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CONTENTS.

Note on <i>Scirpus Debilis</i> and <i>Scirpus Smithii</i>	73
WILLIAM SCOTT, B.A.	
Recent Contributions to Gaelic and Manx Literatures.	74
REV. NEIL MACNISH, B.D., LL.D.	
The Indian Character.	79
E. M. CHADWICK, ESQ.	
Indian Ghosts and Torch Feasts	81
R. G. HALIBURTON, F.R.G.S., ETC.	
Some Basic Dyke and Volcanic Rocks.	85
W. G. MILLER, M.A.	
Vapor Tensions of Liquid Mixtures	87
W. LASH MILLER, PH.D., AND T. R. ROSEBRUGH, B.A.	
New Species of Canadian Fungi	89
J. B. ELLIS AND J. DEARNESS.	
Alan Macdougall.	94

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NOTE ON SCIRPUS DEBILIS AND SCIRPUS SMITHII. BY WM. SCOTT, B.A.,
VICE-PRINCIPAL OF THE TORONTO NORMAL SCHOOL.

(Read March 13, 1897.)

These two species were found by me last season. This is the first record of these plants being found in Canada. *S. debilis*, Pursh, was found growing in a ditch on the railroad near Queenston Heights, and *S. Smithii*, Gray, was growing on Toronto Island.

Regarding these two plants, N. L. Britton and A. Brown in their "Illustrated Flora," say of *S. Smithii*: "Perhaps only a form of the preceding, *S. debilis*." A careful study leads me to the conclusion that they are entirely distinct species:

(1) Their mode of growth is very different. *S. Smithii* grew in detached plants, and tillered from the root like grain. *S. debilis* grew in clumps. Many plants were clustered together. Careful search on various occasions was made, but no isolated plants could be found in the one case and no clustered ones in the other.

(2) The involueral leaf is almost a prolongation of the culm in *Smithii*; in *debilis* it is very divergent. It is almost always turned at right angles to the culm.

(3) In *Smithii* the scales are oblong; in *debilis* they are oval or elliptical.

(4) In *Smithii* the seeds are brown obovate, flattened, and have no glossy appearance. In *debilis* they are black, broadly obovate, rounded and are glossy. Under a lens they are as easily separated as barley and wheat with the naked eye.

RECENT CONTRIBUTIONS TO GAELIC AND MANX LITERATURE. BY REV.
NEIL MACNISH, B. D., LL. D.

(Read March 20, 1897).

A veritable Renaissance has in recent years been observable in the study of Gaelic and of Gaelic literature. Never since Fingal was King of Seallama, and since Malvina gladdened the declining years of Ossian, has so much attention been paid to Gaelic, and to Gaelic traditions and folk-lore; and have so many men of scholarly ability and taste devoted themselves to the study, and, indeed, to the development of Gaelic. For it has always been conceded that Gaelic possesses intrinsic qualities of an extraordinary kind; and that, therefore, it can, in able hands, take on beautiful and diversified forms and developments. Evolution, in the truest acceptation of the term, is characteristic of Gaelic; insomuch that, were scholars of ability and ingenuity to turn their careful attention to it, it could continuously assume larger and wider proportions. Such a momentum in favour of the language and literature of the Gael has now been gathered, that anything like retrogression is not to be apprehended, so far as regard is had to the production of Gaelic poetry and prose. Eisteddfod is the appellation that is given to the annual gatherings of the Welsh—which having their origin in the unrecorded past, call forth unabated enthusiasm wherever they are held. Prizes are wont to be given which are very much appreciated, as they deserve to be, for superior excellence in prose and verse; in vocal and instrumental music, and in other avenues of intellectual effort and research in connection with the history and language of the Cymri. The Gaels of Scotland have been very slow in instituting any gatherings similar to the Welsh Eisteddfod. Regrets are now unavailing, that the other members of the large Celtic family did not, centuries ago, follow the example of the Welsh in the way of holding annual gatherings for the honouring and perpetuating, in healthful and ever-increasing vitality, of their own particular language with all its literature, and with all its traditions, that could in that case be found to pertain to it. Had such gatherings been in existence for centuries, it may be confidently maintained that Scottish and Irish Gaelic as well would to-day have treasures of valuable literature in prose and verse of which too high an opinion could not be formed;—treasures which, unhappily, have sunk into the deep sea of forgetfulness. Much praise is to be awarded to those intelligent and enthusiastic Gaels, who were successful some six years ago in establishing the Gaelic Mod,—an annual gathering at which prizes are given, after the example of the Welsh Eisteddfod, for the best productions in Gaelic prose and verse, in vocal and instrumental music, as well as in other attainments of a literary and artistic character.

The fifth Mod was held in October of last year in Perth. It was very successful. Unmistakable indications are available that the Mod is growing in popular esteem, and that it promises fairly to intensify the ardour of Gaels for their language and their traditions, and thereby to subserve the patriotic and very commendable purpose which its founders had in contemplation. The next Mod is to be held in Inverness, which possesses the best and most intellectual Gaelic Society in the world—a Society that has already published some twenty volumes of Transactions, which contain papers of a very instructive character, dealing as they do, with an extensive variety of Gaelic subjects.

In the centuries that have gone, there must have been a continuous intimacy between the Gaels of Ireland and the Gaels of Scotland. A reciprocal influence

must have been thus created in the development of the literature and customs of the Irish and Scottish Gaels.

"Ultonian Hero Ballads, collected in the Highlands and Western Isles of Scotland from the year 1510 and at successive periods till 1870"; such is the designation of a book which was published some time ago by Hector MacLean, under the auspices of the Islay Association. The Gaels of Islay evince a laudable willingness and liberality to honour and befriend any native of their island who succeeds in making a name for himself in the domain of Gaelic learning. To that number belonged the late Hector MacLean, who arranged and translated the Ultonian Hero Ballads. He has rendered in other respects important services to the cause of Gaelic literature. He was an able coadjutor of the late Mr. Campbell, who compiled "Leabhar Feinne." "The large amount," Mr. MacLean writes, "of Irish Saga literature belonging to the Ultonian cycle dates in its form back to the tenth century, and there is MS. tradition of part of it extending back to the seventh century. Different forms of the same Saga can be discriminated as far back as there are means of research, and these Sagas have undergone the same harmonising process, but not the same euhemerising process as the earliest annals. The same mediæval school was conspicuous in this one case as in the other. These ballads have for many centuries been sung and rehearsed in the Highlands." Mr. MacLean has made an important beginning in investigating a department of literature which concerns Irish and Scottish Gaels alike, and which demands much more extensive study than it has yet received.

Iain Lom MacDonald is one of the most talented and satirical poets in the entire range of Gaelic poetry. The largest and best collection of the poems of this famous bard was published some time ago in Antigonish, Nova Scotia. The Rev. A. MacLean Sinclair, who prepared the collection in question, has already gained for himself a great reputation for his unremitting devotion to Gaelic literature, and to the perpetuation of Gaelic poetry. He takes an affecting leave of his labours in behalf of Iain Lom in these words: "Beannachd leat Iain Luim, chuir mise d'orain a mach cho maith 's cho ceart 's a b' urraun mi. Tha mian doch as gu tig aon eiginn am dheigh a ni na's fhearr."

