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JANUARY, 1897.

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THE OTTAWA NATURALIST.

Published by the Ottawa Field-Naturalists' Club

CONTENTS.

	PAGE
1. The Living Chimera and its Egg.—Prof. E. E. Prince, B.A., F.L.S.	185
2. Ottawa Spiders and Mites.—W. Hague Harrington, F.R.S.C.	190
3. Clouds.—Principal J. A. Dresser, B.A.	192
4. NOTES, REVIEWS AND COMMENTS :— <i>Canadian Stromatoporoïds</i> , J. F. Whiteaves; <i>Paradoxi- zites beds in Eastern America</i> , G. F. Matthew; <i>Augen Gneiss at Bedford, N.Y.</i> , Luquer and Ries; Bulletin of the Natural History Society of New Brunswick, Vol. XVII., No. 4, October, 1896; Geological Survey of Canada, Annual Report, Vol. VII., 1896.	196
5. New Members, O.F.N.C.	199
6. Journal of Geography.	200
7. Club Notes : Annual Meeting, Prizes offered.	200

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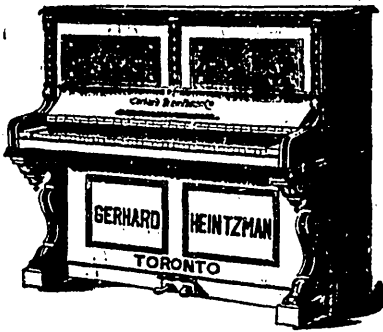
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THE OTTAWA NATURALIST.

VOL. X.

OTTAWA, JANUARY, 1897.

No. 10.

THE LIVING CHIMÆRA AND ITS EGG.

By PROF. E. E. PRINCE, B.A., F.L.S.,
Dominion Commissioner of Fisheries, Ottawa.

Few naturalists have ever had the advantage of seeing alive that somewhat rare and profoundly interesting fish, the oceanic Chimæra or Rabbit Fish. Its grotesque outline and staring eyes so impressed Frank Buckland that he pronounced it "worthy the imagination of the most barbarous Chinaman that ever designed a figure-head for a piratical war-junk." In 1891 two or three specimens were obtained off Achill Head, Co. Mayo, at a depth of 127 fathoms, but as I had just left the vessel, the "Fingal," on which I was acting as naturalist to the Fisheries Survey, I missed seeing these remarkable examples alive. In 1895, during my cruise along the Pacific Coast, I had the privilege on many occasion of examining living specimens, the species occurring there (viz *Chimæra collaei*, Bennett) being netted fairly numerous in the inshore waters. In British and Norse seas the Chimæra is taken at considerable depths, say 70 to 200 fathoms; but in British Columbia this fish is frequently found in the drag seines used for taking salmon this kind of net being necessarily hauled in very shallow bay and estuaries.

The length of the fish varies from 12 inches to 30 or 36 inches and the head is disproportionately large, bluntly tapering in front, flattened on the top, and below sloping back to the mouth, which is quite underneath the head, some distance from the tip of the snout as in the sharks. The long body narrows

very much and ends in a long whip-like tail, bearing a fin-lobe above and below, near the tip. A long fin passes down the back, nearly the whole length, and in front of it, immediately behind the head, there rises a high first dorsal fin, triangular in shape, and provided with a powerful anterior spine, curiously serrated upon its front edge. The wing-like pectoral fins are a most striking feature as they possess a fleshy peduncle or arm portion, and the pointed fins protrude most prominently on each side of the head. When lying flat against the body they extend over one-fifth of its length. A similar but much smaller pair, the ventral fins, protrude some distance behind the pectoral fins. Both pairs are like very flexible grey wings, resembling Indian rubber in texture, semi-transparent, and supported by horny fin-rays. I was enabled to examine specimens of both sexes, a fortunate circumstance as they differ considerably in their external characters. On the forehead of the male, between the eyes, there exists a finger-like protuberance partly bent upon itself, with a flattened tip, fimbriated, and studded underneath with sharp denticles. This spine-covered surface fits into a soft mucous depression in front. Oil and mucus occur in the cavity which is no doubt glandular in nature. One writer has suggested that it is phosphorescent, and that the *Chimæra* carries a lamp upon its forehead; while Buckland fancifully compared it to a crown, whence he says, the Norwegians have called the *Chimæra* the "king fish" and also the "King of the Herrings."

