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KOOTENAY
APR 14 1969
NATIONAL PARK

Department of Biology
Upper Iowa College
Fayette, Iowa. 52142. U. S. A.

January 1, 1969.

The Director
National Parks Branch
Department of Northern Affairs and National Resources
Ottawa, Ontario, Canada.

Dear Sir:

Enclosed please find "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, YOHO, & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman and Richard W. Coleman, Ph. D., Professor of Science, Department of Biology, Upper Iowa College, Fayette, Iowa. U. S. A. 52142.

In 1964 all of the superintendents and staff in Banff, Jasper, Yoho and Kootenay National Parks were most cooperative during this survey.

Other invertebrate animal groups collected from this survey are still being studied by various specialists for eventual specific determinations. When these determinations of these invertebrates not mentioned in this report have been received, other reports on this investigation will be forthcoming.

Although by now I have conducted biological surveys in every province and territory of Canada, having started these studies in 1947 as a graduate student visiting the Province of Saskatchewan during a Dominion black fly investigation, I still hope to be conducting biological investigations in Canada in the summers for many years to come.

Respectfully yours,
Richard W. Coleman
Richard W. Coleman, Ph. D.
Professor of Science.

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"A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN
AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, Yoho,
& KOOTENAY NATIONAL PARKS AND ENVIRONS
IN ALBERTA-BRITISH COLUMBIA, CANADA."

TO THE
DIRECTOR, NATIONAL PARKS BRANCH,
DEPARTMENT OF NORTHERN AFFAIRS
AND
NATIONAL RESOURCES,
OTTAWA, ONTARIO, CANADA.

by
Persis C. Coleman
and
Richard W. Coleman, Ph. D.
Professor of Science
Department of Biology,
Upper Iowa College
Fayette, Iowa. U. S. A. 52142.

(1) "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, YOHO, & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA."

INTRODUCTION

This study has been based upon a general invertebrate survey conducted in Banff, Jasper, Yoho and Kootenay National Parks in the summer of 1964, the data presented in this report representing only one of several animal groups being under study in this investigation.

The preliminary report, Part I, cites the localities where organisms were collected on this general invertebrate survey of certain areas in Banff, Jasper, Yoho and Kootenay National Parks in 1964 so that an idea can be arrived as to the breadth and scope of this survey. In addition it is important to indicate in what areas these organisms have not been found so that ecological interpretations may be made of this data for other workers at a later date.

The definitive report, Part II, elaborates information pertaining to specific amphipods that were collected from certain areas in Banff, Jasper, Yoho and Kootenay National Parks. The other collections in Part I that were not reported in Part II did not show any of these specific amphipods. Specific acknowledgement for determinations of these specimens made by members of the staff of the National Museum of Canada, Ottawa, Ontario, Canada may also be found in Part II.

Although biological surveys have been conducted in all of the provinces and territories of Canada, such surveys will be continued in Canada for many years to come.

"A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN
AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, YOMO,
& KOOTENAY NATIONAL PARKS AND ENVIRONS
IN ALBERTA-BRITISH COLUMBIA, CANADA!"

by

Persis C. Coleman

and

Richard W. Coleman, Ph. D.

Part I

Part I of this report enumerates the individual collections made in this general invertebrate survey in order that the reader may obtain an idea on the scope and extent of the survey in question. The following collections are cited from this survey:

1. From submerged vegetation in Bow River, near edge of parking lot opposite Luxton Museum, Banff, Banff National Park, Alberta, Canada. June 17, 1964. colls.:Persis C. & Richard W. Coleman.

2. From submerged vegetation and rocks in Sundance Creek, near Sundance Canyon Parking Area, Banff National Park, Alberta, Canada. June 17, 1964. colls.:Persis C. & Richard W. Coleman.

3. From submerged vegetation and rocks in Spray River, collecting area near road to bridge to Golf Course, Banff National Park, Alberta, Canada. June 17, 1964. coll. R. W. Coleman.

4. From submerged rocks in stream runoff entering Bow River at Bow Falls, near foot bridge to Banff, Banff National Park, Alberta, Canada. June 17, 1964. coll. R. W. Coleman.