"Lyra Celtica" is the name of an anthology of representative Celtic poetry, which is edited by Elizabeth A. Sharp, with an introduction and notes by William Sharp. The "Lyra Celtica" was published during 1896. It is a large, varied and interesting collection of Celtic poetry, containing, as it does, ancient Irish and Scottish poems, ancient Cornish and early Armorican poems, early Cymric and mediæval Welsh; Irish modern and contemporary Scoto-Celtic, (middle period), modern and contemporary Scoto-Celtic, contemporary Anglo-Celtic poets (Wales), contemporary Anglo-Celtic poets (Manx), contemporary Anglo-Celtic poets (Cornish), modern contemporary Breton, the Celtic Fringe. Miss Sharp has accordingly travelled over a very extensive field in her desire to gather poetical flowers for her Celtic anthology. It is remarked in the preface, that the volume "is no more than an early, and in a sense merely arbitrary, gleanings from an abundant harvest."

Of recent years, we have had many works of the greatest value in Celtic ethnology, philology, history, archaeology, art, legendary ballads and romance, folk-lore and literature. In the national libraries of Great Britain alone it is estimated that if all the unedited MSS. were printed they would fill at least 1,200 or 1,400 octavo volumes. Though the songs and poems and ballads that the "Lyra Celtica" contains appear in an English dress, it is possible, however, for the student to discern the peculiarities of the mind and heart, of the thoughts and feelings, customs and manners of the various Celtic races. There are to be found side by side in the "Lyra Celtica" translations of the songs and poems that were wont to be sung and to be admired in distant days of Celtic warfare and exploits by Welsh and Cornish and Armorican Celts, and by Irish and Scottish Gaels and Manxmen. There must be those who, elated by the strong vitality which is pulsating now through the arteries and veins of the Celtic races, will call in question

the accuracy of the statement "that the Celtic race stands now with averted torch, and the light of it is a glory before the eyes, and the flame of it is blown into the hearts of the mightier conquering people. The Celt falls, but his spirit rises in the heart and in the brain of the Anglo-Celtic peoples with whom are the destinies of the generations to come."

It must be regarded as a strong indication of the present vitality of the Gaelic language that a translation of the Book of Common Prayer into Gaelic, for the benefit of the Gaelic members of the Scottish Episcopal Church, was published during last year. The translators have performed their work well, as a general rule. With commendable propriety, advantage was taken of the Gaelic version of the Bible, which is in common use in Scotland, for the purpose of presenting, in a Gaelic dress, those portions of Scripture that, along with the Psalms, go to form a considerable portion of the English Prayer-Book. It is at least interesting to know that in Argyllshire itself there are several Episcopal ministers who conduct religious services in Gaelic. It may be safely inferred, that if the Bishops of the Scottish Episcopal Church were apprehensive that Gaelic was sadly on the decline, and was hurrying to the day of its death and consequent extinction, they would not have taken the pains of translating the English Prayer Book into Gaelic.

As might be expected, owing to the great dissimilarity which exists between English and Gaelic idioms, the Gaelic translation of the English Prayer-Book is occasionally stiff. Praise rather than blame, however, is to be generously bestowed on the translators, who have done their work with much ability and accuracy.

In the introduction to his grammar—the first Gaelic grammar which was published—Shaw had this doleful statement to make when it was published in 1778: "But at present I much doubt whether there be four men in Scotland that would spell one page the same way. The taste, at this day, of the clergy—a lettered and respectable order—is to understand the English, content with what Gaelic enables them to translate of a sermon they originally wrote in English. And although they are obliged to speak in public once in seven days, there are not five ministers in Scotland who write their discourses in their own tongue." Almost one hundred and twenty years have passed since Shaw had occasion to give such a lamentable account of the defective Gaelic scholarship of his time. Innumerable progress has, in the interval, been made in the grammatical study of the Gaelic language, and in the acquiring of ability and facility to speak and write it fluently and accurately. It would be simply ridiculous to apply the strong condemnation which Shaw attached to the Gaelic scholarship of his own time, to the wide and thorough scholarship which obtains in our day. Were correctness in the understanding and in the writing of Gaelic to be taken as an infallible criterion of the utility of that language, the conclusion could not be resisted, that the chances of a prolonged existence are altogether on the side of Gaelic as we know and speak it now.

"A Course of Gaelic Grammar, by Duncan Reid, F.S.L.A., teacher of Gaelic in the High School of Glasgow." Such is the writing on the title page of a very useful and intelligible grammar, which was published in August, 1895. The author thus writes in his preface: "In compiling this course of Gaelic grammar, I have adopted the plan which I have followed during the last few years in teaching the students of the Gaelic class in the High School of Glasgow. It is chiefly intended as a text-book for Highland schools and pupil teachers, and is designed to meet the requirements of the Scotch Education Code. The ordinary student will find here sufficient material to enable him to acquire a good knowledge of Gaelic grammar. The exercises are carefully graded, and the selections for reading, towards the end, are from the standard works of some of the best writers of Gaelic prose and poetry." Though exception may be taken to portions of Reid's Grammar, it has to be admitted that it is very concise and simple, so that the ordinary student can easily obtain a sufficient knowledge of the language, whereby he can be enabled to appreciate its peculiar beauties, and to derive enjoyment from its treasures in prose and verse.

“Elementary Gaelic Grammar or the elements of Gaelic grammar, based on the work of the Rev. Alexander Stewart, D.D., by H. Cameron Gillies.” Such is the name of an able and instructive Gaelic Grammar, which was published a few months ago. Dr. Gillies resides in London, England, and is engaged in the practice of medicine. He has for several years devoted much attention to Gaelic. He has a keen critical faculty, insomuch that he finds particular pleasure in prosecuting his studies in the somewhat abstruse domain of Celtic philology. The present position of Gaelic, favourable in a satisfactory degree as it is in London, the metropolis of the world—owes very much to the fine enthusiasm, the diligent learning and the unflinching earnestness of Dr. Gillies. According to his own averment, Dr. Gillies has based his grammar on the work of Dr. Alexander Stewart. It has always to be conceded that Stewart’s Grammar, so far as it goes, is the best Gaelic Grammar which has ever been written (Dr. Stewart was minister of Moulin, in Perthshire, when he wrote his grammar), involving as it does—for the field of Gaelic grammar was at that time largely, if not entirely, fallow ground—great acumen and pains and reflection. The splendid Irish scholar, O’Donovan, found abundant reason in the honesty of his heart—able grammarian as he himself was—to bestow warm praise on the ability, industry and acumen of Dr. Stewart. It was Dr. Stewart who corrected the proof-sheets of what is known as ‘Sinclair’s edition of Ossian,’ which was published in 1807. In the preface to his Grammar, Dr. Gillies thus writes: “The purpose of this Grammar is to afford assistance to such as may desire a living and intelligent acquaintance with the Gaelic language of Scotland. I endeavoured to have special regard to the phonetic basis of the language, and have always appealed to it whenever it was necessary to do so. As Gaelic Grammars are continually making their appearance, it cannot be denied that Gaelic still possesses the pulsations of a healthy and vigorous existence. If a language is dying, and, like the withered leaves of autumn, is showing unmistakable signs of decay and death, no man can have the courage and energy which the writing of the grammar of such a language involves. A decrepid language, an enfeebled and helpless language, a language which is on the brink of the grave, and which is suffering the loss of all its former friends, can by no reasonable possibility induce any man—unless he is enthusiastic to an unwonted degree—to consume the midnight oil in preparing a grammar which, as he honestly thinks, is able to meet the requirements of his own time, and to impart even a moderate amount of life and strength to the language which he loves as the language of his ancestors, and, therefore, of those who are dearest and greatest in his imagination and memory.”