The hind part of each ventral fin forms a separate bifurcate appendage, covered with a soft glandular membrane complexly folded and perforated by a longitudinal channel.

The male shark and skate have similar curious structures but in the *Chimæra* they are even more complex and curious, and impossible to be clearly described without the aid of figures.

The eyes are large and brilliant, unprovided with lids, and show a glowing green opalescent in the living fish. The iris is of a pale steel-blue colour. Buckland presaged that "the eye in life must have a monstrous and fierce appearance" and

certainly these organs stand in great contrast with the dull un-intelligent eyes of the shark or the sturgeon.

On account of its peculiar projecting teeth, four protruding from the upper jaw and two from the lower jaw, the fish bears in British Columbia the name of Rat-fish or Rabbit fish, and the terms are appropriate as the mouth recalls most strikingly that of a rodent. They are white or semi-transparent, and unlike the teeth of sharks and rays are never replaced if lost. No doubt mollusks and crustaceans form a large part of its food.

The gill arrangements are most remarkable, for instead of the five to eight exposed gill-openings in front of each breast fin, such as we find in sharks, the Chimæra has a large operculum or gill cover consisting of several broad plates marked by distinct lines of division, and most effectively shielding the four-paired gills within. The gill chamber opens by a narrow slit near the base of the peduncle or stalk of the pectoral fin, on each side of the head. No doubt the lines marking the separate opercular plates are the tracks of mucus canals. Similar large smooth plates encase the whole head. They resemble a coat of mail resplendent with a brilliant metallic appearance. The head is especially striking from its bright silvery lustre, over which, in life, all the colours of the spectrum spread, golden yellow, rosy pink, emerald green, pearly blue, indeed every prismatic tint. If Chimæra is one of the sea's most grotesque creatures, it is, in its rainbow glory, one of its most resplendent. The shrunken, faded brownish or yellow examples of Chimæra, exhibited in our museums, convey no idea of the real splendour of this strange marine vertebrate. The crude semblance as if made of wrinkled leather, is utterly unlike the smooth glittering, living fish. In allusion to its beautiful colours the Norsemen call it the gold or silver fish; but its external appearance is not less remarkable, to the naturalist, than its anatomical structure.

In my dissection of a number of specimens in 1895 I noted some of its structural features. Thus the short and capacious intestine exhibited the spiral partition or valve, which we also find in sharks and ganoids.

The liver was smooth, solid and compact, not expanded and lobed, as in many fishes, and it was extremely rich in oil. In form and character it reminded me of the same organ in the electric ray (*Torpedo*) which I dissected in Ireland six years ago. The cheeks and face of the fish are traversed by a complex series of mucus canals with numerous rows of pores. These canals are connected with the well-marked lateral line, along the side of the body. The ovaries in the female fish were large leaf-like organs, not unlike those of the Skate, and in the semi-transparent tissue pale white eggs were scattered in great numbers, about the size of peas. The ova were not apparently near complete maturity, though the specimens were examined in July, which is usually regarded as the spawning time. I should opine that the specimens examined by me would not have spawned until the fall, say September or October. The eggs deposited are probably few in number as in the sharks.