5. Lake Minnewanka, near Boat Landing, Banff National Park, Alberta, Canada. June 17, 1964. coll. Richard W. Coleman.

6. From edge and marginal zone of Two Jack Lake, Two Jack Lake Picnic Ground, Banff National Park, Alberta, Canada. June 17, 1964. colls.:Persis C. & Richard W. Coleman.

7. At marginal zone of Johnson Lake, near Two Jack Lake Road, 0.4 road mi. N. junction Two Jack Lake Road to Highway #1, Banff National Park, Alberta, Canada. June 17, 1964. colls.:Persis C. & Richard W. Coleman.

Please turn to page #2:

(2) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, YOHO & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D:

8. Vermilion Lake, approximately 0.8 road mi. W. of junction of Vermilion Lakes Scenic Drive to Banff Road, Banff National Park, Alberta, Canada. June 17, 1964. coll. Richard W. Coleman.

9. West side of Johnston Creek, collecting area near where creek crosses under highway #1A and near Johnston Canyon Picnic Area, Banff National Park, Alberta, Canada. June 17, 1964. colls.: Persis C. & Richard W. Coleman.

10. On the edge and marginal zone of Moraine Lake, near Moraine Lake Lodge, Banff National Park, Alberta, Canada. June 17, 1964. coll. R. W. Coleman.

Although we investigated Lake Louise and its outflow, due to lack of proper equipment we couldn't successfully search for invertebrates because Lake Louise was in an overflow stage.

11. Policeman's Creek, collecting area near Bow Valley Motel, Canmore, Alberta, Canada. June 18, 1964. colls.: Persis C. & Richard W. Coleman.

12. Gap Lake, collecting area between Highway #1A and Canadian Pacific Railroad Tracks, approximately 3.5 road mi. W. Exshaw, Alberta, Canada. June 18, 1964. colls.: Persis C. & Richard W. Coleman.

13. Big Hill Provincial Park, collecting area in Creek near crossing of road to Texas Gate, Alberta, Canada. June 18, 1964. colls.: Persis C. & Richard W. Coleman.

14. From marginal zone of Cochrane Lake, Alberta, Canada. June 18, 1964. colls.: Persis C. & Richard W. Coleman.

15. Big Hill Creek, collecting area near Highway #1A near Cochrane Creamery Limited, Cochrane area, Alberta, Canada. June 18, 1964. coll. Richard W. Coleman.

16. Lac Des Arcs Camp in Bow Valley Provincial Park, Alberta, Canada. June 18, 1964. coll. Richard W. Coleman.

17. Collecting area near Highway #1, Pigeon Mountain area near Chevron Service Station and Bow Provincial Campsite, Alberta, Canada. June 18, 1964. colls.: Persis C. & Richard W. Coleman.

18. Bow River and its side pools, Bow River Camp, Bow Provincial Park, Alberta, Canada. June 18, 1964. colls.: Persis C. & Richard W. Coleman.

(3) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, Yoho & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.:

19. Herbert Lake Campground, near Banff-Jasper Highway, Banff National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman.

20. Mosquito Creek Campground, Banff National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman.

21. Bow Lake, near Bow Lake Campground, Banff National Park, Alberta, Canada. June 19, 1964. collected from sub-merged branches. colls.: Persis C. & Richard W. Coleman.

22. Edge of Waterfowl Lake, Waterfowl Lake Campground, Banff National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman.

23. Edge of Waterfowl Lake, near Campground, Banff National Park, Alberta, Canada. June 19, 1964. coll.: Persis C. Coleman.

24. Rampart Creek, collecting area at edge of campground, Banff National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman.

25. From swamp, Alexandra, Canadian Youth Hostel Camp, Banff National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman.

26. Alexandra River, collecting area near Cirrus Mountain viewpoint on Banff-Jasper Highway, Banff National Park, Alberta, Canada. June 19, 1964. coll. Richard W. Coleman.

27. Creek running alongside Columbia Icefield Campground, 3/4 mi. from Columbia Icefield Junction, Jasper National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman.

28. Tangle Creek, near picnic area, Banff-Jasper Highway, Jasper National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman.

29. Jonas Creek, near campground, collecting area near Banff-Jasper Highway, Jasper National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman.

30. Pools near Jonas Creek, Jonas Creek Campground, collecting area near Banff-Jasper Highway, Jasper National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman.

