.
Bill	12.	13.	14.	16.	19.	21.	23.	24.	25.	27.	30.
" Gape	22.	26.	31.	31.5	35.	38.	42.	43.	45.	46.	46.
" Nostr.	9.	9.5	11.	12.	13.	15.	16.	18.	20.	19.5	21.5
" Eye	23.									46.	50.
Ht. Bill	6.	6.5	7.	7.2	8.	8.	8.	8.	8.	8.	8.
TrToeNail	49.	53.5	60.	64.5	66.	68.	70.		72.5		74.
2nd Toe	16.	18.	19.	21.5	22.		23.		25.		25.
" Nail	5.	5.	6.	6.	7.	7.	7.		8.	8.5	9.
3rd Toe	22.	28.	31.	34.	34.	34.	35.	35.	35.		35.
" Nail	5.	5.	6.	7.	7.5	8.	8.		9.	9.	10.
4th Toe	20.	21.	26.5	33.	33.5	34.	34.		35.		35.
" Nail	4.	4.5	5.	5.		6.			7.	7.5	7.5
6th Prim			3.5	12.5	16.	38.	51.5		75.	88.	88.
" Sheathed				5.	6.	22.	35.		69.	74.	
6th Secon.			6.	15.		36.	49.		60.	62.5	64.
" Sheathed			1.	7.		22.				52.	
Scapulars			14.	24.	28.	44.	47.			55.	60.
" Sheathed				14.		24.	35.				
Rump Feath.			2.	7.(5.)		22.			25.	30.	30.
Crown "				1.		9.(9.)			10.		9.
Flanks "				8.(6.)		9.(7.)					
Chest "			6.5	11.(10.)					30.		
Tail "				6.	10.	20.	32.		45.		50.
" Sheathed				2.	7.	16.	26.				
2-3 Web				20.5					30.	33.	33.
3-4 Web				20.					25.	26.	26.

NESTING HABITS OF THE GREAT BLACK-BACKED GULL (LARINUS MARINUS)
(by Howard B. Miller)

Three Black-backed Gull nests were discovered on Kent's Island. The first nest was found on June 19th. The nests were located near the southern end of the island in the most populous sector of the Herring Gull colony. They were grouped together on the highest part of the island. Nest No. 1 was some 200 feet from No. 2, and No. 3 was situated 65 feet from No. 1 and 175 feet from No. 2. Nest No. 1 contained two eggs, and the other nests had clutches of three eggs each. Four or five pairs of the species frequented Bowdoin Island, but their nests, if any, could not be located. The Black-backed Gull proved the shyer of the two Gull species at Kent's Island. They seldom lay a second clutch after their first nest is robbed without building a new nest....the Herring Gull does this invariably.

Since the nesting season for the Black-backs generally starts during the first week of May, it is assumed that the birds under observation had been robbed of previous clutches.

The color of the eggs of this species varies from that of the Herring Gull in that the ground color is usually a darker shade of Brown. The eggs are larger than those of the Herring Gull. Measurements were made of the three clutches of eggs: Nest No. 1: (1) 78.x55.mm, 116.4 gr. (2) 77.x54.mm, 113.2 gr. No. 2: (1) 76.5 x 55.mm, 116.5 gr. (2) 76.5 x 54.mm, 113.6 gr. (3) 76. x 56.5mm, 121. gr. No. 3: (1) 77. x 54.mm, 105 gr. (2) 75. x 54.mm, 105.5 gr. (3) 77. x 54.8mm, 103.gr. The reason for the variation in the weight of eggs of different sets is due mostly to the fact that they were weighed at different stages of incubation.

The nests are composed mostly of dead grasses and an occasional twig. Dead Yarrow stalks are often found in the nests. No seaweed, a common nest-building material among the other Gulls, was found in these nests. The width of the three nests ranged from 46 to 55 mm. The width of the bowls ranged from 22 to 25 mm.

The eggs of the Black-backed Gull require about 24 hours to hatch. Two eggs were found in a pipped condition. One egg had an opening in the shell about 10 mm long and took 25 hours to hatch. The other had an opening 20. mm long and took 29 hours to hatch. The egg tooth wears a hole in the egg and then the head is thrust out. The chick uses his feet to push itself from the shell. The eyes are open from the first. The chick peeps from time to time throughout the process of hatching. After hatching, it peeps vehemently and continually when the parents are absent.

Both the male and the female birds share in the incubation of the eggs. The birds sit on the eggs for lengths of time from ten minutes to one and one half hours. A pup tent was used for observation work but proved unsatisfactory. The rustling of the flaps and motion inside disturbed the birds a great deal.