The inhabitants of the Isle of Man are conspicuous for their zeal in collecting the literary remains that can be found in the island, whether they assume the form of poetry, or folk-lore, or historical narratives, or carols and ballads. Since the Manx Society was established in 1858, very much has been done to rescue from oblivion many of the literary links that connect the Isle of Man of to-day with the Isle of Man of the days that have gone. At an expenditure of endless energy and trouble, Mr. A. W. Moore, M.A., Cronkbourne, Douglas, has conferred great benefits on the literature of his native island. Through his indefatigable exertions much that will prove to be very valuable in the lore of Manxmen has been recovered and published. In addition to other publications with which he had to do he published, in 1891, “The Carvalyn Gailchagh,” or Manx carols. “Manx Ballads and Music” is the name of another collection which he published toward the end of last year. “The object of this publication,” he asserts, “as that of the Manx Carols, is to collect in one volume a curious literature, the greater part of which was threatened with almost certain loss.” Though he has been assiduous in collecting those ballads and in thus preserving from oblivion songs which were wont to be sung by the peasantry of Man, he has no high opinion of the poetical merit of many of them. He divides them into “mythical, semi-historical and historical ballads; children’s songs and ballads connected with customs and superstitions; love-songs, patristic ballads, nautical ballads and miscellaneous ballads.” He thinks more highly of the Manx melodies than of the ballads, forasmuch as they are in most cases older, as well as superior to the words which are now set to them. He has strong reasons for entertaining the hope “that the results of

this little book will be to admit the music of the Isle of Man to a distinct though humble share in the great body of national music which is now being so generally collected," and that in it may be found, in the striking words of a recent writer, "the national idioms in their simplest and most unsophisticated expression." As the music to which ballads are sung intensifies the great regard that the peasantry of any country entertain for their songs, it may naturally be expected that the publication of their songs, along with their appropriate music, will increase the zest wherewith the inhabitants of the Isle of Man sing such songs as "Coysl jeh ny Baatyn-Skeddan," "Mannin veg veen," and "Na Kirree fo Niaghtey."

THE INDIAN CHARACTER. BY E. M. CHADWICK, ESQ.

(Read April 10, 1897)

This paper was read, as views on the same subject had been presented by a reader before the Institute some time previously. Such former paper had not, in the opinion of the present reader, exhausted the subject, nor treated it quite justly or in due proportion, but had rather enlarged upon the faults of the Indians without giving due weight to their better qualities, the reader being impressed with the importance of understanding and recognizing what good there is in those under our care and tutelage, and how many unfortunate mistakes may have been in the past, and possibly may be in the future, avoided by a better knowledge of what the Indian has been, is, and may be.

The Indian, as a subject of which so many have written, has been in this respect at a great disadvantage, and has been treated with much injustice, because, firstly, his history has, for the most part, been written by his enemies; secondly, most writers have formed their impressions from tribes which have been deteriorated from contact with unscrupulous whites, diminished by intemperance and the diseases which have ever marked the advance of civilization, impoverished by the destruction of their accustomed means of subsistence, and disheartened and dispirited by the change in their circumstances; and lastly, because it has been a common practice to gauge the Indian by a European standard. This last, however, may be regarded as an unintentional but very marked tribute to the innate merits of the Indian, for other uncivilized people have been described either without reference to other conditions than those in which the writers happened to find them, or by comparison with people of similar circumstances.

The reader reviewed the various traits of the Indian character at length, and concluded as follows:

While the policy of our Government has ever been wise and commendable, and has been generally honestly carried out by the executive agents and officers, I cannot but think that in one respect a grave mistake has been commonly made by those charged with duties bringing them into immediate contact with the Indians, both officials and others, and perhaps especially missionaries, whose methods are apt to be unduly patronizing. The Indian is in many respects child-like, knowing that the white man's knowledge is superior to his, and, therefore, when his tutelage begins he enters into a relation as regards the whites similar to that of pupil and teacher. This condition is one of much difficulty, requiring management with a tact and skill such as few people are able to exercise. If the Indian were treated as a friend and equal rather than as a pupil or dependent, I believe his advancement would be more certain and speedy. Individual cases of Indians revolting, and perhaps with little or no apparent reason, from the guidance or control of agents or missionaries will no doubt occur in the experience of such people, without their perceiving that a certain amount of fault may lie with themselves. I do not wish to be understood as unduly criticising either agent or missionary, for in Canada I am convinced that our Indian agents as a class are men competent and well worthy of the great trust and responsibility imposed upon them, as I certainly know some of them to be, and for the missionaries I have the highest respect, believing that upon the faithful performance of their duties, more than anything else, depends the future welfare of the Indian as a civilized citizen.

But even missionaries are human and sometimes make mistakes, and they have many serious difficulties to contend with, for not only have they to overcome such as necessarily arise from the character of the Indians, and customs and circumstances of their former life, but they have also to fight the devil incarnate in the persons of evil and unscrupulous whites, who, for their own gain or gratification, do not hesitate to bring moral and physical ruin upon the Indian.

It is to me a matter of much regret that in the process of bringing the Indian into civilization there has been an effort to make him forget his past history and customs. Much of the history of some, at least, of the Indian nations is by no means a thing to be wiped out of memory, and, though some of their customs must necessarily be disused, as being inconsistent with both Christianity and civilization, the romantic and picturesque, which ever attended the life of the Indians, and surrounded them with a charm which has produced abundant material for writers of fiction and poetry, is surely worth preservation, and, in my judgment, should be no more a hindrance to their advancement than somewhat similar conditions have been in the case of the Highlanders of Scotland. I am convinced that an Indian who holds the memory of his forefathers in respect, and looks back with honest pride upon the antiquities of his nation, and is permitted to do so, will make a better citizen than one who is taught, as is evidently too often the case, to consider all such things as contemptible, and to be put aside and buried in the past. Among the Six Nations, those who are disposed to keep alive their traditions and such of their ancient customs as are not unsuited to their present manner of life, are subjected to a kind of mild social ostracism. I venture to believe that to be a great mistake, and for my part would regard an Indian who had the courage to appear in buckskin and feathers, without being paid for doing so, as excellent material from which a valuable citizen might be made if judiciously treated. The system which is followed, I believe, with all due deference to those who have more experience than I have, to be calculated to make such men and women useless members of society, and thus indirectly to lower the general social and moral tone of the people. A loyalist at heart, if injudiciously treated, may be made a rebel in act.

INDIAN GHOSTS AND CONCH FEASTS. BY R. G. HALIBURTON, F.R.G.S., ETC.

(Read April 10, 1897).

Had the natives of Jamaica any connection with the races of North or South America? This is a question which we cannot discuss in the limited state of our knowledge of West Indian natives. This arises partly from the fact that the cruel power that is now deluging Cuba with blood, succeeded in little more than a century in exterminating the friendly and peaceable natives of the West Indies.

No page in the history of our race presents such a blank as that which refers to those people. The Spaniards said that the natives reminded them of the people of Majorca; but that race was a small one, and no doubt an offshoot of the dwarf stock that, according to Professor Sergi, migrated from North Africa to the islands and to the Northern shores of the Mediterranean. The Spaniards probably referred to the little Caribs. In the Atlas region of Morocco the dwarfs and their large offshoots are called "the little Haritin" and "the large Haritin." When I first, in 1890, saw one of the latter, I said "That man must be a Carib." The dwarfs range from 4 feet to 4 feet 10. Their larger kinsmen are from 4 feet 10 to 5 feet 4 inches, and both have that peculiar, bright-reddish complexion, that so generally characterizes dwarfs. My Berber servant (thanks to whom I became their discoverer) said, "They have a red complexion, quite different from that of other races in Morocco. It is like that of the red Indians of America." A recent color chart by a German anthropologist makes the Tupi Guarani and most other races of South America have the same tint as the Berbers. The fact that their names for spirits, or ghosts, *Cemis*, and *Tona*, are to be met with in Central America, and as far north as the Pueblos, leads us to suspect that the people of the islands, and of Central America must have sprung from the same stock.