Please turn to page #4:

(4) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF
CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER,
YOHO & MOUNTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH
COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.:

31. Bubbling Springs picnic area, near Banff-Jasper Highway,
Jasper National Park, Alberta, Canada. June 19, 1964. colls.:
Persis C. & Richard W. Coleman.

32. Honeymoon Lake, near campground, Banff-Jasper Highway,
Jasper National Park, Alberta, Canada. June 19, 1964. colls.:
Persis C. & Richard W. Coleman.

33. Athabasca River, near Athabasca Falls picnic ground, near
Banff-Jasper Highway, Jasper National Park, Alberta, Canada.
June 19, 1964. colls.: Persis C. & Richard W. Coleman.

34. Leach Lake, near picnic area off Banff-Jasper Highway,
Jasper National Park, Alberta, Canada. June 19, 1964. colls.:
Persis C. & Richard W. Coleman.

35. Whirlpool River, at edge of Meeting of the Waters picnic
ground, near Banff-Jasper Highway, Jasper National Park,
Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W.
Coleman.

36. Collected from under rocks in liverwort and moss along
Angel Glacier footpath and environs of Mt. Edith Cavell
Chalet (11,000 feet range in elevation), Jasper National
Park, Alberta, Canada. June 20, 1964. colls.: Persis C. &
Richard W. Coleman.

37. On edge of Athabasca River, near campsite number 8,
Wabasso Campground, Jasper National Park, Alberta, Canada.
June 20, 1964. colls.: Persis C. & Richard W. Coleman.

38. From under rotting logs and stones embedded in liver-
worts, near campsite number 8, Wabasso Campground, Jasper
National Park, Alberta, Canada. June 20, 1964. colls.:
Persis C. & Richard W. Coleman.

39. From under decomposed wood, near K-2 campsite, Wapiti
Campground, Jasper National Park, Alberta, Canada. June 20,
1964. colls.: Persis C. & Richard W. Coleman.

40. From under rocks, Whistler's Mountain Ski Hill View Point,
Jasper National Park, Alberta, Canada. June 20, 1964. colls.:
Persis C. & Richard W. Coleman.

41. From ground cover around edge of Lac Beauvert near road
to Jasper Park Lodge, approximately 1/2 mi. W. of Jasper
Park Lodge Gate, Jasper National Park, Alberta, Canada.
June 20, 1964. colls.: Persis C. & Richard W. Coleman.

Please turn to page #5:

(5) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, Yoho & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.:

42. Near Old Fort Point Viewpoint at edge of Athabasca River, Jasper National Park, Alberta, Canada. June 20, 1964. colls.: Persis C. & Richard W. Coleman.

43. From Miette River near picnic area, collecting area near where Miette River crosses Yellowhead Highway (Highway #16), approximately 9 road mi. W. of junction of Yellowhead Highway to Banff-Jasper Highway, Jasper National Park, Alberta, Canada. June 20, 1964. coll. Richard W. Coleman.

44. From Deer Creek, near Deer Creek Campground, 14.5 road mi. from junction of Yellowhead Highway to Banff-Jasper Highway, off Yellowhead Highway (= Highway #16), Jasper National Park, Alberta, Canada. June 20, 1964. coll. Richard W. Coleman.

45. Deer Creek Campground, from rotted tree under rocks & from animal feces, near Yellowhead Highway (= Highway #16), 14.5 road mi. from junction of Yellowhead Highway to Banff-Jasper Highway, Jasper National Park, Alberta, Canada. June 20, 1964. coll. Richard W. Coleman.

46. Patricia Lake, near Patricia Lake Bungalows, Jasper National Park, Alberta, Canada. June 20, 1964. colls.: Persis C. & Richard W. Coleman.

47. Near Patricia Lake, found in rotted wood near Patricia Lake Bungalows, Jasper National Park, Alberta, Canada. June 20, 1964. colls.: Persis C. & Richard W. Coleman.

48. Pyramid Lake area, from pools near boat piers & parking lot, Jasper National Park, Alberta, Canada. June 20, 1964. colls.: Persis C. & Richard W. Coleman.

49. In ground cover, Cottonwood Creek Tent and Trailer Camp, near Highway #16, Jasper National Park, Alberta, Canada. June 20, 1964. coll. Richard W. Coleman.

