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MARCH, 1897.

VOL. X, No. 12.

THE OTTAWA NATURALIST.

Published by the Ottawa Field-Naturalists' Club

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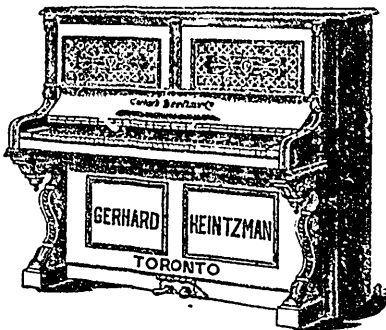
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THE OTTAWA NATURALIST.

VOL. X.

OTTAWA, MARCH, 1897.

NO. 12.

FAUNA OTTAWAENSIS.

HYMENOPTERA PARASITICA—PROCTOTRYPIDÆ.

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

The species in the remaining two sub-families have proved more numerous than I anticipated. Fortunately I was able to send about a score of the more difficult specimens to Mr. Ashmead, who found among them seven new species, including representatives of two new genera. He very kindly prepared for me descriptions of these new genera and species, which will be found in the Canadian Entomologist, Vol. XXIX, pp. 53, 56. The first list contained 99 species and in the subjoined one are 60, so that, after allowing for possible synonyms, we have, in round numbers, 150 species captured in this locality. All the sub-families are represented except the second--Embolinæ--of which, however, only one American species has been recognized, viz. *Ampulicomorpha confusa*, Ashm., from California and Nevada. Undoubtedly many other species will yet be found around us, perhaps enough to swell this preliminary list to 200 eventually.

New localities will have to be visited, as those which were nearest are rapidly disappearing. Since the first portion of this paper was printed, Powell's Grove and the Race-course have met the fate of the luxuriant woods which, a few years ago, were known as Stewart's bush--the happy hunting grounds of the botanist, and yielding some game even for the gunner. The fall of the giant twin-pine that stood on Bank Street, signalled the near clearance of the adjacent woodland patches to make way for the extension of the city southward. Both Powell's Grove and the swamp enclosed by the old race track were capital collecting grounds, and their disappearance, albeit

inevitable, must give Ottawa naturalists a sense of personal loss sustained. One compensation there is in the extension of electric car systems, by which other more distant localities may be reached almost as quickly as were those which lay so near at hand.

PROCTOTRYPIDÆ. (*Continued.*)

SUB-FAMILY IX. BELYTINÆ.

<i>Leptorhaptus rufus Ashm.</i>	Three females; Hull and Race-course, July and Aug.
<i>Leptorhaptus conicus Ashm.</i>	Female; Kettle Island, Aug. 25. Male; Race-course, Aug. 22.
<i>Miota canadensis Ashm.</i>	Female; King's Mt., Aug. 12. Two males; Hull, Aug. 26.
<i>Miota americana Ashm.</i>	Several females; Kettle Island, Hull and Race-course, Aug.
<i>Miota coloradensis Ashm.</i>	Female; Hull, July 23.
<i>Miota rufopleuralis Ashm.</i>	Female; Hull, Aug. 14.
<i>Scorpioteleia mirabilis Ashm.</i>	Female; Kettle Island, Aug. 18.
<i>Stylidolon politum Ashm.</i>	Female; May 13.
<i>Acropiesta flavicauda Ashm.</i>	Female.
<i>Belyta erythropus Ashm.</i>	Two males; Hull, July and Aug.
<i>Oxylabis spinosus Prov.</i>	Female and five males; Hull, Kettle Island and Race-course, May and Aug.
<i>Cinetus mellipes Say.</i>	Female; King's Mt., Aug. 12. Male; Hull, Aug. 19.
<i>Cinetus similis Ashm.</i>	Female; Hull, Aug. 16.
<i>Xenotoma xanthopus Ashm.</i>	Female; Hull, July 29.
<i>Zelotypa flavipes Ashm.</i>	Female and two males; Race-course, Aug.
<i>Zelotypa longicornis Ashm.</i>	Four females and one male; King's Mt., Kettle Island and Hull, Aug.
<i>Zelotypa fuscicornis Ashm.</i>	Male; Hull, July 22.
<i>Zelotypa ruficornis Ashm.</i>	Female; Race-course, Aug. 14.
<i>Zelotypa sp. nov.</i>	Female; King's Mt., Aug. 12.
<i>Pantoclis canadensis Ashm.</i>	Two females and male; King's Mt., and Race-course, Aug.
<i>Pantoclis coloradensis Ashm.</i>	Three males; Hull and Kettle Island, Aug.
<i>Pantoclis analis Ashm.</i>	Female and two males; Hull and Race-course, June and Aug.
<i>Pantoclis similis Ashm.</i>	Two males; Hull, Aug. 5 and 14.
<i>Pantoclis crassicornis Ashm.</i>	Male; Kettle Island, Aug. 25.
<i>Zygota americana Ashm.</i>	Abundant in Aug.
<i>Aclista rufescens Ashm.</i>	Female; Hull, Aug. 5.