Brasseur de Bourbourg's idea that the Popul Vuh was historical, even though he was backed up in it by Max Muller, he had to abandon in his old age. It was a mythical work, containing astronomical legends that are as widespread as the wanderings of our race. Within the past two years cave deposits and inscriptions have been found in Yucatan, that lead to the idea that the Mayas, when they arrived there, were already a semi-civilized people.

We must be patient, and must collect in properly managed museums all that can be gathered together as to the aborigines of the West Indies. In time this great blank in anthropology will be filled up, but we now have tantalizing glimpses of affinities, that serve only to stimulate and baffle our curiosity.

Bishop Hanna was right in his conjecture, that aboriginal remains would probably be found, if sought for, in Pedro, Jamaica. The contents of the caves there are well known, although it is possible that treasure-seekers, or even antiquaries, may a century or two ago have carried away or destroyed much in them that would have been of interest. On the top of a hill at Malvern Chase, it was said, when I was there eleven years ago, that there was an Indian burial place. I employed a couple of men for one or two days in opening some places that seemed promising, but the results were on the whole disappointing. On digging down in some places there, we found an almost solid mass of little shells, about two inches thick, in a regular layer. But we found no skeletons or human bones, although we came across a large quantity of broken pottery, which seemed to have been an

offering to the dead, for when an article is broken, it belongs to the spirits. On Haugmena night, New Year's Eve (for "Haug" means a "ghost," and the spirits then pay the earth a visit, as they do also at Hallow-eve, and the Eve of May-Day), it is a custom among Highlanders to drink a toast, and then to throw the wine-glasses over the left shoulder, no doubt once a mode of making an offering to ancestral ghosts. The Maori used to always offer a grace to ancestors by throwing a little food over the left shoulder. On spilling salt, many people, to avert ill-luck, throw salt over the left shoulder. All this dates back to an era when our ancestors were somewhat like the old aborigines at Pedro.

The ashes and a few bones were quite consistent with funeral, or memorial feasts. There were indications that the place had been opened before, and it is possible that skeletons may have been carried away.

The pottery we found was of singular interest. There were some dishes about six inches long, very shallow and graceful in shape, with handles formed of frogs' heads most artistically executed. I have not seen anything of the sort to equal them in the Peabody Museum collection from Central America.

The frog was the symbol of rain and of the rain-god in Mexico and in Central America. The pottery was evidently intended to be hung up, as it was pierced, or had handles for that purpose, like Guanche pottery. The gypsies, who, like the Berber tribes on the coast opposite the Canaries, hang up their drinking cups, believe that if they are allowed to touch the ground they are thereby consecrated to the dead, and must be broken in pieces.

Before I dismiss the subject of destroying articles as a mode of offering them to spirits, I may mention a singular custom of the Spanish gypsies, who at a certain feast collect many bushels of confections made (if I remember right) of white powdered sugar. These are thrown on the floor of the dancing room, until it is covered with a layer two or three inches deep. Of course the cost of this proceeding is a very heavy one. The gypsies then, men and women, commence a weird, frenzied dance, in which they work themselves up into a delirium, and then sink down exhausted. The sugar clogs their feet, and covers their legs and garments, and when they cease dancing they present a most singular and sorry picture.

Though archaeologists cannot conjecture the origin of this custom, we may form a shrewd guess as to what this dance means. The ghosts are in for a big candy frolic, and the sweetmeats must be destroyed before the spirits can own them. The rationale of these ideas is, I think, capable of a very simple explanation. With primitive races of men everything in nature has its spiritual double. The soul of the hunter's dog goes to the Land of the Blessed and hunts game there for his master, just as he did on earth; and the warrior fights, loves, and feasts as heartily as he did when in the flesh.¹

In the Peabody Museum of Anthropology there is to be seen half a bushel of pearls, some of large size, that have been subjected to the action of fire. They have not been destroyed; they have only been translated to the necks and arms of tawny warriors. Who knows that the only pale-faced ghost, that of the late George Washington, that ever found its way into the Red Man's Paradise, may not have often seen and admired them?

All this serves to explain the meaning of the Mysteries, or initiations of pre-historic man, and of antiquity. With Christians admission to the society of the

(1) Maspero in "The Struggle of the Nations," a translation of which has just been published by Appleton & Co. (N.Y., 1897), since the above paper was read, says (p. 523) of the mummies of pets of the deceased placed in Egyptian tombs, "A few of the principal objects were broken or damaged, in the belief that by thus destroying them their double would go forth and accompany the human double, and render him their accustomed service during the whole of his posthumous existence."

This is a singular confirmation of my conjecture, and shows how much of prehistoric man survived in the Egyptian.

blessed must be obtained through the atonement. With primitive man this was accomplished by initiation. To become a blessed spirit, a man must die. Hence "the death of the Mysteries," or "Cabeiric death," which was brought about by exhausting ordeals, long fastings, and the use of narcotics, under the effect of which the aspirant lost consciousness, and fell into a death-like trance. He was then buried and resurrected, but he returned a blessed spirit. An American Indian who has been initiated indulges in the boast, "I am a spirit." Death thenceforth has no spiritual terrors for him (2).

This was the Egyptian belief. The deceased worshipper of Osiris, who had been initiated into "the Mysteries of Isis," himself become an Osiris, and, as a "Blessed Osirian," reigned with the gods. These ideas can be detected in the Apocalypse, a work permeated by the astronomical imagery, the symbolism of numbers, and the allegorical spirit of the venerable Mysteries. Read by the light of primitive cults, the following significant passage becomes a little more intelligible than it has hitherto seemed.

"Blessed and holy is he that hath part in the first resurrection: on such the second death hath no power, but they shall be priests of God and of Christ, and shall reign with him a thousand years" (Rev. 20 : 6).

In 1888 I mentioned to Professor Maspero verbally, and afterwards by letter, that the "Osirian cult" still existed in America. *Osiris* is the Greek form of *Hoesari* in Egyptian, which in Phœnician and in the traditions of southern Morocco and the western Soudan is *Isiri*. Among the Caribs and the Abipones of South America the name is *Hoscheiri*, or *Ischeiri*, and the initiated becomes an *Ischeiri* after death.

I shall hereafter bring out these points in a paper on "Vestiges of the Osirian Cult in the New World."

Shell mounds are to be found from the icy North to the Straits of Magellan. At a suitable time of the year the Indians used to picnic for weeks on the seashore. In New England they bequeathed their indigestible but tempting "clambake" to the Pilgrim Fathers and their descendants; and their memory will be preserved green as long as "clam-chowder" endures.

On the shores of the Gulf of Mexico, where oysters took the place of the venerated clam, there are many "shell-islands" where there are enormous deposits of oyster shells. I spent the winter of 1882-3 on one called Tiger-tail Island, where that terrible Seminole Chief, Tiger-tail, was wont to roast and bake oysters in place of Yankees.