50. Lake Annette, near Lake Annette picnic grounds, off of Maligne Road, Jasper National Park, Alberta, Canada. June 21, 1964. colls.: Persis C. & Richard W. Coleman.

51. Lake Annette picnic grounds, from under rocks off of Maligne Road, Jasper National Park, Alberta, Canada. June 21, 1964. coll. Richard W. Coleman.

52. Maligne Canyon River, near Maligne Canyon Tearoom, Jasper National Park, Alberta, Canada. June 21, 1964. colls. Persis C. & Richard W. Coleman.

53. From rocks and rotten lumber near Maligne Canyon Tearoom, Jasper National Park, Alberta, Canada. June 21, 1964. coll. Richard W. Coleman.

(6)continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, Yoho & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.:

54. At edge of Maligne Lake, near chalet boat landing, Jasper National Park, Alberta, Canada. June 21, 1964. coll. Richard W. Coleman.
55. Under rocks and rotten wood, near Maligne Lake Chalet, Jasper National Park, Alberta, Canada. June 21, 1964. coll. Richard W. Coleman.
56. Medicine Lake, near Maligne Road, near Beaver Creek, Jasper National Park, Alberta, Canada. June 21, 1964. coll. Richard W. Coleman.
57. From ground cover near Beaver Creek parking area, near Maligne Road, Jasper National Park, Alberta, Canada. June 21, 1964. coll. Richard W. Coleman.
58. Beaver Creek, near where creek crosses Maligne Road, Jasper National Park, Alberta, Canada. June 21, 1964. coll. Richard W. Coleman.
59. From edge of Edith Lake, near Frank Morin residence, Jasper National Park, Alberta, Canada. June 21, 1964. coll. Richard W. Coleman.
60. Talbot Lake, off Edmonton Highway, near picnic area, Jasper National Park, Alberta, Canada. June 21, 1964. colls.: Persis C. & Richard W. Coleman.
61. Near Rocky River Campground in a pool, Jasper National Park, Alberta, Canada. June 21, 1964. colls.: Persis C. & Richard W. Coleman.
62. Fiddle River, near campground, off Edmonton Highway, Jasper National Park, Alberta, Canada. June 21, 1964. coll. Richard W. Coleman.
63. _____ Creek, collecting area near parking lot for Miette Hot Springs Mineral Baths & Pool, creek running along one edge of Miette Hot Springs Bath House, Miette Hot Springs, Jasper National Park, Alberta, Canada. June 21, 1964. coll. Richard W. Coleman.
64. Under rocks in the area of the Upper Hot Springs Pool entrance area, Banff National Park, Alberta, Canada. June 22, 1964. coll. Richard W. Coleman.

Please turn to page #7:

(7) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, YOHO & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.:

65. Sink Lake, near Lake Louise Road, approximately 4/5 road mi. E. of junction of Lake Louise Road to Highway Number 1, Yoho National Park, British Columbia, Canada. June 23, 1964. coll. Richard W. Coleman.

66. Near Sink Lake, under rocks and rotten wood near Lake Louise Road, approximately 4/5 road mi. E. of junction of Highway Number 1 to Lake Louise Road, Yoho National Park, British Columbia, Canada. June 23, 1964. coll. Richard W. Coleman.

67. Wapta Lake, collecting area near Highway #1 across from Lake Wapta Lodge, Yoho National Park, British Columbia, Canada. June 23, 1964. coll. Richard W. Coleman.

68. Kicking Horse River, near Kicking Horse Campground, Yoho National Park, British Columbia, Canada. June 23, 1964. coll. Richard W. Coleman.

69. Kicking Horse Campground, near Kicking Horse River, under rocks embedded in ground cover, Yoho National Park, British Columbia, Canada. June 25, 1964. coll. Richard W. Coleman.

70. Highline Bungalows (formerly Yoho Valley Lodge), under wood and rocks, near Takakkaw Falls, Yoho National Park, British Columbia, Canada. June 23, 1964. colls.: Persis C. & Richard W. Coleman.

71. Yoho River, near Takakkaw Falls Parking Lot, Yoho National Park, British Columbia, Canada. June 23, 1964. colls.: Persis C. & Richard W. Coleman.

72. Kicking Horse River, Field, Yoho National Park, British Columbia, Canada. June 23, 1964. colls.: Persis C. & Richard W. Coleman.

