

Library of the Museum
OF
COMPARATIVE ZOÖLOGY,

AT HARVARD COLLEGE, CAMBRIDGE, MASS.

Founded by private subscription, in 1861.

The gift of *The Essex Institute*

No. 4198

BULLETIN

OF THE

ESSEX INSTITUTE,

VOLUME VII.

1875.

SALEM, MASS.

PRINTED AT THE SALEM PRESS.

Sm 1876.

CONTENTS.

	Page.
Regular Meeting, January 4, 1875,	1
F. W. Putnam, Archaeological Researches in Kentucky, 2.—William H. Dall, On the Mode of Burial of the Aleuthian Islands, 9.—Robert Ridgway, Lists of Birds observed at various localities contiguous to the Central Pacific Railroad from Sacramento to Salt Lake City, 10.	
Regular Meeting, January 18, 1875,	25
Haydn Brown, On Comb Manufacturing, 26.	
Regular Meeting, February 1, 1875,	27
A. Graham Bell, On the Subject of Speech, 28.—Lists of Birds observed at various localities contiguous to the Central Pacific Railroad (continued), 30.—Catalogue of the Birds ascertained to occur in Nevada, 35.	
Quarterly Meeting, Wednesday, February 10, 1875,	41
Proposals of Misses Mary E. and Abby O. Williams to deposit a collection of Paintings, 41.—A New Draft of the Constitution and By-Laws proposed, 42.	
Regular Meeting, Monday, February 15, 1875,	42
G. Batchelor, Memoir of B. F. Browne, 41.—John Robinson, Ferns of Essex County, 44.	
Regular Meeting, Monday, March 1, 1875,	54
F. W. Putnam, account of the Fortifications and other Enclosures of the Older Races of Indians in N. A., 56.	
Catalogue of the First Art Exhibition, March, 1875,	57
Regular Meeting, Monday, March 22, 1875,	63
J. H. Stevens, On the Applications of Galvanic Electricity, 63.	
Regular Meeting, Monday, April 5, 1875,	69
E. C. Bolles, On East Indian and Japanese Paper, 71.—Synonymy, Description, History, etc., of the Prairie Hare, by E. Coues, 73.	
Regular Meeting, Monday, April 19, 1875,	85
Regular Meeting, Monday, May 3, 1875,	87
Annual Meeting, Wednesday, May 12, 1875,	87
Retrospect of the year, 89; Members, 89; Meetings, 94; Lectures and Concerts, 96; Horticultural, 97; Art Exhibition, 99; Library, 100; Publications, 101; Museum, 101; Financial, 101; Officers elected, 103.	
Field Meeting at Hamilton, Thursday, June 3, 1875,	105
Ramble and Notice, 105.—F. W. Putnam, Notice of Shellheaps and Indian Relics at Newbury, 105.—A. Osgood, Notice of the Mining Lands of Newbury, 108.—J. H. Stevens, On the Cane Brakes in Louisiana, etc., 108.—L. H. Upton, List of Plants found in flower, 109.	
Regular Meeting, Monday, June 21, 1875,	110
Notice and Resolutions on the decease of C. W. Upham, 110.	