The Black-backed Gull is the king of the Gull clan. They choose the best nesting sites and make the other Gulls stay well aloof from the region immediately around their nests. If another bird should approach within five yards of their nest, it would immediately become the object of a spirited and effective attack. I once saw a Black-backed Gull walk slowly and determinedly over to a Herring Gull's nest and take dead grasses and other building materials from it in spite of the owner's protests.

During the incubation of the eggs and the raising of the chicks, at least one of the parent birds is always near the nest. Be-

fore the eggs hatched, both ~~birds~~ birds are together at the nest most of the time--one on guard, and one sitting on the eggs. They leave separately to secure food. After the eggs are hatched, one bird is always away securing food. When a person approaches their nest, the adult birds circle anxiously overhead. They stay much more aloof than the Herring Gulls. They seem to be very irritable at this time and continually dive at any Gull that might get in their way, but they never dive towards a human being in the manner of the other Gulls.

In order to facilitate the study of growth and details of plumage changes a young Black-backed Gull hatched on Kent's Island was kept in one of the Station's experimental cages. On leaving the island the gull was taken to my home at Cooper's Mills, Massachusetts and later sent to Brunswick where it is at present being kept in one of Dr. Gross' large outdoor cages. Detailed measurements, weights, and photographs are being taken from time to time. It is hoped that this unusual bird may be kept in captivity for several years or at least until the complete transition to the adult nuptial plumage is made.

METEOROLOGICAL COMMENTS
(by Robert D. Morss, Jr.)

During the summer an attempt was made to keep a record of the weather conditions at the station. Our main handicap was the lack of instruments. Wet and dry bulb thermometers and a wind direction indicator were improvised. Unfortunately we lacked a rain gauge and an anemometer, and our barometer did not arrive until the latter part of the summer.

The island has a moderate wet climate during the summer. The extremes of temperature recorded during the stay, observations being made four times a day, were 50° F. and 84° F. The mean day and night temperatures, recorded at 2 pm and 11 pm, were 65.9° and 55.5° F. respectively, giving a mean day and night range of only 10.4° F. This low average and small range of temperature is typical of any small island in the open ocean, which is considerably influenced by the temperature of the salt water. The island is protected by Grand Manan on the North West but it receives the full force of the South West winds. Southerly and westerly winds are usually accompanied by fog, and it is perhaps interesting to note that during the first thirty six days of our stay we had only eleven clear days and several of these were accompanied by rain storms. Clear and sunny weather was always to be expected as soon as the wind turned around to the north or the east. At these times the wind was usually strong. As may well be understood, the fogs and low temperatures have an important bearing on the island's humidity which is very high.

The tides at Kent's Island are hardly comparable to those at

the head of the Bay of Fundy (the rise and fall at Moncton is 42 feet), but it often has a range of as much as 20 feet in the level of the ocean. The rise and fall usually amounts to about 16 to 19 feet--enough to have a great deal of effect on boating. The tidal currents around the island run at between three and four knots causing rips which are of real danger to small boats, especially when the wind and the tide are opposed. The members of the first expedition in 1934 (Messrs. Gross, Whitman, Favour, and Fisher) were nearly drowned when their two small boats (a canoe and a 10 foot dinghy) were caught in one of these rips. The highest tides experienced during the course of the summer centered around July 16th at which time there was a total eclipse of the moon. The eclipse, however, due to adverse weather conditions was not visible to members of the party.

A table of observations for a typical week of July follows:
(Week beginning July 14, 1935)

Date	Wet Bulb		Dry Bulb		Temp.		Wind	Remarks
	C.		C.		F.			
	Noon	Night	Noon	Night	Max.	Min.		
14,	18.5	12.0	19.5	13.3	67.5	56.0		Clear, Sunny
15,	16.0	12.0	16.4	11.1	61.5	52.0	SW-W	Fog, Clear
16,	14.0	12.0	15.0	12.2	59.0	54.0	S-SW	Fog, Rain
17,	17.5	13.0	17.7	13.1	64.0	55.5	SE	FOG
18,	21.0	13.5	23.0	14.2	73.5	57.5	S-SW	FOG
19,	16.0	14.0	17.8	14.5	64.0	58.0	SE-W-N	Clear
20,	17.0	13.0	18.0	14.5	64.5	58.0	N-W	Clear, Sunny

The relation between wind and weather conditions can be seen clearly. The very small range of temperature with a comparatively low maximum is typical of the island.