73. Near Kicking Horse River under drift wood, Field, Yoho National Park, British Columbia, Canada. June 23, 1964. colls.: Persis C. & Richard W. Coleman.

74. Emerald Lake, near Lodge, Yoho National Park, British Columbia, Canada. June 23, 1964. colls.: Persis C. & Richard W. Coleman.

75. Near Emerald Lake near Lodge, found under rocks and rotten wood, Yoho National Park, British Columbia, Canada. June 23, 1964. colls.: Persis C. & Richard W. Coleman.

Please turn to page #8:

(8) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF
CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER,
YOHO & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH
COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.:

76. Finn Creek, near picnic area and near where it enters Kicking
Horse River, Yoho National Park, British Columbia, Canada. June
23, 1964. colls.: Persis C. & Richard W. Coleman.

77. Finn Creek picnic area, near Kicking Horse River, found in
rotten wood, Yoho National Park, British Columbia, Canada.
June 23, 1964. colls.: Persis C. & Richard W. Coleman.

78. _____ Creek crossing road to warden house near trail to
Hoodooos, Hoodoo Campground area, Yoho National Park, British
Columbia, Canada. June 23, 1964. colls.: Persis C. & Richard W.
Coleman.

79. From pool of water just below junction of Hoodoo Creek
Campground to park warden residence, Yoho National Park, British
Columbia, Canada. June 23, 1964. colls. Persis C. & Richard Coleman.

80. From pool of water just below junction of Hoodoo Creek Camp-
ground to park warden residence, Yoho National Park, British
Columbia, Canada. June 23, 1964. coll.: Persis C. Coleman.

81. Near junction of Hoodoo Creek Campground to park warden
residence, found in rotting wood and under rocks, Yoho National
Park, British Columbia, Canada. June 23, 1964. coll. Richard W.
Coleman.

82. Kicking Horse River, near junction of 11th Ave. to 10th Ave.,
Golden, British Columbia, Canada. June 23, 1964. coll. Richard
W. Coleman.

83. Near Kicking Horse River, near junction of 11th Ave. to 10th
Ave., Golden, British Columbia, Canada. June 23, 1964. coll.
Richard W. Coleman.

84. From edge of Columbia River, near Donald, British Columbia,
Canada. June 23, 1964. coll. Richard W. Coleman.

85. From under rocks near Continental Divide sign of Banff and
Kootenay National Parks off of Highway #93, Alberta-British
Columbia border, Canada. June 24, 1964. from ground cover. colls.:
Persis C. & Richard W. Coleman.

86. From ground cover near trail and parking area to Stanley Glacier,
Kootenay National Park, British Columbia, Canada. June 24, 1964.
coll. Richard W. Coleman.

Please turn to page #9:

(9) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, YORO & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.:

87. In creek, near parking lot and trail to Stanley Glacier and near Highway #93, Kootenay National Park, British Columbia, Canada. June 24, 1964. colls.: Persis C. & Richard W. Coleman.

88. Tokumm Creek Trail, Marble Canyon, Kootenay National Park, British Columbia, Canada. From ground cover. June 24, 1964. colls.: Persis C. & Richard W. Coleman.

89. Tokumm Creek, Marble Canyon, Kootenay National Park, British Columbia, Canada. June 24, 1964. coll. Richard W. Coleman.

90. Hawk Creek, near where it crosses Highway #93 near Hawk Creek Road Camp, Kootenay National Park, British Columbia, Canada. June 24, 1964. coll. Richard W. Coleman.

91. From ground cover near where Hawk Creek crosses Highway #93 near Hawk Creek Road Camp, Kootenay National Park, British Columbia, Canada. June 24, 1964. coll. Richard W. Coleman.

92. Vermilion River, collecting area near Highway #93 near where Vermilion River crosses under Highway #93, near Vermilion Lodge Bungalows, Kootenay National Park, British Columbia, Canada. June 24, 1964. coll. Richard W. Coleman.

93. From ground cover, Vermilion Lodge area, Kootenay National Park, British Columbia, Canada. June 24, 1964. coll. Richard W. Coleman.

94. Wardle Creek near picnic area, Kootenay National Park, British Columbia, Canada. June 24, 1964. colls.: Persis C. & Richard W. Coleman.