In the male specimens I found white, compact ovate organs with complicated tortuous ducts, and other structures found always in the shark tribe. By the kindness of the curator of the Victoria Museum (Mr. Fannin) I became possessed of an egg case of *Chimæra*. It is an extremely rare object though H. M. Inspector of Irish Fisheries (Mr. Spotswood Green) lately secured many examples in deep water on the west coast of Ireland. Yarrell curiously enough states that the eggs are large and "covered with a horny shell flattened on the edges and velvety," but on what authority is not explained. The egg case is in fact like a dark horny pod, long and narrower at one end than at the other. It is $3\frac{1}{2}$ or 4 inches long, and down each side there extends a flattened projecting edge which may, in some cases, bear hairs. Each case contains one egg, and the young fish is compelled to assume a somewhat peculiar position, lying flat on its side with its head directed towards the larger end of the case. How it escapes no one knows. Probably an imperceptible slit exists through which the fish emerges, but the *Chimæra's* egg is usually held to be imbedded in the sand with

one end projecting. This, it is considered, accounts for its extreme rarity in the marine zoologist's hauls.

In the Fisheries Museum in Ottawa, a specimen of the egg of Chimæra is exhibited but the young fish had hatched out before it was obtained.

The scientific interest of a fish like Chimæra is very great. There are not more than three or four species now existing and they are widely scattered in the most diverse seas. No doubt it is an ancient type of fish and may be the last of a dying race. Its protocercal or equal-lobed tapering tail is more primitive than that of any other fish. In some points *e. g.* the spiral valve, the ventrally placed mouth, and the cartilaginous skeleton, it is allied to the sharks. Its naked skin is in contrast to both sharks and ganoids, while the operculum, almost enclosing the branchial apparatus, connects it with Ganoids and Teleosts. The teeth, ears and jaw cartilages are very peculiar, the palato-quadrate bar being unsegmented. Whether to class it with the sharks, or establish as Professor Huxley urged, a separate sub-class Holocephali, for these few fish, the Chimæras, scientific authorities are not yet agreed.

Linnæus called it Chimæra on account of its peculiar external aspect, but its anatomical and other features fully justify the name. It is at once a primitive, aberrant, and grotesque creature, with characteristics which are common to all the various sub-classes of the great class of fishes. It is in many respects one of the most generalised of existing fishes, and on that account it is of the highest scientific interest.

Marine Dept., Ottawa,

January, 1897.

OTTAWA SPIDERS AND MITES.

By W. HAGUE HARRINGTON, F.R.S.C.

In the first number of the present volume, page 11, was published a list of 61 species of spiders collected at Ottawa, and kindly determined for me by Mr Nathan Banks. During the past season my collections were, unfortunately not very extensive but I was able to send recently to the same gentleman a small lot which he has again been good enough to examine. His list, which I append, shows that 35 species were represented, of which 15, or nearly half, were not in the former sending. These additions I have indicated by an asterisk, and it will be noticed that the family Lycosidæ especially has furnished several. One species is considered to be new and has received the manuscript name given in list.

Last winter I also sent to Mr. Banks a small collection of mites, which had been obtained in sifting moss gathered in November in Dow's Swamp. The list of the species is annexed, and Mr. Banks wrote to me as follows in regard to them:—
 "The first is a large, globose, shiny species found in moss, readily known by its emarginate wing; it is widely distributed. The second is not common. The third is not rare in moss, it has dark spots from which arise bristles. The *Oppia* is new, it is close to my *Scutovertex pilosus*, but differs in tectal plate and less bristly body. The *Nothrus* is probably *N. rugulosus*, but it is not quite adult. The *Hoplophora* is very distinct, being strongly granulate. The *Uropoda* is probably new. You will find others (*Oribatids*) in fungi, decaying vegetable matter, and sphagnum moss. There should be some interesting *Nothrids* from your locality, as they are rather common in Northern Europe."

ARANEINA—SPIDERS.

DRASSIDÆ.

Drassodes humilis Bks.**Gnaphosa conspersa* Thor.*Gnaphosa brumalis* Thor.*

CLUBIONIDÆ.