- Aclista borealis* *Ashm.* Female and male.
Anectata hirtifrons *Ashm.* Female and two males; July and Aug.
- SUB-FAMILY X. DIAPRIINÆ.
- Polypeza Pergandei* *Ashm.* Female; May 20.
Paramesius clavipes *Ashm.* Four females, one male; Hull, Aug. and Dow's Swamp moss, Nov.
Paramesius spinosus *Ashm.* Male.
Paramesius sp. nov. Female and two males; Aug.
Spilomicrus armatus *Ashm.* Two females and male: Race course and Casselman, Aug. and May.
Spilomicrus atriclavus *Ashm.* Female.
Spilomicrus sp. nov. ? Two females; Hull, Aug.
Spilomicrus sp. nov. ? Female; Hull, July 29.
Hemilexodes sp. nov. Female.
Aneurhynchus mellipes *Ashm.* Six females, one male; Hull, Kettle Island and Race-course, June, July and Aug.
Aneurhynchus sp. nov. ? Male; Casselman, May 24.
Galesus quebecensis *Prov.* Five males; Hull, July and Aug.
Galesus atricornis *Ashm.* Female.
Galesus polita *Say.* Female; so determined by Provancher.
Loxotropa nana *Ashm.* Two females; Aug.
Loxotropa abrupta *Ashm.* Several females; Aug.
Loxotropa pezomachoides *Ashm.* Eight females.
Tropidopria conica *Fabr.* Female; June 12.
Tropidopria carinata *Thoms.* Female.
Tropidopria torquata *Prov.* Female.
Tropidopria simulans *Ashm.* Females abundant, Aug.
Diapria armata *Ashm.* Female.
Diapria virginica *Ashm.* Three females and male; King's Mt. and Race-course, Aug.
Diapria sp. nov. ? Male; Aug. 13.
Ceratropia megaplasta *Ashm.* Female.
Ceratropia infuscatipes *Ashm.* Three females; Aug.
Trichopria Harringtonii *Ashm.* Female.
Trichopria carolinensis *Ashm.* Female; Dow's Swamp moss, Nov. Male; Race-course, Aug. 1.
Trichopria flavipes *Ashm.* Female.
Phænopria hæmatobia *Ashm.* Four females; Dow's swamp moss, Nov.
Phænopria aptera *Ashm.* Females abundant. Several from Dow's Swamp moss.
Monelata hirticellis *Ashm.* Two females.

STEPHANOCEROS—A BEAUTIFUL ROTIFER RECORDED AT
OTTAWA.

By WALTER S. ODELL, Esquire.