In the Caribbean Sea the conch took the place of the oyster. I chartered a schooner in 1870 and explored the network of little islands and inlets in the British and foreign Leeward and Virgin Islands, which no one ever visits. As Pere Labat speaks of heaps of shells left by the Caribs at Anegada, I thought I would take a look at them. The island is surrounded by a network of coral reefs extending ten miles to the seaward, and but few strangers reach it except those that have been washed ashore. I found the people there (about two hundred in number I should think), much disturbed by my visit, and they refused at first to come with me. But the next morning the whole population seemed to turn out to aid me. I

(2) The following passage, from Mr. Lyman Abbott's article in the Outlook (Mar. 1897), is applicable to the belief of prehistoric man:—"What is God's way of doing things according to evolution? It is to develop life by successive processes, until a spirit akin to this appears in a bodily organism, akin to that of the lower animals from which it had been previously evolved. This bodily organism is from birth in a constant state of decay and repair. At length the time comes when, through disease or old age, the repair no longer keeps pace with the decay. Then the body returns to the earth, and the spirit to God who gave it. . . . But every death is a resurrection of the spirit. What we call death, the New Testament calls 'an exodus,' or an emancipation from bondage, an 'unmooring,' or setting the ship free from its imprisonment. The spirit is released from its confinement, and the release is death. Death is, in short, not a cessation of existence, not a break in existence; it is simply what Socrates declared it to be, 'the separation of the soul and body; and being dead is the attainment of this. When the soul exists in itself, and is parted from the body, and the body is parted from the soul, that is death.' (See *Phædo*, Jowett's Trans.)"

afterwards learned that on my arrival they had held a meeting, at which it was resolved that, as no man in his senses would think of opening a heap of old conch shells; I must be in search of Captain Kydd's treasure. They then generously resolved that I be permitted to open these mounds, but at my own expense; and they further resolved, that while they would help me to find the treasure, they would never allow me to carry off a penny. Anxious to have a hand in the "find," they flew upon the shell mounds like demons; but I did not wish to pay all the people of the island, and therefore selected three or four, who opened half a dozen shell mounds, watched with intense anxiety by the rest of the people. We found only shells and ashes, nothing of interest, and, sad to say, no vestige of Captain Kydd and his hoards.

I encouraged that idea about Captain Kydd by looking very mysterious, consulting my notebook, pacing off the distance between certain objects, and behaving generally like a truant land-surveyor. My benevolent object was, I subsequently learned, most fully accomplished, for the people there are now the highest living authorities on the subject of Carib shell mounds. For a fortnight after I left, the whole population turned out, and overhauled all the numerous shell mounds in the island, but, unfortunately they found nothing. They then concluded that I had inherited some invaluable notebooks and maps from my worthy ancestor, Captain Kydd, and that I had slipped ashore in the night, and had carried off millions of "pieces of eight" and "Spanish Joes."

A friend, Chief Justice Semper of St. Kitts, warned me never to venture near that island again, and I have taken his advice. It was the cheapest bit of archaeological exploration on record.

This fish diet must have greatly contributed to the vitality and vigor of the Indians. The prevalent idea that fish is so little nutritious that to dine on fish is equivalent to fasting, was a little shaken by the fact, that communities that live on fish are very prolific. A gentleman, whom I met recently at the Toronto Club, and who had spent some winters at Hudson's Bay, told me that it was a favourite amusement there to pit the fish-eating against the flesh-eating Indians in trials of strength, and that in every case the former came off victorious.

NOTE ON SOME BASIC DYKE AND VOLCANIC ROCKS OF EASTERN ONTARIO
AND QUEBEC. BY W. G. MILLER, M.A.

(Read April 18, 1897).

Dr. F. D. Adams, in his recently published "Report on the Geology of a Portion of the Laurentian Area lying to the North of the Island of Montreal" (1), describes a series of post-archæan dykes which are stated to be "probably pre-Potsdam in age." The rocks in these dykes are of three different kinds, viz.: diabase, augite porphyrite (spilite type), and a rock which "is neither a diabase nor a gabbro, having neither the ophitic structure of the former nor the hypodiamorphic granular structure of the latter. The structure is rather a porphyritic one . . ."

It may be interesting to note that a similar series of basic rocks occurring in dykes is characteristic of the Kingston district, which is distant about 150 miles from the area referred to by Dr. Adams.

In a paper (2), published some time ago, Mr. R. W. Brock and the present writer described two rocks which with diabase are the characteristic basic dyke and volcanic rocks of the eastern part of Frontenac county and the adjacent portions of the counties of Leeds and Lanark. One set of dykes, which occurs near the village of Seeley's Bay is, judging from Dr. Adams' description, practically identical in character with those he has described in the district north of Montreal, and which he calls augite porphyrite (spilite type).

The rock referred to by Dr. Adams as being "neither a diabase nor a gabbro" is represented in the Kingston district by a rock which resembles it closely. The Quebec rock is apparently somewhat more basic than its Kingston representative, and contains phenocrysts of both augite and plagioclase, of which the former is the older. Unless, however, a series of analyses were made of specimens selected from different parts of the dykes, it would not be possible to make a satisfactory comparison of the acidity of the dykes in the two districts. One of the striking characteristics of these rocks from both districts is the occurrence in them of micropegmatite or a granophyric intergrowth of quartz and feldspar. Dr. Adams says, "This micropegmatitic or granophyric intergrowth of quartz and feldspar will probably be found very widespread in its occurrence in the dykes cutting the archæan in Canada, as it is known in diabases of Templeton, in the County of Ottawa, in the Province of Quebec, while Dr. Lawson describes it as occurring abundantly in the dykes of the Rainy Lake district to the west of Lake Superior."

Prof. C. H. Smyth has described a group of diabase dykes among the Thousand Islands, St. Lawrence River, in the southern part of the County of Leeds (3). These also have representatives in the area described by Dr. Adams.

Different varieties of plutonic rocks related to gabbro are found in the two districts. Letting the term gabbro stand for these, norite and anorthosite, we have an interesting series of rocks in the two districts, including—if we consider the

(1) Pp. 134 to 139, Part J. Annual Report, Vol. VIII., Geol. Survey of Canada.

(2) Canadian Record of Science, October, 1895.

(3) Transactions N.Y. Academy of Sciences, Vol. XIII.

rock containing micropegmatite to belong to the dyke division proper—plutonic, dyke and volcanic representatives of the gabbro group. Their relations may be shown in tabular form as follows :

Gabbro Group.	{	Plutonic Gabbro.	
		Dyke Gabbro porphyrite.	
		Volcanic	} Diabase. (Augite porphyrite.

Whether the rock here placed under the dyke division be considered to belong there or under the volcanic division we have an interesting series which includes the characteristic pre-Potsdam basic rocks of the two districts. Representatives of other sub-divisions of the gabbro dyke rocks, viz.: gabbro aplite (or beerbachite) and gabbro lamprophyre (or odinite) have not as yet been found in the districts under consideration.

THE VAPOR TENSIONS OF LIQUID MIXTURES. BY W. LASH MILLER, PH.D.,
AND T. R. ROSEBRUGH, M.A.

(Read April 24, 1897.)