Clubiona obesa Hts.*Thargalia canadensis* n. sp.*

- Agalena nevia* *Htz.*
- Dictyna volupis* *K&ys.*
- Theridium differens* *Em.*
Linyphia communis *Htz.**
Crustulina sticta *Ch.**
- Epeira patagiata* *Clk.*
Epeira strix *Htz.*
- Tetragnatha extensa* *Linn.*
- Nysticus limbatus* *K&ys.*
Coriarachne versicolor *K&ys.*
- Lycosa balingtonii* *Blk.**
 " *frondicola* *Em.**
 " *pratensis* *Em.**
 " *communis* *Em.**
- Phidippus mystaceus* *Htz.*
Phidippus rufus *Htz.*
Phileus militaris *Htz.*
Dendryphantès octavus *Htz.*
- Chelanops sanborni* *Hag.**
- AGALENIDÆ.
- DICTYNIDÆ.
- THERIDIIDÆ.
Stemonyphantes bucculentus *Clk.**
Lophocarenum florens *Ch.*
- EPEIRIDÆ.
Singa variabilis *Em.*
- TETRAGNATHIDÆ.
- THOMISIDÆ.
Misumena vatia *Clk.*
Philodromus ornatus *Bks.**
- LYCOSIDÆ.
Pardosa lapidicina *Em.**
Pirata sp?
Pisaura undata *Htz.*
- ATIDÆ.
Dendryphantès flavipedes *Peck.**
Attus palustris *Peck.*
Epiblemma scenicum *Clk.**
Ergane borealis *Blk.*
- CHEMNATIDÆ.
- ACARINA—MITES.
- ORIBATIDÆ.
Oribata emarginata *B&rs.* Several. *Noth-us rugulosus* *Bks i* Young.
Oribatella signata *L&rs.* Two specimens. *Hoplophora granulata* n.sp. Three speci-
Oribatella bidentata *Bks.* Several. mens.
Oppi i canadensis n. sp. Two specimens.
- GAMASIDÆ.
Uropoda sp? Several.

CLOUDS.

By PRINCIPAL J. A. DRESSER B.A., of Richmond, Que.

Read before the St. Francis College Literary and Scientific Society, Feb. 3rd, 1897.

(An Abstract).

In the opening words of Prof. Davis's admirable work on the subject of Meteorology he says: "We dwell on the surface of the land; we sail across the surface of the sea; but we live at the bottom of the atmosphere.

Its changes pass over our heads; its continual fluctuations control our labors. Whether our occupation is indoor or out, on land or at sea, we are all more or less influenced by changes from the clear sunshine of blue skies, to the dark shadows under clouds; from the dusty weather of droughts to the rains of passing storms; from the enervating southerly winds to the bracing currents from the north.

Few persons fail to raise some questions now and then concerning the causes and processes of these changes; some inquire more earnestly, desiring to inform themselves carefully on the subject.

No school study suggests more frequent questions from scholars, or allows more educative replies from teachers than meteorology, the science of the atmosphere."

To this it may well be added that the atmospheric phenomena of sky and clouds furnish some of the grandest panoramas of beauty that nature ever presents to our eyes. And yet, how strange it is that while we recognize the different forms of earth and sea, we so seldom distinguish the various features of the atmosphere.

We have an abundance of names for the different appearances of land and water, as island, peninsula, isthmus, cape, and mountain; or, sea, gulf, bay, lake and river. But for the many and beautiful aspects of the sky, only indefinite or figurative language is commonly at hand. It is only fine or dull, bright or cloudy.

With the advancement of meteorological knowledge much has been done, however, to bring about a desirable change. Convenient names which have a definite application, more commonly used to designate the different kinds of clouds and it thus becomes possible to describe an appearance of the sky in such a manner as to correctly represent it to a person who has not seen it. In order to distinguish the different classes of clouds it is necessary to consider how they are formed.