I am not aware that the species of Rotifer *Stephanoceros Eichornii* has been found in this locality, if so it has not been described in the "Naturalist." Dr. A. C. Stokes, who is perhaps the best authority on Infusoria in America, says it "does not seem to be common." It has never been my good fortune to find it till it appeared in my aquarium this winter, on a leaf of *Ceratophyllum*. Three specimens have since appeared in the same. This is one of the most beautiful living microscopic objects found in fresh water, and is barely visible to the eye, being 1.82 mm. long, 212 mm. wide. This rotifer unlike the common forms, lacks the wheel-like cilia surrounding the rim of the head, but instead, five long elliptical arms arranged equidistantly on the head, are held aloft like graceful plumes. These, thicker at the base, are beautifully curved and extended, while the rotifer is feeding, and the tips all point inwards to a common centre. Each arm is bordered by a row of long hairs or cilia springing from the sides and curved outwards and upwards, with inner rows of shorter cilia, forming a firm cage for holding any unlucky infusorian that wanders in. I have seen a *Paramecium* passing through this cage several times without being secured. When touching the mouth at the base of the arms, it was suddenly drawn, in and in few seconds the creature was transformed into a shapeless mass. The rotifer then straightened the arms till they appeared as a round bundle of erect plumes, and gradually retracted into its case, first withdrawing the head and then the bundle of plumes till it was entirely enclosed. This hyaline case is hollow, tubular, faintly ringed and about four times as long as broad, rounded at the top, and constricted so as to enclose the animal tightly as if in the mouth of a sac. The body is pyriform, the lower part gradually tapering to an attenuated foot. The mouth at the base of the arms is ciliated and leads through a short passage to the mastax or jaws. No eyes were present, and I would therefore conclude

that the individuals examined were adults, as Prof. Slack writes : "two red eyes are found in young specimens, but in adults they either disappear or not conspicuous."

Stephanoceros is voracious and feed upon a variety of organisms, such as unicellular plants, amniulcules and rotifers.

Reproduction takes place by means of ova. No ova were detected in the Ottawa examples but in *Flossularia*, an allied form. I have frequently met the brownish, granular and oval ovism adhering to the body case. The ova of the latter are generally found attached to the slender stems of myriophyllum or other aquatic plants growing in quiet ponds or shallow bays. They are also found adhering to the fine rootlets of submerged willows. For the period covering two whole weeks I was able to study the characters and structure and mode of life of this rare and most beautiful rotifer—by being carerul and placing the individuals back into my aquarium immediately after examination.

OTTAWA HYDRACHNIDA.

KÖENIKE, VON F.—*Zur systematik der Gattung Eylais, Latr.* Sonder-Abdr. d. Abh. d. Naturw. Ver. z. Bremen, 1897, Band XIV, H. 2.

In this paper, *Eylais falcata*, *Eylais desecta* and *Eylais triangulifera* are three Canadian species of Hydrachnida described for the first time by Dr. Kœnike, on pp. 288-290. Previous to this most recent study of the genus *Eylais*, our Ottawa species of *Eylais* were all referred to *E. extendens** by Mr. Tyrrell, in the Report of the Entomological Branch of the Club, and by Dr. Kœnike himself in his "Nordamerikanische Hydrachniden." Dr. Kœnike's present paper evidently subdivides the genus *Eylais* and the forms described under the designation *E. extendens* O. P. Muller).

(1) *E. falcata*—This species was found in a pond at Deschenes, and in the Rideau, by Mr. Tyrrell.

*Trans. Ottawa Field-Naturalists' Club, Vol II, No. 1, p. 140, 1884; and Nordamerikanische Hydrachniden, Abh. d. Naturwiss. Ver. z. Bremen, Bd. XIII, Heft. 2, p. 171, 1895.

(2) *E. desecta*—Also discovered by Mr. Tyrrell in a pond at Deschene, Que. This form is related to *E. undulosa*, Kœenike.

(3) *E. triangulifera*—Pond at Deschenes, collected by Mr. J. B. Tyrrell. A form showing some characters allied to *E. desecta*, Kœenike, and to *E. Mulleri*, Kœenike.

The Rideau Canal and the ponds about Ottawa have only been partially examined as yet by the members of our Club, and we hope that future researches will disclose the rich fauna waiting to be discovered.—H. M. A.

THE LECTURE COURSE.

The joint course of Lectures under the auspices of the Ottawa Literary and Scientific Society and of the Ottawa Field Naturalists' Club is now over and a brief synopsis is given of the events as they took place.