95. From ground cover near Wardle Creek and picnic area, Kootenay National Park, British Columbia, Canada. June 24, 1964. coll. Richard W. Coleman.

96. Kootenay Pond, collecting area near wayside stop, approximately 2 road mi. N. E. Kootenay Crossing Park Warden District #2, Kootenay National Park, British Columbia, Canada. June 24, 1964. coll. Richard W. Coleman.

97. McLeod Meadow Campground, from creek near foot bridge, Kootenay National Park, British Columbia, Canada. June 24, 1964. colls. Persis C. & Richard W. Coleman.

Please turn to page #10:

(10) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, YOHO & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.:

98. Olive Lake, near campground, Kootenay National Park, British Columbia, Canada. June 24, 1964. colls.: Persis C. & Richard W. Coleman.

99. From ground cover, Olive Lake Campground, near Highway #93, Kootenay National Park, British Columbia, Canada. June 24, 1964. coll. Richard W. Coleman.

100. From _____ creek outflowing from Olive Lake, Olive Lake Campground near Highway #93, Kootenay National Park, British Columbia, Canada. June 24, 1964. colls.: Persis C. & Richard W. Coleman.

101. From ground cover, environs of Radium Hot Springs Aquacourt, Radium Hot Springs, Kootenay National Park, British Columbia, Canada. June 24, 1964. coll. Richard W. Coleman.

102. Columbia River, Athalmer area (near Coronation Hotel on Hotel Drive), British Columbia, Canada. June 24, 1964. colls.: Persis C. & Richard W. Coleman.

103. From ground cover, from environs of Cave and Basin Springs, Banff, Banff National Park, Alberta, Canada. June 25, 1964. coll.: Richard W. Coleman.

104. Bow River, collecting area near where Wolf Street ends near river edge, Banff, Banff National Park, Alberta, Canada. June 25, 1964. coll. Richard W. Coleman.

105. At edge of Bow River, collecting area near where Wolf Street ends near river edge, Banff, Banff National Park, Alberta, Canada. June 25, 1964. coll. Richard W. Coleman.

(11) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, Yoho & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.:

Part II

Part II of this report cites the specific determinations of certain amphipods of the Class Crustacea collected from certain areas cited in Part I of this report. These amphipods were determined by members of the staff of the National Museum of Canada, Ottawa, Ontario, Canada. A kodachrome picture of the breeding area as well as a series of environmental tests were taken for each collection. Such kodachromes and data pertaining to this investigation will form the basis for a paper to be presented to a scientific meeting in the near future.

Collection # 7: At littoral zone of Johnson Lake, near Two Jack Lake Road, 0.4 road mi. N. junction Two Jack Lake Road to Highway #1, Banff National Park, Alberta, Canada. June 17, 1964. colls.: Persis C. & Richard W. Coleman. [Water test: pH 8.0; 9.2 ppm. dissolved oxygen and total hardness expressed as 10 grains per gallon or 171 ppm.]:

- a. Gammarus lacustris lacustris Sars
- b. Hyalolella azteca Sauss.

Collection # 12: Gap Lake, collecting area between Highway #1A and Canadian Pacific Railroad tracks, approximately 3.5 road mi. W. Exshaw, Alberta, Canada. June 18, 1964, colls.: Persis C. & Richard W. Coleman.

- a. Gammarus lacustris lacustris Sars
- b. Hyalolella azteca Sauss.

Collection # 19: Herbert Lake, Campground, near Banff-Jasper Highway, Banff National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman. [Lake data: Bed of lake-mud with decomposed organic debris and small to large rocks; water test: pH 8.0; 7.8 ppm. dissolved oxygen and total hardness expressed as 9 grains per gallon or 155.9 ppm.]:

- a. Hyalolella azteca Sauss.

Please turn to page #12:

(12)continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, Yoho & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph. D.:

Collection # 21: Bow Lake, near Bow Lake Campground, Banff National Park, Alberta, Canada. June 19, 1964. collected from submerged branches. colls.: Persis C. & Richard W. Coleman. [Lake data: Sandy bottom with gravel and small to large rocks; water test: pH 7.8; 8.0 ppm. dissolved oxygen and total hardness expressed as 6 grains per gallon or 102.6 ppm. l.:

a. Hyalella azteca Sauss.