The atmosphere, like a sponge, can absorb a certain amount of water. Thus the water evaporated from the streams and pools, which dry up in summer, passes into the air, generally in the form of invisible vapour.

The atmosphere also can hold more water when warm than at a colder temperature, and it becomes colder the farther it is removed from the earth.

Accordingly as the warm air rises from the earth, it becomes cooler and the moisture that was before invisible is seen in the form of minute floating droplets, and a fog or cloud appears according to the height at which it is developed. The degree of temperature at which those appear is called the dew-point, and the height at which this is reached is marked by the lower margin of those clouds which have even base lines.

If the clouds rise so high that the temperature falls below the freezing point, the vapour is changed to snow or icy particles which probably constitute the majority of clouds.

The upward movement of the air, which it is necessary to consider here, is, like the winds, caused primarily by differences in the temperature of the air. This ascent of the warmer air, which is known as *convection*, assumes a vorticular or whirling motion and is often very rapid. It may be observed on the eve of a thunder storm when the cloud known as cumulus can be seen rolling upwards with astonishing celerity.

Having thus briefly treated of the causes of clouds, their different classes may be taken up. These are distinguished chiefly by their form but the altitude is also considered.

CUMULUS.—That form which is the most easily distinguished and is at the same time also the most beautiful, is known as the Cumulus. These are the dome-like clouds that appear on a showery afternoon of summer, which are commonly called "Thunder heads." They usually rise from a flat base, perhaps a mile above the earth to a height of several thousand feet higher, with bold rounded tops often resembling huge mountains. Where the sun shines upon them they present a fleecy appearance, where it does not, they are dark and frowning. When the opposite side from the observer is exposed to the sun they show most beautiful white margins being in poetic imagery the clouds with silver lining.

STRATUS.—*Stratus* includes all low-lying cloud sheets which have no definite form, from the fogs at the surface of the earth, to clouds of considerable height. It is not a cloud of beauty, but is a usual accompaniment of dull weather and cyclonic storms. It is sometimes the only cloud seen at a single point for several days.

CIRRUS.—*Cirrus* is the name applied to clouds composed of long slender fibres, which are sometimes delicately ; at others, finely banded. They are the highest clouds we see, probably ranging from five to eight or even ten miles in height. In our latitude they generally move eastward, often with a velocity of more than one hundred miles per hour, but owing to their great altitude, they appear to move much more slowly. They undoubtedly consist of icy particles similar to those which float in the lower atmosphere in our coldest weather.

CIRRO-STRATUS.—*Cirro-Stratus* clouds consist of wavy cirrus fibres mingled with bands of a more horizontal appearance. They often extend across the entire sky, when they converge at opposite points of the horizon and form the peculiar feature known as "Noah's Ark." This is probably due to the perspective effect of the parallel bands seen directly overhead being produced in opposite directions in parallel lines. They range next in height to the cirrus and like clouds of that class are in general an indication of a storm.

CIRRO-CUMULUS.—*Cirro-Cumulus* is another modification of the cirrus and is somewhat closely related to the last. It consists of separate masses or balls of clouds. When these are close together they form the mackerel clouds which overspread the sky with the appearance of a mosaic. They are also seen in isolated forms when they represent small storms in the upper air.

There is the authority of both science and verse for the adage that "a mackerel sky seldom leaves the meadows dry," and also for the sailor's saying that "Mare's tails and mackerel scales make lofty ships carry low sails."

CUMULO STRATUS.—The flattened or extended cumulus clouds are called *cumulo-stratus*. They are somewhat extensive clouds and are chiefly seen in fair windy weather. In the latest terminology this class is divided into two sub-classes, (a) Strato-cumulus embracing the extended cumulus; (b) Cumulus which is bordered by cirro-stratus tops, and called cumulo-nimbus.