By kind permission of the Hon. G. W. Ross, Minister of Education for Ontario, and of Dr. J. A. MacCabe, Principal of the Provincial Normal School, Ottawa, the hall was again placed at our disposal for the said course of free public lectures. The following comprise the series of evening soirees :

NOVEMBER 9TH, 1896.—On this evening between 8 and 10.30 p.m. was held a *Conversazione* and *Microscopical Soiree* at which Principal MacCabe, Mr. Shutt, Mr. Klotz, and Mr. A. H. Macdougall gave brief addresses. These were followed by five-minute talks on Natural History, illustrated with microscopic slides thrown upon a white screen by means of an electric projection microscope furnished for the occasion by Mr. H. M. Ami. This method of presenting microscopical objects before so vast an audience as was present on that occasion proved most interesting and satisfactory. Dr. Fletcher spoke on insects and plants ; Mr. Odell on living organisms in water ; Prof. Prince on various Zoological and Anatomical preparations whilst Dr. Ami introduced thin sections of corals and rocks and spoke briefly upon their structure and characters.

At the conclusion of the evening a hearty vote of thanks was unanimously accorded to the Ottawa Electric Company for supplying *gratis* electric current, wires, etc., during the evening. To Mr. Wm. Scott and Mr. A. Dion especially, are the thanks of the members of the two societies due for their great kindness and interest in the matter.

NOVEMBER 27TH, 1896, Ottawa Teachers' Association.—
Electrical Discharges in High Vacua, by Prof. John Cox, M.A., F.R.S.C., of the Physics Laboratories, McGill University, Montreal.

Professor Cox began by showing the insulating power of dry air and the disruptive discharge which occurs when the terminals are approached to a minimum distance. He then caused the same discharge to take place in sealed tubes from which the air had been exhausted in varying degrees, and demonstrated Quet's observations upon the stratification of the medium. He referred to the fact that De la Rue has proved by the uniformity of potential that even in highly attenuated air the discharge is a disruptive one, and that at no degree of exhaustion is air a conductor. The strizæ were shown in a large number of Geissler tubes containing various gases highly rarified. All the strata appear to start from the positive pole, and as they successively detach themselves from it they occupy very constant positions relatively. The potential necessary to cause a current to pass (disruptively) diminishes until a certain attenuation is reached, when it increases and the strata thicken and diminish in number until no discharge passes, however high be the potential. The colours are reversed in order by reversing the direction of the current. All these experiments were made in tubes which, are highly rarified, still were far from perfectly vacuous. Dr. Crook was the first to carry the exhaustion of tubes to a degree approaching perfect vacuum. In this case the stratification ceases, and a bluish light fills the entire tube. When the vacuum approaches perfection the light proceeds from

the electrode in straight lines, and is capable of throwing a shadow (of a piece of mica, &c.,) surrounded by a brilliant fluorescence. Tubes containing gems, as diamond, ruby, emerald, topaz, etc., were illustrated in this way with most beautiful effect. The rectilinear light is also capable of producing mechanical effects, and these were demonstrated. One of the most beautiful experiments was that in which a tube of potash was fused into a perfectly vacuous globe provided with electrodes. The vacuum acted as a complete non-conductor, but as the potash tube was treated and a little moisture generated, the striæ began to appear. As the potash tube cooled, and the moisture was re-absorbed, the phenomena proceeded in reverse order.

Professor Cox went on to state the theories which have been promulgated to explain the appearances referred to; but our space will not permit us to attempt any exposition of these. But it would be inexcusable to omit stating that the whole field opened up by Crooke's and more recently investigated by Lenard, Roentgen and others, is really very imperfectly explored as yet, and may be expected to yield rich treasure as research progresses.

DECEMBER 17TH, Ottawa Literary and Scientific Society.—
“*Goethe.*” By Prof. Leigh R. Gregor, M.A., Ph.D., (Heidelberg), of McGill University, Montreal.