Much of the recent remarkable progress in physico-chemical work is due to experimental and theoretical investigations on the vapor tensions of solutions, and Professor Van 't Hoff's paper showing the relations between the tensions, freezing-points, boiling-points, osmotic pressures and compositions of solutions marks a new epoch in the science. In his celebrated monograph "On equilibrium in heterogeneous systems" Prof. Willard Gibbs has deduced an equation (1) from which may be obtained a relation between the alterations produced in the vapor tensions of the components of a liquid mixture by altering the composition of the mixture. A close examination of this result of Gibbs and of the method by which it was obtained, shows that his equation contains as special cases many of the results of Van 't Hoff referred to above; it is consequently very desirable to subject the equation in its most general form to a direct comparison with experimental results. Such a control would be afforded by a set of measurements of the tensions and compositions of the vapors given off at any constant temperature by mixtures of two liquids in different proportions, but curiously enough no complete set of measurements of the nature referred to seems as yet to have been published. We have undertaken to supply the requisite data by an investigation of the case of mixtures of alcohol and water; the present paper contains a short description of the apparatus employed, the results of the measurements, and their comparison with the theory will form the subject of a subsequent communication.

The apparatus, as finally constructed, consists of a cylindrical vessel to hold five litres, made of tinned copper, and provided with five openings. Of these, the first is fitted with a thermometer, the second with a means of filling and emptying the vessel, the third with means of electrical communication to a heating coil suspended in the liquid; while through the fourth passes a glass tube to convey the vapors to a condenser, from which the condensed liquid drops back through the fifth opening into the apparatus. When desired, small quantities of the condensed vapor may be removed and their composition ascertained; these analyses, together with a knowledge of the composition of the contents of the copper vessel and measurements of the temperature and pressure, give all the data necessary for testing the accuracy of the equation of Gibbs referred to above.

In order to protect the vapor from partial condensation (and consequent fractionation) on the way to the condenser, the tube through which it passes is wound with insulated wire and may thus be kept hot, electrically; errors due to splashing of the boiling liquid have been provided against by a special construction at the bottom of the tube; condensation on the walls of the copper vessel itself is prevented by surrounding the latter with a tin cylinder wound with wire and kept at the temperature desired by means of an adjustable electrical current, while the absence of super-heating, and a thorough equilibrium between vapor and liquid, are secured by the use of perforated copper plates (under the surface of the liquid) through which the vapor must find its way.

As it is desirable that the boiling points of the mixtures should be varied at

(1) Trans. Connec. Acad. III. 143. Egn. No. 97.

pleasure, a subsidiary piece of apparatus has been constructed by means of which the pressure in the boiling vessel may be maintained constant at any desired point from 20—1200 mm. This pressure-regulator consists of two five-gallon jars, of which the first is attached directly to an air pump, and the second to a U-tube manometer and to the boiling apparatus (between condenser and fifth opening); communication between the jars is afforded through a tap, which is usually closed, but may be opened by an electrical device set in motion whenever the mercury of the manometer (in the open limb) rises high enough to form contact with an adjustable platinum wire.

NEW SPECIES OF CANADIAN FUNGI. BY J. B. ELLIS AND J. DEARNESS.

(Read April 24, 1897.)

HYMENOMYCETES.

PORIA SUBRUFATA, E. & D.

Resupinate, effused, mostly in small patches 2—4 cm across, inseparable, soft, juicy, creamy-white when fresh, becoming reddish when dry; margin thin, membranaceous, narrow, almost wanting. Pores round to sub-angular, $\frac{1}{2}$ — $\frac{1}{4}$ cm. long, $\frac{1}{2}$ — $\frac{1}{4}$ mm. wide, dissepiments thin, margin acute but not lacerate. Spores elliptic-oblong $4 \times 3 \mu$.

On a rotten beech log at Granton, Ont., Nov., 1896. No. 2442 in Herbarium of J. Dearness.

Apparently allied to *Poria Cruentata*, Mont., but the pores cannot be called "very short," and their surface is uneven.

PYRENOMYCETES.

ROSELLINIA COMPRESSA, E. & D.

Perithecia scattered or often in small groups of 4—6 or more, sometimes 2 or 3 sub-confluent, superficial, rather depressed, globose, about $\frac{1}{2}$ mm. in diam., membranaceous, sparingly clothed with short (20—30 μ) spine-like, black hairs: ostiolum minute, papilliform. Asci cylindrical, 75×10 — 11μ , obscurely paraphysate. Sporidia uniseriate, elliptical, obtuse, brown, strongly compressed, 12 — 16×8 — 10μ and about 3μ thick.

On decorticated elm, Granton, Ont, Canada. Herb. D., No. 1791.

DIDYMOSPHERIA THALICTRI, E. & D.

Perithecia gregarious, depressed-globose, 200 to 250 μ in diam., visible through the darkened epidermis which is barely pierced by the papilliform deciduous ostiolum. Asci oblong, short stipitate, paraphysate, 8 spored. Sporidia biseriate, at first fusoid-oblong, sub-hyaline, 4-nucleate, but finally uniseptate and slightly constricted, sub-inequilateral or slightly curved, pale brown, 13 — $15 \times 3\frac{1}{2} \mu$.

On dead stems of *Thalictrum polygamum*, London, Can., Aug., 1895. Herb. D., No. 2297.

DISCOMYCETES.

PSEUDOHELOTIUM CANADENSE, E. & D.

Ascomata scattered, short stipitate, whitish, with a yellowish tinge, about 1 mm. in diam., puberulent; margin fringed with tufts of short, pale hairs, and when dry the opposite sides rolled together so as to become elliptical or triangular in outline; texture, fibrous; apparently sessile, but short-stiped. Disk concave, yellowish. Asci, clavate-cylindrical, paraphysate, about $40 \times 4 \mu$. Sporidia biseriate, oblong, obtuse, mostly straight, hyaline, 8 — $12 \times 1\frac{1}{2}$ — 2μ .

On dead stems of *Aretium Lappa* L., London, Can., Aug., 1895. Herb. D. No. 2340.

COCCOMYCES RUBICOLA, E. & D.

Ascomata covered by the adnate epidermis, hemispheric-prominent; the pustules pierced in the centre, then radiate-cleft and open, exposing the pale, whitish or wood-coloured disk, $\frac{1}{2}$ —1 mm. in diam., bordered by the toothed margin of the ruptured ascoma. Asci, oblong-cylindrical, sessile, 60—70 x 7 μ . Paraphyses, filiform, curved or bent at the tips. Sporidia fasciculate, linear, nucleate, hyaline, sub-attenuated below, 45—60 x 2—2 $\frac{1}{2}$ μ .

On dead stems of *Rubus strigosus*, Granton, Ont., Aug., 1895. Herb. D., No. 2352.

C. Rubi (Fr.) is a foliicolous species, having sporidia only 6—8 μ . long.

HYPHOMYCETES.

RHINOTRICHUM HERBICOLUM, E. & D.

Effused, light yellow, becoming brown in the centre. Hyphæ, coarse, septate, branched, nearly hyaline, 8—10 μ thick. Fertile hyphæ, sub-undulate above, tips swollen and bearing the globose, sub-hyaline, finely echinulate, 7—9 μ conidia.

On dead stems of *Solidago Canadensis*, London, Can., Aug., 1895. Herb. D., No. 2314.

This species differs from *R. Curtisii*, Berk., in its coarser hyphæ and its smaller echinulate conidia.

STYSANUS TUBERICOLA, E. & D.

Stem composed of parallel fibres, 700 to 800 μ high, 10—12 μ thick, tips of the fibres relaxed and bearing the elliptical, brownish, 4—5 x 2 $\frac{1}{2}$ —3 μ conidia, forming a terminal oblong head 110—130 x 35—50 μ . The fibres forming the stem spread out at the base forming a loosely interwoven grayish mycelium.