Collection # 32: Honeymoon Lake, near campground, Banff-Jasper Highway, Jasper National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman. [Water test: pH 8.0; 6.6 ppm. dissolved oxygen and total hardness expressed as 5 grains per gallon or 85.5 ppm. l.:

a. Hyalella azteca Sauss.

Collection # 34: Leach Lake, near picnic area off Banff-Jasper Highway, Jasper National Park, Alberta, Canada. June 19, 1964. colls.: Persis C. & Richard W. Coleman. [Lake data: Sandy bottom area with small to large rocks; water test: pH 8.2; 7.6 ppm. dissolved oxygen and total hardness expressed as 7 grains per gallon or 109.7 ppm. l.:

a. Hyalella azteca Sauss.

Collection # 46: Patricia Lake, near Patricia Lake Bungalows, Jasper National Park, Alberta, Canada. June 20, 1964. colls.: Persis C. & Richard W. Coleman. [Lake data: Bed of lake in collecting area sandy with small to large rocks; water test: pH 8.5; 8 ppm. dissolved oxygen and total hardness expressed as 15 grains per gallon or 256.5 ppm. l.:

a. Gammarus lacustris lacustris Sars
b. Hyalella azteca Sauss.

Please turn to page #13:

(13)continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BENTLEY, JASPER, YOHO & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.:

- Collection # 50: Lake Annette, near Lake Annette picnic grounds, off of Maligne Road, Jasper National Park, Alberta, Canada. June 21, 1964. colls.: Persis C. & Richard W. Coleman. [Lake data: Sandy bottom with small to large rocks; water test: pH 8.2; 9.0 ppm. dissolved oxygen and total hardness expressed as 8 grains per gallon or as 136.8 ppm.]:
- a. Hyalella azteca Saus.
- Collection # 60: Talbot Lake, off Edmonton Highway, near picnic area, Jasper National Park, Alberta, Canada. June 21, 1964. colls.: Persis C. & Richard W. Coleman. [Lake data: Collecting area sandy bed with small to large rocks; water test: pH 7.8; 7.0 ppm. dissolved oxygen and total hardness expressed as 14 grains per gallon or as 239.4 ppm.]:
- a. Hyalella azteca Saus.
- Collection # 65: Sink Lake, near Lake Louise Road, approximately 4/5 road mi. E. of junction of Lake Louise Road to Highway Number 1, Yoho National Park, British Columbia, Canada. June 23, 1964. coll. Richard W. Coleman. [Lake data: Mud bottom with decayed vegetation and with small to large rocks; water test: pH 8.0; 8.6 ppm. dissolved oxygen and total hardness expressed as 7 grains per gallon or 119.7 ppm.]:
- a. Hyalella azteca Saus.

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(14) continued "A REPORT ON OBSERVATIONS ON THE BIOLOGY OF CERTAIN AMPHIPODS (CLASS CRUSTACEA) IN BANFF, JASPER, Yoho & KOOTENAY NATIONAL PARKS AND ENVIRONS IN ALBERTA-BRITISH COLUMBIA, CANADA" by Persis C. Coleman & Richard W. Coleman, Ph.D.:

Collection # 96: Kootenay Pond, collecting area near wayside stop, approximately 2 road mi. N. E. Kootenay Crossing Park Warden District #2, Kootenay National Park, British Columbia, Canada. June 24, 1964. coll. Richard W. Coleman. [Pond data: Soil sample grey sandy clay bottom which appeared to be very oozy in places at the edge of the pond; water test: pH 9.25; dissolved oxygen in collection areas registered in chemical tests as too low a concentration for a reaction or for trace readings; and total hardness expressed as 14 grains per gallon or 239.4 ppm.]

a. Gammarus lacustris lacustris Sars
b. Hyalolella azteca Sauss.

Collection # 98: Olive Lake, near campground, Kootenay National Park, British Columbia, Canada. June 24, 1964. colls. Persis C. & Richard W. Coleman. [Lake data: Lake bottom collecting area with small to large rocks and with decomposed vegetation and organic matter; water test: pH 8.0; 9.2 ppm. dissolved oxygen and total hardness expressed as 10 grains per gallon or 171 ppm.]

a. Gammarus lacustris lacustris Sars
b. Hyalolella azteca Sauss.