Before introducing the lecturer (Dr. Gregor) to the audience. Mr. O. J. Klotz, who was chairman on this occasion, seized the opportunity and on behalf of the members of the two societies under whose auspices the lecture course was organized, disclaimed publicly their having had anything whatever to do with a certain item which had appeared in the daily press of the Capital reflecting upon the suitability of the hall for public lectures. The hall is most eminently fitted and particularly well adapted for courses of free public lectures like these.

Dr. Gregor's valuable lecture was greatly appreciated by the large audience present.

JANUARY 7TH, 1897, Ottawa Field-Naturalists' Club.—“*Under the Midnight Sun—a Trip to Iceland*,” with lime-light illustrations. By Prof. James Mavor, University of Toronto.

At this lecture the Report of the Geological Branch of the of the Club was read by one of the leaders, Dr. H. M. Ami. This report will appear in the April number of the OTTAWA NATURALIST.

As Prof. Mavor's lecture has already been published *in extenso* in two leading Scottish magazines the above references are given for the benefit of those who desire to peruse this interesting study of the descendants of that early race which inhabits one of the most remote and northerly centres of civilization.

JANUARY 21ST, 1897, Ottawa Field-Naturalists' Club.—“*Recent Explorations in Canada*” was the subject of this evening's entertainment.

The Director of the Geological Survey of Canada, Dr. G. M. Dawson, was present and introduced the subject with a few preliminary remarks on the progress made in geographical research since '91—in which year he had read a paper before the Ottawa Field-Naturalists' Club—when he pointed out that there was then not less than 950,000 square miles of unexplored territory in British North America—in round numbers 1,000,000 square miles. Since that time, various exploratory surveys were carried on by the Geological Survey Department and by the other Geographical branches of the Canadian Government, chiefly under the direction of Capt. E. Deville, Surveyor General, and not less than 350,000 square miles of British territory had been made known within these six years of research.

Dr. Robert Bell was the next speaker. He described more particularly the region which may be called northermost Ontario in that part of the province and in the adjacent parts of Quebec which border on James's Bay. He spoke at length upon the non-validity and non-permanence of Indian names and con-

cluded his remarks with notes upon the agricultural, forest, mineral and other natural capabilities of that region.

Mr. J. B. Tyrrell then followed and described the "Barren Lands" through which he had traversed in several directions.

Mr. A. P. Low then described the "Labrador Area," the special district which had fallen to his lot to explore. The evening proved a most interesting and instructive one.

The February issue of the OTTAWA NATURALIST, Vol. X, No. 11, pp. 201-216, 1897, contains a full account of the exploratory surveys and remarks made by Dr. Dawson, Mr. Tyrrell and Mr. Low. We hope to publish Dr. Bell's remarks in a forthcoming report of these transactions.

FEBRUARY 4TH, 1897, Ottawa Literary and Scientific Society.—

This evening was occupied with "*The Lyric Poets of the Sixteenth Century*," by Duncan Campbell Scott, who kindly undertook to fill the gap caused by Mr. W. D. Lesueur's illness. The latter had intended to present to the audience a lecture entitled ; "*The Meaning and Value of Culture*."

FEBRUARY 25TH, 1897, Ottawa Field-Naturalists' Club.—"*The American Lobster*," by Andrew Macphail, B.A., M.D., C.M.

This lecture proved a most instructive one and was illustrated by means of lime-light views, microscopic slides, and also by specimens. The lecture will probably appear in a forthcoming number of this journal, and need not be referred to at any greater length at present.

MARCH 4TH.—"*Weather*" by Otto J. Klotz. Esq.

This lecture is now in the press and will be published in the May number of the OTTAWA NATURALIST. It was illustrated with a number of excellent lantern slides and much enjoyed by all who were present.

MARCH 11TH, 1897, Ottawa Field-Naturalists' Club.—“*Fruit and Fruit Districts of Canada*,” by Mr. John Craig, Horticulturist, Dominion Experimental Farms.

The valuable remarks made by His Excellency the Governor General, who, as patron of the Club, has always taken much interest in the work of the Club by attending on several occasions, together with remarks by members of the O. F. N. C. and the excellent lecture delivered by Mr. Craig, will shortly appear in the OTTAWA NATURALIST.