NIMBUS.—*Nimbus* is the name given to any cloud from which rain or snow is falling. It therefore represents a state of the weather rather than a form or elevation of cloud and hence it is not a truly scientific term. Accordingly, the term "overcast" is often employed in its stead to denote a sky evenly obscured by a cloud having no definite form. . . .

Did time permit, we could here study the phenomena of storms. The nature of the *cyclone* and the *tornado*, the laws by which they are governed and how these laws were discovered, as well as the great value of scientific weather predictions, all of which are most interesting topics of study.

The beauty of the clouds, however, is more than sufficient for our present consideration.

Whether we look at the towering cumulus or the graceful and wavy cirrus, we must acknowledge their beauty. Nor is there less to admire in the mottled cirro-cumulus or the delicate streaks of the cirro-stratus.

How often a few fleecy floating patches of cirro-cumulus in a clear blue sky form a scene that can only be compared to the view from some high cliff out upon an island-dotted sea ; or a lofty cumulus raising his head high above his fellows, frowns down in a awful darkness, or shines resplendent in the setting sun !

The successive variations of the clouds, the grand and imposing as well as their beautiful and graceful aspects, present a field for contemplation and admiration too varied, too grand, and too sublime to fail to arouse the enthusiasm of the most prosaic observer and to implant in him a true love of nature.

In the words of Shelley, the cloud seems to say :

“ I bring fresh showers for the thirsty flowers,
From the seas and the streams ;
I bear light shade for the leaves when laid
In their noon-day dreams,
From my wings are shaken the dews that waken
The sweet buds every one,
When rocked to rest on their mother's breast,
As she dances about the sun,
I wield the flail of the lashing hail,
And whiten the green plains under ;
And then again I dissolve it in rain
And laugh as I pass in thunder.

Richmond, Que.,

Feb. 3rd, 1897.

NOTES, REVIEWS AND COMMENTS.

WHITEAVES, J. F.—“ *Canadian Stromatoporoids.*” Can. Rec. Science, Vol. VII, pp. 129-146, July, 1896.

The following species are herein recorded :

ORDOVICIAN SPECIES.

- | | |
|--|---|
| 1. <i>Clathrodictyon variolare</i> , Rosen sp. | 3. <i>Labechia Huronensis</i> , Billings, sp. |
| 2. <i>Labechia Canadensis</i> , Nicholson and Murie. | 4. <i>Beatricea nodulosa</i> , Billings. |
| | 5. “ <i>undulata</i> , Billings. |

SILURIAN SPECIES.

- | | |
|---|--|
| 6. <i>Actinostroma matutinum</i> , Nicholson. | 11. <i>Stromatopora Galtensis</i> , Dawson sp. |
| 7. <i>Clathrodictyon vesiculosum</i> , Nich. and Murie. | 12. “ “ <i>constellata</i> , Spencer sp. |
| | 13. “ “ <i>Hudsonica</i> , Dawson sp. |

- | | |
|---|---|
| 8. Clathrodictyon fastigiatum, Nich. | 14. " " Carteri, Nicholson. |
| 9. " " ostiolatum, Nich. | 15. Syringostroma Ristigouchense,
Spencer. |
| 10. Stromatopora antiqua, Nich. and
Murie. | |

DEVONIAN SPECIES.

- | | |
|--|---|
| 16. Actinostroma expan. un, Hall and
Whitfield. | 24. Stromatopora sp. cf. S. bucheliensis,
Bargatzky. |
| 17. Actinostroma Tyrrellii Nicholson. | 25. Stromatoporella, cf. S. Hüpschii,
Barg. |
| 18. " " Whiteavesii, Nich. | 26. Stromatoporella granulata, Nicholson. |
| 19. " " fenestratum, Nich. | 27. " " Selwynii, Nicholson. |
| 20. Clathrodictyon cellulosum, Nich.
and Murie. | 28. " " incrustans, Hall and
Whitfield. |
| 21. Clathrodictyon laxum, Nicholson. | 29. Stromatoporella tuberculata, Nich. |
| 22. " " retiforme, Nich. and
Murie. | |
| 23. Stromatopora sp. cf. S. bucheliensis,
Bazatzky. | |

SPECIES OF DOUBTFUL AFFINITIES.