This fungus developed on pieces of potato in a moist chamber which had been used for culture purposes. Other pieces of potato were inoculated with it and thus a considerable quantity was obtained. London, Can., Apr. to June, 1894. Herb. D., No. 2261.

RAMULARIA ARISÆMÆ, E. & D.

Spots oval, tan coloured, turning pale or yellow-white by concentric rings from the centre outwardly, $\frac{1}{2}$ to 2 cm. Conidial tufts minute, very numerous, mostly epiphyllous, giving a grayish cast to the pallid area of the leaf, the tuft consisting of a few close, almost sessile, conidia. Conidia hyaline, grumous, nucleate, straight, 20—22 x 3—3 $\frac{1}{2}$ μ .

On leaves of *Arisæma triphyllum*, Torr., Granton, Ont., July, 1893. Herb. D., No. 2139.

TORULA CARICINA, E. & D.

Hypophyllous forming dense dark olive, orbicular or elliptical patches, 1—2 mm. diam., composed of erect, simple or branched from the base, chains of closely connected, smooth, translucent, pale brown conidia, 20—30 μ long, consisting of 10 to 15 conidia about 3 μ in diameter.

On dead leaves of *Carex lupulinus* var.—; London, Can., Sept. 1896. Herb. D., No. 2403.

T. graminis. Desm., also occurring on species of *Carex*, has conidia 5 to 6 μ in diam., becoming black.

CLADOSPORIUM (?) MYRIOSPORUM, E. & D.

The fungus first appears as pale specks on the pea-pod; it soon becomes erumpent in small, light-coloured tufts, and finally confluent, forming a scurfy or faveolate scabby coat on the pod. From the first the much-branched, fertile hyphæ produce abundantly minute hyaline conidia, little over 1 μ long, but as the tuft develops the

branches darken and the spores become larger, darker, and some of them septate. Their shape is mostly oblong, slightly pointed at one end, truncate at the other, showing the circle of attachment. Continuous spores vary from $1\frac{1}{2} \times 1$ to $1.4 \times 4 \mu$, septate ones from 10×3 to 30×6 — 8μ . Under a high power all except the smallest are seen to be rough or minutely echinulate. The hyphæ are sub-fasciculate, simple or septate, sub-geniculate, varying in colour from hyaline to olivaceous, sub-dentate or entire above, 40 — 80×3 — 6μ .

On pea-pods, communicated by Dr. J. Fletcher, Ottawa, from South Vancouver, B.C., and by B. C. Buffum, Laramie, Wyoming. Aug., 1896. Herb. D., No. 2395.

This fungus was so injurious in the British Columbia locality that the crop was not threshed.

CLADOSPORIUM ACUTUM, E. & D.

Black tufts, $\frac{1}{2}$ — 1 mm. diam., thickly scattered over the lower surface of the leaf, sparingly confluent. Fertile hyphæ caespitose, olive brown, nearly straight, 3 — 5 septate, 80 — $110 \times 3\frac{1}{2}$ — 4μ , abruptly and mostly obliquely pointed at the apex. Conidia elliptic, 1-septate, becoming brownish, 10 — 15×6 — 8μ .

On fallen ash leaves, London, Can., Oct., 1896. Herb. D. No. 2441.

CERCOSPORA CARICINA, E. & D.

Tufts punctiform, minute, seriate between the parallel ribs of the leaf. Hyphæ caespitose, mostly continuous, brown, notched and crooked above, 15 to 25×3 to $3\frac{1}{2} \mu$. Conidia slender, obclavate-cylindrical, hyaline, continuous, 34 — 73 (mostly 35 — 50) $\times 3 \mu$.

The leaves of the host are at first dotted with brown specks and blackened, finally becoming dead and then lighter in colour.

On leaves of *Carex rosea*, London, Can., Aug., 1896. Herb. D., No. 2390.

CERCOSPORA LESPEDEZÆ, E. & D.

Spots irregular, red, bounded by the veinlets, 2 to 5 mm. Tufts of conidia epiphyllous, hyphæ continuous, pale brown, 10 — $25 \times 4 \mu$. Conidia clavate-cylindrical, 35 — $50 \times 4\frac{1}{2} \mu$, 1 — 5 -septate.

On leaves of *Lespedeza capitata*, Michx., London, Can., July, 1893. Herb. D., No. 2135; N.A.F., No. 3094.

SPHÆROPSIDÆÆ.

PHYLLOSTICTA HERACLEI, E & D.

Spots large, 1 — 2 cm., reddish brown, indefinite, finally confluent and covering a large part of the leaf, which becomes pale and dry. The spots at first are margined with a faint yellowish zone. Perithecia mostly epiphyllous, nearly black, sub-erumpent, 110 — 125μ . Spores hyaline, oblong, continuous, $3\frac{1}{2} \times 1\frac{1}{2} \mu$.

On leaves of *Heracleum lanatum* Michx., London, Can., September, 1892, Herb. D., No. 2026.

PHYLLOSTICTA HISPIDA, E. & D.

Perithecia gregarious, innate, globose, with a broad, round opening, small (75 — 80μ) visible on both sides of the leaf, but more distinct and prominent below. The leaf is clouded with dark, indefinite patches, but there are no distinct spots. Sporules oblong-cylindrical, obtuse, 3 — $4 \times 1\frac{1}{2} \mu$.

On leaves of *Smilax hispida*, Muhl., London, Can., Sept.-Oct., 1896. Herb. D., No. 2424.

PHOMA PANICULATA, E. & D.

Perithecia scattered, convex, hemispherical, about $\frac{1}{2}$ mm. in diam., covered by the epidermis which is raised into little black blisters and finally irregularly rup-

tured. Sporules oblong, 20—30 x 8—10 μ , rounded at the ends, hyaline, filled with granular matter.

On dead limbs of *Cornus paniculata*. London, Canada, May, 1893. Herb. D., No. 2099.

This differs from *Phoma Corni*, Fekl., and *P. Corni Succiv* (Fr.), in its much larger sporules.

DENDROPHOMA POARUM, E. & D.

Perithecia erumpent superficial, papillate, hemispheric to conical, 150 to 200 μ in diam. Sporules oblong-fusoid, hyaline, with a small nucleus in each end, 10—12 x 2—2½ μ , terminal and lateral on dichotomously branched basidia, 20 x 1½ μ .

On culms and inflorescence of *Poa Annuu*, London, Can., June, 1894. Herb. D., No. 2266.

VERMICULARIA SAMBUCINA, E. & D.

Perithecia gregarious, numerous, erumpent, hemispheric-depressed, 90—180 μ , thickly beset with dark brown, short bristles 40—100 μ , mostly about 45 μ . Sporules hyaline arcuate-fusoid, nucleolate, 24 x 3—3½ μ .

On dead young stems of *Sambucus* sp., London, Can., Aug., 1895. Herb. D., No. 2310.

DIPLODIA THALICTRI, E. & D.

Perithecia sub-gregarious, sub-cuticular, depressed-spherical or elliptical, small, 150—200 μ , visible through the thin epidermis which is raised into pustules and pierced by the papilliform, soon deciduous ostiola. Spores oblong-cylindrical, obtuse, 1-septate, pale brown, not constricted, 8—10 x 3½ μ .

On dead stems of *Thalictrum polygamum*, London, Can. Herb. D., Nos. 2211 and 2296.

ASCHOCHYTA LEONURI, E. & D.