This lecture closed the series of winter soirees which were exceedingly well attended throughout.

NOTICES AND REVIEWS OF RECENT GEOLOGICAL LITERATURE.

BEECHER, CHARLES E.—*Outline of a Natural Classification of the Trilobites*. Articles VIII and XVIII, Amer. Journ. Sc., 4th Series, Vol. III, pp. 89-106 and 181-207, Plate III, New Haven, March, 1897.

Following up his own good work on the ontogeny, structure, appendages and systematic position of the trilobites, Dr. Beecher presents to us his arrangement of the families of trilobites. We have much pleasure in reproducing his scheme as follows :—

SUB-CLASS TRILOBITA.

ORDER A.—HYPOPARIA.

- | | |
|----------------------|------------------------|
| Family 1. Agnostidæ. | Family 3. Trinucleidæ. |
| “ 2. Harpepidæ. | |

ORDER B.—OPISTHOPARIA.

- | | |
|--------------------------|----------------------|
| Family 4. Conocoryphidæ. | Family 8. Bronteidæ. |
| “ 5. Olenidæ. | “ 9. Lichadidæ. |
| “ 6. Asaphidæ. | “ 10. Acidaspidæ. |
| “ 7. Proctidæ. | |

ORDER C.—PROPARIA.

- | | |
|-------------------------|------------------------|
| Family 11. Encrinuridæ. | Family 13. Cheiruridæ. |
| “ 12. Calymenidæ. | “ 14. Phacopidæ. |

The definitions of the orders and the families of the Trilobita given by Dr. Beecher in article XVIII, point to the recent rapid advances made in palæobiologic studies; and whilst retaining the families adopted by Barrande, Salter and Zittel, the order of arrangement, consequent upon his own researches, is very different. There are certain families and genera of trilobites which Dr. Beecher has not yet included in his classifications. These it were well to keep in mind and obtain information thereon so as to enable them to be placed in their proper position in the classification. To Dr. Beecher and Mr. H. M. Bernard we owe much regarding the affinities and structure of a trilobite.—H. M. A.

BEECHER, CHAS. E.—*On the occurrence of Silurian strata in the Big Horn Mts., Wyoming, and in the Black Hills, South Dakota, (not previously noted).* Amer. Geol., Vol. XVIII, pp. 31-33, Minneapolis, July, 1896.

Dr. Beecher notes the occurrence near Buffalo, Wyoming, of *Halysites catenulatus*, L., *Heliolites interstinctus*, L., species of *Zaphrentis*, *Favosites* and *Amplexus*, besides a *Rhynchotrema* allied to *R. increbescens* and a small *Scenidium* or *Orthis* which may be from a horizon as yet indeterminate between the limits of the Trenton and Niagara. He further records the occurrence of *Endoceras annulatum* of *Maclurea Logani*, and of *Halysites* from a locality a few miles south-east of Deadwood, S. Dakota. "Recent investigations have shown," says the writer, "the unreliability of several species generally considered as characteristic of the American Niagara, notwithstanding that in Europe the same forms are well-known to have a wide vertical range."—H. M. A.

CROSBY, W. O.—*Glacial Drift.* Technology Quarterly, Vol. IX, Nos. 2 and 3, pp. 116-144, June and September, Boston, 1896.

CROSBY, W. O.—*Contribution to the Geology of Newport neck and Conanicut, Island.* Amer. Jour. Sc., Vol. III, pp. 230-236, March, New Haven, 1897.

CROSBY, W. O. AND M. L. FULLER—*Origin of pegmatite*.
Technology Quarterly, Vol. IX, No. 4, pp. 326-356, Boston
December, 1896.

The aqueo-igneous theory of the origin of pegmatite, the characters of the *acid pegmatites*, their composition, the relations of the composition to enclosing rocks, texture and crystallization are presented. Then the igneous, aqueous, and aqueo-igneous theories that have been advanced are discussed. We think that writers are presenting the situation in a very fair light when they conclude from their studies of *pegmatite* that :

(1) "No sharp line of demarcation can be drawn between dikes and veins."