- | | |
|-------------------------------------|--|
| 30. Stromatocerium erugosum, Hall. | 34. Caunopora mirabilis, Spencer. |
| 31. Stromatopora Hindei, Nicholson. | 35. Coenostroma botryoideum, Spencer. |
| 32. " " striatella, Nicholson. | 36. Dictyostroma reticulatum, Spencer. |
| 33. Caunopora Walkeri, Spencer. | 37. Stromatopora perforata, Nich. sp. |
| | 38. " " mamillata, Nich. |

MATTHEW, G. F.—“*Faunas of the Paradoxides beds in Eastern North America.*” No. 1. Trans. N. Y. Acad. Sc., Vol. 15, pp., 192-247, plates 14-17, Aug. 1896.

LUQUER, L. M. AND HEINRICH RIES—“*The ‘Augen’ gneiss area, pegmatite veins and diorite dikes at Bedford, N. Y.*” Amer. Geol., Vol. XVII, No. 4, pp. 239-261, Oct., 1896.

BULLETIN OF THE NATURAL HISTORY SOCIETY OF NEW BRUNSWICK, No. XIV, 66 pp., St. John, N.B., 1896.

This number contains: (1) *A Biographical Sketch of Dr. Abraham Gesner*, accompanied by a portrait of that eminent worker in the field of geological survey in Eastern Canada early in the century (1839-1843). The sketch is written by G. W. Gesner and gives useful information regarding this pioneer in the geological work of a portion of Acadia. The writings of Dr. Gesner are also indicated. (2) *The Restigouche—with notes especially on its flora*, by G. U. Hay. This sketch of a trip down the Restigouche in company with Dr. Ganong contains

eleven species of plants new to the flora of New Brunswick. (3) *An outline of Phytobiology (Phytoecology)*, by W. F. Ganong. This is practically a plea for the establishment of a biological Survey of Acadian Plants. (4) "*Notes on the Natural History and Physiography of New Brunswick*," by W. F. Ganong. In this article "Temperature measurements in Clear Lake," the outlet-delta of L. Utopia and other topics are discussed. (5) "*Notes on the occurrence of two shrews new to New Brunswick*," by Philip Cox. *Sorex Richardsoni*, Bachman and *S. fumens*, Miller, are the two specimens recorded—the latter for the first time in British North America. An interesting Appendix, with Biographical Notes, follow the articles just mentioned.—H. M. A.

GEOLOGICAL SURVEY OF CANADA, By G. M. Dawson, C.M.G., LL.D., &c., Director, "Annual Report," (New Series) Vc VII, Reports A. B. C. F. J. M. R. S. for 1894, published 1896, being publication No. 581 of Geol. Survey Reports, &c.

REPORT A.—This deals with the Summary Report of the operations of the Survey for 1894, and includes a preliminary account of explorations and geological surveys as well as of museum and office work for that year.

REPORT B.—This is the "Report on the Area of the Kamloops map-sheet, British Columbia," by George M. Dawson, with an appendix contains 427 pages in which are described the physical geography of the region, the general geology, indicating the palæozoic and mesozoic formations represented, together with descriptions of the conditions of metamorphism appertaining the volcanic rocks. Four appendices accompany this report; one on the petrographical characters of the rocks, by W. F. Ferrier; one on Shuswap names in the Kamloops map-sheet; one on limits of growth of spruce trees, &c. and one on observations of temperatures at different altitudes.

REPORT C.—"*Exploration of the Finlay and Omenica Rivers*," by R. G. McConnell. The routes travelled, the geological observations made, together with a geological summary and economic notes obtained are given in this report.