The writer believes that this work should be carried out in future years especially in that it may be possible to coordinate it with biological researches. Records should be kept of the temperature, wind direction, wind speed, rainfall, barometric pressure, ocean temperature, relative humidity, and dew point. A diary of any unusual meteorological phenomena should be kept. Such data should prove very useful in coordination with the Biological studies of the Station.

RADIO COMMUNICATION (by George R. Casman)

A short wave transmitting station using the call letters VELEW was maintained at Kent's Island during the entire season. The cooperation of the Canadian Government enabled us to enjoy the full privileges of the Canadian Amateur Radio frequencies.

VELIN made nearly a thousand contacts with other stations. It effected transmissions with amateurs in every U.S. District and in thirteen foreign countries: Spain, Hungary, Russia, Cuba, England, Mexico, Scotland, Holland, Switzerland, France, Jamaica, Germany, Newfoundland. In every U.S. district the signals of VELIN were reported to be very strong—R8 to R9. Equally good reports were secured from the Spain and Germany transmissions.

VELIN originated more than 200 radiograms during its two months of operation. It maintained schedules with two amateur stations on a frequency of 3860 kilocycles: WBSN, the Army Signal Corps at Baltimore, Md.; and WLJL at West Acton, Mass.

News, Weather Reports, and Entertainment were derived from radio. These broadcasts were picked up on both the regular broadcast bands and the short wave broadcast frequencies. Reception at the island proved to be excellent, and there was none of the man-made static that so often disturbs radio communication.

The transmitter was a Collins 30FXB, the finest that could be secured. It had an input of 200 watts on the final 203-A for phone and 250 watts for CW transmissions. It performed perfectly and our transmissions were praised highly.

Additional equipment included a Hallicrafter Receiver which proved to be ideal for our purposes—it is of a type that is ideal for expedition work. Astatic Crystal Microphones of the latest type were used in voice transmissions while our code was sent from an automatic sending key, the "Mac-key". Trimm headphones were used—these were of the feather weight type.

The Bliley Crystal Company supplied our transmitting crystals. VELIN was heard on all of the following frequencies: 1783, 3515, 3860, 3996.5, 7083, 14,060, 14,288, 14392 kilocycles. The station used a 266 foot voltage-fed zep type of antenna at the height of about 35 feet. The kilowatt Kato gasoline-driven generator provided sufficient power for the transmitter and receiver. The power plant was situated in a specially-built box about 25 feet distant.

The American Radio Relay League, West Hartford, Conn. or any amateur radio station is in a position to send messages to the Station. This service is free and is carried on because of the interest of radio amateurs in transmission work. The Station reports daily during the summer months at 7:00 A.S.T. to Brunswick, Maine on phone—this transmission can usually be heard by anyone in New England with an "All-wave" receiver. The frequency will be the same next summer

as last summer, 3860 kilocycles or occasionally 3965 kilocycles.

To coordinate field parties and for the safety of those carrying on researches from the boat, it is suggested that 5-meter transceivers be secured for the 1936 season. These are simple radio-telephone devices—a complete two-way installation would cost only thirty dollars.

VISITORS

July 11th: Dr. and Mrs. Olin S. Pettingill, Jr., spent a day and a night on the island. They arrived on a chartered boat and camped near the wharf. Dr. Pettingill gathered material for a survey he is making of the bird life in the Grand Manan archipelago.

July 20th: Mr. R.W. Tufts, Chief Migratory Bird Officer for the Maritime Provinces, visited the island.

Judy 23d: Dr. and Mrs. Alfred O. Gross, and Dr. David Potter and Mr. Charles Pomerat of Clark University arrived from Lubec in the Station's launch. Dr. Potter and Mr. Pomerat made their headquarters at the laboratory from which point they carried on studies of the plant life and the invertebrates respectively. Dr. and Mrs. Gross stayed on Hay Island at the residence of Mr. Henry Ingalls.

July 25th: Mr. Albert T. Gould with three companions including his son arrived at the island in his schooner-yacht, the Segochet. The following day the staff helped put water supplies aboard the schooner, and Messrs. Gould, Dana, and MacDonald visited the village of White Head with several members of the expedition in the launch.

August 2d: Messrs. Sumner, Alger, Radcliffe, and Carleton Pike visited the island. Unfortunately most of the staff was on a trip to Machias Seal Island, but the visitors were able to inspect the laboratory and the bird life of the island. Their presents of beefsteaks, cigarettes and other niceties were highly appreciated! This group made the trip on Alger Pike's cruiser, the Quoddy.

August 14th: Mr. Barker, the Grand Manan game warden, Mr. Vance Cheney, the fishery inspector, and Constable N.H. Cole of the Canadian Mounted Police made a short stop at the Station.