(2) "In a broad view of the early history of the earth, all the sedimentary and vein rocks are, of course, secondary with reference to the primitive igneous crust, but so are the igneous rocks with which we are now acquainted."

(3) "Probably none of the igneous rocks which have been studied are truly primitive and their derivation in some cases from sediments is claimed by many observers. We commend this paper to all earnest students of Archæan geology.—H. M. A.

BOLETIN DEL INSTITUTO GEOLOGICO DE MEXICO. Nums
4, 5, 6. *Bosquejo geologico de Mexico*, Director, José G.
Aguilera, Mexico, 1897.

We have just received the above work, which contains 270 pages of 4to letter press with a number of wood cuts and a coloured geological map of Mexico. This work opens with an appropriate "biographical sketch of Don Antonio del Castillo, late Director of the Geol. Inst. of Mexico," by J. G. Aguilera, followed by an introduction to the present volume and report by the same author. Three chapters follow, bearing upon the geological work carried on by R. J. Bullna, E. Ordonez and J. G. Aguilera. This completes part I of the present volume. The second part consists of a geological summary of the Republic of Mexico, in which extensive lists of the fossil

organic remains determined by James Hall, Newberry, Felix, Castillo and Aguilera and others are given. The volume closes with a chapter on volcanic rocks and a well-executed coloured geological map of Mexico mentioned above.—H. M. A.

CALVIN, S.—*Administrative Report of the State Geologist of Iowa for 1896.*

The Pleistocene geology of Iowa is given by stages and include the following periods :—

- I. The ALBERTAN.—Invasion by glaciers.
- II. The AFTONIAN.—Melting interglacial retreat.
- III. The KANSAN.—More intense cold than Albertan.
- IV. The BUCHANAN.—Long stage, interglacial.
- V. The ILLINOIS.—Only small part of Iowa invaded.
- VI. (Unnamed)—Interglacial modifications of previously deposited drift.
- VII. The IOWAN.—N. half of Iowa over-ran by glaciers.
- VIII. The TORONTO (?) *sic.*—Fourth interglacial, of short duration.
- IX. The WISCONSIN.—Last invasion of Iowa by ice.
- X. RECENT STAGE.—Wisconsin ice disappeared.

The above sketch is taken from Prof. S. Calvin's comment in the April number of the *American Geologist*, and may be of interest to our readers.—H. M. A.

WATSON, THOS. L.—*Lakes with more than one outlet.* Amer' Geol. Vol. XIX, pp. 267-290, April, 1897.

The result of observations over the surface of an island located in Hudson Strait, directly off the south-east coast of Baffin Land, named Big Island are here noted. The author quotes R. Bell, A. P. Low and J. B. Tyrrell of the Canadian Geological Survey. He also combats the theoretical assumption that "it is contrary to all known physiographic principles for a lake to exist with more than one natural outlet, for any length of time," a subject upon which we trust to hear further.

KIMBALL, JAMES B.—*Physiographic Geology of the Puget Sound Basin.* Amer. Geol. Vol. XIX, No. 4, pp. 225-237, Minneapolis, April, 1897.

Bears directly upon the geological history of the geological history of the Coastal Region of British Columbia and Vancouver Islands. This paper will be of special interests to Canadian

geologists, and others who have taken an active part in unravelling the intricate problems involved. The author states that he has not yet observed the marked "physical break between the Cretaceous and Eocene on the Pacific border."

STANTON, T. W.—*The faunal relations of the Eocene and Upper Cretaceous on the Pacific Coast*. U. S. Geological Survey, Extr. from 17th Ann. Rep. of Survey, 1895-96. 1005-1048, Washington, D. C., 1886.

In this paper the author, who has made a most careful study of and carried extensive researches in the Pacific Coast Region of the U. S. of America, gives us a valuable contribution to the geological history of that region, not only in differentiating the various horizons and faunas presented, but also in describing several new species which he has discovered during his travels in the West. Dr. Stanton has been able to bridge that hiatus between the Eocene and Cretaceous systems by careful stratigraphic methods accompanied by accurate palaeontologica determination. H. M. A.