REPORT F.—“*On the Country in the vicinity of Red Lake and part of Berens R., Keewatin,*” by D. B. Dowling. In this report the physiographic and geologic features of the district are indicated, together with interesting notes of observations made.

REPORT J.—“Report on that portion of the Province of Quebec comprised in the S.W. quarter sheet-map of the Eastern Townships of Canada,” by R. W. Ells, F. D. Adams and H. M. Ami.

REPORT M.—“On the Surface Geology of East New Brunswick, N.W. Nova Scotia and a portion of P.E.I.,” by R. Chalmers. In this report the topographical and physical features of the district are delineated, the Tertiary or Preglacial and early and later Pleistocene deposits are described. The agricultural capabilities of the district, its forests and minerals, as well as materials of economic importance are pointed out.

REPORT R.—This is the report of the Chemical and Mineralogical Branch of the Department, by G. C. Hoffmann. Analyses of coal, gold and silver assays, analyses of iron, nickel and cobalt ores, natural waters, and miscellaneous examinations of material from the various Provinces of the Dominion are given.

REPORT S.—“Mineral Statistics,” Reports for 1893 and 1894, by E. D. Ingall.

This very important and instructive contribution to our knowledge of the mineral, forest and other natural resources of our vast Dominion is accompanied by maps, sections and illustrations which greatly enhance the value of the volume. Eleven geological and topographical maps are included in the above, besides fourteen plates illustrating different sections of country and exhibiting remarkable features of more than usual interest.—H.M.A.

JOURNAL OF GEOGRAPHY.

The Journal of Geography, 41 North Queen Street, Lancaster, Pa.

For many years past there has been felt a growing need of some journal or periodical which would assist in geographical studies and research in America. To satisfy this long-felt want, a number of enthusiastic professors, students of *geography* in the strict sense of the word have just issued. *The Journal of School Geography*. The January and February Nos. 1 and 2, 1897, have just reached us. The editorial staff consists of well-known workers in the field of geography. Besides original articles of strict accuracy and scientific value, the *Journal*

will contain monthly reviews of the leading works which mark the progress of geographical research from an educational standpoint. To the teachers of Ontario and of Canada in general we have no hesitation to recommend this work, and hope that many of our members, who are teachers, will subscribe to this very instructive and live journal.

To give a better idea of the character of the subjects treated, we give herewith the following tables of contents for the two numbers already issued :—

JAN., 1897.—*Introduction* ; *Home Geography*, by W. M. Davis ; *Africa*, Cyrus C. Adams ; *Geographic Instruction in Germany*, Will S. Munroe ; *Suggestions regarding Geography in Grade Schools*, R. E. Dodge ; *Notes*, R. E. Dodge ; *Reviews*.

FEB., 1897.—*The Influences of the Appalachian Barrier upon Colonial History*, Ellen C. Semple ; *Meteorological Observations in Schools*, R. DeC. Ward ; *The Causal Notion in Geography*, F. M. McMurry ; *Geographic Aids* (1), R. E. Dodge ; *Notes and Reviews*.

The editorial staff comprises men most eminent in geographical research, work and studies, including Messrs R. E. Dodge, W. M. Davis, C. W. Hayes, H. B. Kummel, F. M. McMurry, R. DeC. Ward.

CLUB NOTES.

ANNUAL MEETING.—The eighteenth annual meeting of the Ottawa Field-Naturalists' Club is called for Tuesday evening the 16th day of March at 8 o'clock, when the reports of the Council, Treasurer's statement, and Librarian's report will be presented. The election of officers will also take place and discussion on methods of work in order to advance the interests of the Club. Place of meeting: Normal School, Elgin St. entrance.

PRIZES.—At the beginning of the year 1896 the Council of the O. F. N. C. offered a number of prizes for the best collections of plants, insects, minerals and fossils from the Ottawa district. The Council is now prepared to receive the collections for competition. For particulars see May number of NATURALIST.

O. F. N. C.—NEW MEMBERS.

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