Spots 1—1½ mm., numerous, thin, appearing as if the tissue were eaten out by a minute leaf-miner; round or angular, small, becoming confluent and then causing the part of the leaf to drop out. Perithecia 150—170 μ , visible from both sides of the leaf. Sporules oblong-cylindrical, uniseptate, pale, 14—17 x 3½—4 μ .

Perithecia larger and spores different, otherwise like *Phyllosticta decidua*, E & K.

On leaves of *Leonurus cardiaca*, L., London, Can., July, 1893. Herb. D., No. 2160.

HENDERSONIA DISCOSIODES, E. & D.

Spots deep red-brown, definite, sub-orbicular or irregular in shape, 2—10 mm. in diam. Perithecia epiphyllous, discoid, about ½ mm. diam., bordered by the ruptured epidermis, black. Sporules oblong or clavate-oblong, 3-septate and slightly constricted at the septa, smoky-hyaline, 14—16 x 4—5 μ , on slender pedicels about as long as the sporules. The spots finally become whitish in the centre.

On leaves of *Crataegus* sp., London, Can., Aug., 1893. Herb. D., No. 2186.

H. foliorum, Fekl., has curved, darker sporules than this species.

HENDERSONIA OSTRYGENA, E. & D.

Perithecia scattered, about ½ mm. in diam., buried in the bark which is blackened over them and raised into pustules pierced by the minute ostiola. Sporules oblong, 3-septate, not constricted, brown, obtuse, 10—12 x 4 μ , exceptionally with one cell divided by a longitudinal septum.

On dead limbs of *Ostrya Virginica*, London, Can., May, 1893. Herb. D., No. 2170.

CAMAROSPORUM ULMI, E. & D.

Perithecia gregarious, sub-globose, about ½ mm. in diam., soft, slate-colour in-

side buried in the bark, their minute punctiform ostiola piercing but scarcely raising the epidermis. Sporules ovate, 3-septate, sub-muriform, brown, 12—13 x 6—8 μ .

On dead branches of *Ulmus* sp., London, Can. Herb. D., No. 2286.

ASCHERSONIA CARPINICOLA, E. & D.

Stromata convex, erumpent, about 2 mm. in diam., seated on the inner bark, loosely embraced by the lobes of the ruptured epidermis, of carnose texture, nearly amber colour when fresh, darker and sub-rufous when dry, easily deciduous. Perithecia minute, buried in the stroma with their dark-coloured papilliform ostiola erumpent. Sporules elliptical, hyaline, 15—20 x 6—8 μ on short basidia.

On back of dead *Carpinus Americana*. London and Dorchester, Ont. Herb. D., No. 2173.

SEPTORIA HYDROPHYLLÆ, E. & D.

Spots brown, at first 2—4 mm., circular, at last angular; smoky beneath. Perithecia epiphyllous, numerous, 50—80 μ . Sporules straight or curved, hyaline, 35—45 x 1½ μ .

On leaves of *Hydrophyllum Virginicum* L., London, Can., May, 1893. Herb. D., No. 2130.

SEPTORIA HELIOPSISIDIS, E. & D.

Spots irregular, beginning reddish-brown, becoming darker, numerous, 2 to 5 mm. in diam. The part of the spot in which the perithecia develop becomes pallid so that the brownish spots become mottled with white areas. Perithecia amphiphyllous, on small whitish areas, sunken, dark-brown, 85—100 μ . Sporules, straight or flexuous, 23—54 μ , mostly 40 x 1 μ .

On leaves of *Heliopsis lævis* Pers., Thamesville, Ont., Aug., 1892. Herb. D., No. 1981.

PIGGOTIA NEGUNDINIS, E. & D.

On leaves of *Negundo aceroides*. Perithecia minute, subglobose or subelliptical, 50—70 μ diameter, connate in minute, flattened, punctiform tubercles thickly scattered over the lower surface of the leaf, and at first covered by the epidermis, but soon exposed. Sporules oblong, hyaline, continuous, 2½—3 x 1 μ .

Differs from *P. Fraxini* B. & C. in its smaller sporules.

On living leaves of *Negundo aceroides*, London, Can., Sept., 1896. Herb. D., No. 2402.

MELANCONIÆ.

GLOEOSPORIUM CARPINICOLUM, E. & D.

Spots sub-orbicular, definite, dark brown, 2—5 mm. in diam. Acervuli innate, numerous, minute. Conidia minute, 3—4 x 1½—2 μ , issuing on both sides of the leaf in snow-white tendrils.

On leaves of *Carpinus Americana*. London, Can., June, 1893. Herb. D., No. 2122.

Distinct from *G. Carpini* (Lib.) and from *G. Robergii* Desm., which have conidia over 10 μ long.

GLOEOSPORIUM CONFLUENS, E. & D.

Spots small, ½—3 mm., sub-orbicular, greenish at first, becoming horn-colour and finally dull white and transparent in drying, often confluent over a large part of the leaf which then may become rusty brown. Acervuli minute, inconspicuous, soon confluent so as to be indistinguishable and filling the whole interior of the spot with the oblong elliptical, continuous hyaline, 8—10 x 3—3½ μ , conidia.

On leaves of *Sagittaria variabilis*. The acervuli also appear on the petioles, and then the conidia are expelled in small white heaps. London, Can., July, 1895. Herb. D., No. 2285.

ALAN MACDOUGALL.

Alan Macdougall, F.R.S.E., M. Can. Soc. C.E., M. Inst. C.E., for ten years Secretary of the Canadian Institute, died on 23rd April, 1897, at Exmouth, Devonshire, England, after a lingering illness. For a long time his health had been failing, and early in the summer of 1896 he went to Scotland, in the hope that change of scene and a visit to his native land would lead to his recovery. But the hopes of his family and friends were to be disappointed, and he died at the comparatively early age of fifty-five. His services to the Institute as Secretary for ten years were of inestimable value, and numerous papers read by him on subjects more or less connected with his own profession of engineering bear testimony to his scientific zeal and diligence. He was son of the late Col. Macdougall, of Edinburgh, Scotland, and received his education in that city. In 1859 he entered the service of the North British Railway Company, and continued with that company till 1868, when he came to Canada, and became connected with the Toronto, Grey and Bruce Railway, then in course of construction, after which he was employed for about four years in some important lake and river improvements by the Department of Public Works of the Dominion. From 1877 to 1882 he was again in the employ of the North British Railway Company, but in the latter year he returned to Canada, and for a season was a divisional engineer on the Canadian Pacific Railway in Manitoba, after which he engaged in private practice in Toronto until, in 1887, he was made assistant city engineer. As such he conducted some interesting and valuable experiments to determine the velocity and direction of the currents in Lake Ontario, and made surveys in connection with the water supply of the city. He did not long retain his connection with the city service, and after his resignation he devoted his attention chiefly to sanitary science, being consulted as a sanitary engineer by many municipalities all over Canada, from St. John's, Newfoundland, to Victoria, British Columbia. To his enthusiastic devotion to civil engineering is very largely due the formation, in 1887, of the Canadian Society of Civil Engineers, and to the last he bent every energy to the elevation of the status of his profession in Canada. He was an ardent Scot, and took much interest in the work of the St. Andrew's Society, of which society he was elected Secretary for the year 1896; but, unfortunately, his failing health compelled him to resign after a few months' tenure of the office. He was also a member of the Gaelic Society. He was genial and kindly in his intercourse with his fellow-men, and will be long held in grateful remembrance by those who were associated with him on the Council Board of the Canadian Institute.