JAHN, JAROSLAV J.—*Ueber die Geolog. Ver des Cambrium von Tejrovic und Skrei in Bohmen*. Jahrbuch der K. K. geolog. Reichenstalt, 1895, Bd. 45, Hft. 4, Wien., 1896.

An indispensable work to the student of Cambrian geology.

HERSHEY, OSCAR H.—*Eskers indicating Stages of Glacial recession in the Kansan epoch in Northern Illinois*. Amer. Geol. Vol. XIX, pp. 237-253, April, 1897.

DILLER, J. S.—*Hornblende Basalt in Northern California*. Amer. Geol. Vol. XIX, No. 4, pp. 253-255, April, 1897.

TARR, RALF S.—*Valley Glaciers of the upper Nugsuak peninsula*. Amer. Geol. Vol. XIX, pp. 262-267, April, 1897.

MARSH, O. C.—*Stylinodontia, a sub-order of Eocene Edentates*. Amer. Jour. Sc., (4) III, pp. 137-146, 1897.

FRECH, FRITZ, AND W. DAMES—*Ueber unter-devonischen Korallen aus den Karnischen Alpen*. Zeit. d. Deutsch. geol. Gesell., 119-201, 1896.

MARGERIE, EMMANUEL DE—*Catalogue des bibliographies géologiques, et digé avec le concours des membres de la commission bibliographique du Congrès*. Congrès Géol. International, (5e session, Washington, 1891), 733 pages, Paris, 1896.

SMITH, GEORGE OTIS—*Geology of the Fox Islands, Maine.* Pamphlet, 76 pages, plate and map, Skowhegan, 1896.

Seven bulletins of the Geol. Society of America were issued February 1897, as follows :

EMERSON, B. K.—*Diabase pitchstone and mud enclosures of the Triassic trap of New England.* Vol. 8. pp. 59-86, pls. 3-9, Rochester, 1897.

MCGEE, W. J.—*Sheetflood Erosion,* Vol. 8, pp. 87-112, pls. 10-13, Rochester, 1897.

LECONTE, JOSEPH—*Earth crust movements and their causes.* Vol. 8, pp. 113-126, Rochester, 1897.

STANTON, T. W. and KNOWLTON, F. N.—*Stratigraphy and Palaeontology of the Laramie and related formations in Wyoming.*

MERRILL, GEO. P.—*Weathering of Micaceous gneiss in Albermarle County, Va.* Vol. 8, pp. 157-168, Rochester, 1897.

KEMP, J. F.—*The leucite hills of Wyoming.* Vol. 8, pp. 169-182 pl. 14, Rochester, 1897.

UPHAM, WARREN—*Modified drift in St. Paul, Minnesota.* Vol. 8, pp. 183-196, pl. 15, Rochester, 1897.

Earthquake.—On Tuesday the 23rd day of March, 1897, at 6 hrs. 8 min. 3 sec. p.m., there was felt at Ottawa a rather severe shock of earthquake which lasted about twenty seconds. The shock was accompanied by a rumbling noise, the period of greatest intensity of the shock being about eight seconds. At 6 hrs. 8 min. 23 sec. the vibrations and shock were no longer felt. The direction of the oscillations seemed to be from east to west.

The same shock was also felt and recorded at Montreal, Pointe Claire, Ste. Anne de Bellevue, Como, Point Fortune, Hawkesbury, Clarence, in a direction west of Montreal and along the Ottawa Valley ; at Cornwall, Morrisburg and Lancaster along the St. Lawrence ; at St. Hilaire and St. John's south of Montreal, also at Jessup's Rapids, Berthierville, Three Rivers, east of Montreal besides Valleyfield, Coaticooke, Vankleek Hill ; and at Malone in northern part of the State of New York.

ERRATA.

P. 128, for No. 3, Sept., 1896, read : p. 123 No. 2, Aug., 1896.

P. 149, line 9 from top, for Fullberg, read : Tullberg.

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