Mr. Henry S. Shaw planned to visit the Station in a forty foot motor boat that he had chartered. Engine trouble, however, prevented him from reaching the island.

Anyone desiring to visit the Station next summer can secure information by writing to the field director at Brunswick.

The summer address is White Head Island, Grand Manan, N.B., Canada. Messages may be sent by radio. There is steamer service to Grand Manan Island and hotel accommodations are available at North Head. Any visitor to Grand Manan can radio the Station by communication with Mr. Parker, the telegraph operator at North Head. The launch will be sent to Lubec for representatives of the College or for parties willing to defray the expense, which is about fifteen dollars.

FINANCIAL STATEMENT

The "Kent's Island Fund" has been established to finance the Station. Its affairs are conducted through the treasurer's office at Bowdoin College. Any contributions to aid in the work of the project are payable to the treasurer of the college. The funds for the 1935 expedition were derived from the gifts of two Bowdoin alumni, the College, and the fees from the staff:

Total Receipts 1935

Sumner T. Pike	300.00
Henry Hill Pierce	50.00
College Appropriation	350.00
Fees from Staff	<u>720.00</u>
Total Receipts	\$1420.00

The contributions of Mr. Sumner T. Pike and Mr. Henry Hill Pierce were most kind. It is to be hoped that the work of the Station will inspire other friends to tender their financial assistance.

The expenses of the next few years will be considerably affected by the necessary purchase of new equipment. While the addition of boys who could pay more substantial fees would be possible, it would seem best to maintain high standards in the personnel and not to expect more than eight or nine hundred dollars from student fees. The budget for 1936 is practically the same as that of the past year:

Budget for 1936

Warden's Salary	300.00
Food Supplies	500.00
New Equipment	200.00
Transportation	75.00
Boat Maintenance	150.00
Insurance	100.00
Building Maintenance	50.00
Radio Expenses	25.00
Incidentals	<u>100.00</u>
Total expenses	1500.00

New Building Fund	<u>900.00</u>
Total 1936 Fund	2400.00

While the Station can be operated at a total expense of 1500 dollars, our dire need for a new building swells the proposed fund for 1936 to 2400 dollars. Eight or nine hundred dollars will enable us to erect an excellent building with every convenience that would be needed. It would greatly enhance the value of the Station.

To raise this sum, it is suggested that (1) the College appropriation be increased to five hundred dollars, that (2) the members of the staff be assessed for a sum of about 1000 dollars, and that (3) every effort be made to secure financial contributions.

CONCLUSION

Our greatest need is for the funds to erect a new building. There are two types that would be excellent for the purposes of the Station: (1) a two room cottage that measures 12 x 18 feet and would cost 300 dollars to erect, and (2) a four-room house that measures 18 x 21 feet and would cost 600 dollars. Information and plans of these buildings are available in the files at Brunswick. The plan would be to name each house in honor of the donor, This is in the nature of a direct appeal, but the need is so great and so worthwhile that it seems warranted.

Everyone is urged to visit the island. There will be every opportunity to see the great bird colonies and to witness the research work that is being carried on. A trail system that will eventually make a trip to any important point on the island a simple matter is being opened up. Already two paths are in use: "Sterling Rockefeller Trail" which extends from the laboratory to the northern end of the island, and the "Pike Trail" which branches off, passes through the Petrel colony in the heavy spruce wood, and ends on the shore at a point opposite from Hay Island.

In conclusion, I would like to point out that the Station has given every evidence that it will be permanent and that it is bound to play an important part both in the educational work of the College and in many fields of research. The idea of exploration work by undergraduates is not a new one for the College—the Bowdoin expedition to Labrador in 1891. was made up for the most part of students. This movement

has recently gained great impetus at Oxford which has fostered many an undergraduate exploring party. In the introduction to the official account of the Oxford expedition to Spitzbergen is a statement which sounds the theme of Kent's Island: "Such expeditions give most valuable training to their members and although their final purpose is scientific, the underlying reason for them is that their undergraduate members want to go for the experience that they offer". The Bowdoin-MacMillan Arctic Expedition of 1934 and the Kent's Island Expedition of 1935 are outstanding examples of the successful explorations that can be carried out by parties made up chiefly of college students.

Field research of the future will for the most part, be carried on at permanent, strategically located scientific stations. There is no reason why other establishments like Kent's Island cannot be located further north. The college has the tradition and the energy to become a leader in polar research, and most important, it has the support of a man like Commander MacMillan.

Respectfully submitted,

WILLIAM A.O. GROSS,

Filed Director.