Field Meeting at Byfield, Thursday, July 1, 1875,	113
Ramble and Historical Notices, 113.—W. D. Northend, Remarks on Byfield and Dummer Academy, 120.—Remarks by J. Spofford, F. W. Putnam, J. Robinson, 126.—Haydn Brown, Amos Noyes, Samuel J. Spalding, 127.	
Regular Meeting, Wednesday, July 7, 1875,	129
Excursion to the Isles of Shoals, 129.	
Field Meeting at Concord, Tuesday, July 27, 1875,	131
Ramble, 131.—Opening Remarks by the President, 135.—Remarks by E. R. Hoar, 136, 139.—E. S. Morse, 137.—F. W. Putnam, 138.—E. C. Bolles, 139.—G. Reynolds, 140.	
Regular Meeting, Monday, August 2, 1875,	141
Regular Meeting, Monday, September 6, 1875,	142
Regular Meeting, Monday, September 20, 1875,	144
Adjourned Quarterly Meeting, Monday, October 4, 1875,	144
Adjourned Quarterly Meeting, Monday, October 11, 1875,	146
Election of Officers, 146.—John Robinson, Addenda to the Ferns of Essex County, 147.	
Regular Meeting, Monday, October 18, 1875,	149
Mr. Upham's Paper on the Settlement of Rev. S. Skelton, 149.—Mr. Kimball exhibited casts of Indian utensils, 150.	
Regular Meeting, Monday, November 1, 1875,	150
A. Graham Bell, On Visible Speech, 151.	
Second Art Exhibition, 151; Catalogue,	152
Regular Meeting, Monday, November 15, 1875,	162
Regular Meeting, Monday, December 6, 1875,	162
Wright, On "Indian Ridge and its Continuation" in Andover, 165.	
Regular Meeting, Monday, December 20, 1875,	168
Letters Announced, 1, 25, 27, 42, 55, 69, 85, 87, 118, 141, 142, 148, 150, 162.	
Additions to Library, 1, 25, 28, 42, 55, 69, 86, 88, 118, 141, 142, 145, 163.	
Additions to Museum, 2, 70, 110, 148.	

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., JANUARY, 1875. No. 1.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, JANUARY 4, 1875.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From E. P. Boon, New York, Dec. 15; Melvil Dewey, Amherst, Dec. 21, 26; W. I. Fletcher, Hartford, Conn., Dec. 31; Daniel A. Gleason, Boston, Dec. 21; Frank E. Hotchkiss, New Haven, Dec. 27; Alfred M. Mayer, South Orange, N. J., Dec. 18; Charles Phillips, Germantown, Penn., Dec. 30; Lyon, Société d' Agriculture, Juillet 20.

The LIBRARIAN reported the following additions to the library :—

By Donation.

HOTCHKISS, F. E., of New Haven, Conn. Miscellaneous pamphlets, 8.
MERRITT, L. F. Essex County Mercury for Dec. 2, 9, 16, 23, 1874.
STETSON, CHAS., of New York, N. Y. The Erie Railway Tourist. 1 vol. 4to.
WILLSON, E. B. The Christian Freeman and Record of Unitarian Worthies, Dec., 1874. Svo pamph.
WORCESTER COUNTY MUSICAL ASSOCIATION. Seventh Annual Festival, Oct. 19, 20, 21, 22, 23, 1874. Svo pamph.

By Exchange.

ACADÉMIE IMPÉRIALE DES SCIENCES, BELLES-LETTRES ET ARTS, LYON. Mémoires, classe des Sciences. Tome xx, 1873-74.

- INSTITUT HISTORIQUE, PARIS. L'Investigateur. 40 Année, No. 5. 1874.
 SOCIÉTÉ D' AGRICULTURE. D' HISTOIRE NATURELLE ET DES ARTS UTILES,
 LYON. Annales, 4e Série. Tomes iv, v. 1871-72. 2 pamphlets.
 SOCIÉTÉ LINNÉENNE, LYON. Annales. Tome xx. 1873.
 PHYSIKALISCH-MEDICINISCHE GESELLSCHAFT, WÜRZBURG. Verhandlungen,
 Neue Folge, Bd. viii. 1-2 Heft. 1874.
 ZOOLOGISCHE GESELLSCHAFT. FRANKFURT. Zool. Garten xv, Jahrg. Nos.
 1-6, 1874.
 PUBLISHERS. American Naturalist. Forest and Stream. Gloucester Telegraph.
 Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter.
 Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody
 Press. Salem Observer. Salem Post. Sailor's Magazine and Seaman's Friend.

Donations to the cabinets were announced from George L. Peabody, of New York City, a rare and valuable Japanese gold obang; from Louis F. Emilio, gold bearing quartz from the Vulture Mine, Arizona, and from Charles T. Jenkins, gold bearing quartz from Ophir Hill, Grass Valley District, Nevada County, Cal.

Mr. F. W. PUTNAM, of the committee appointed at a previous meeting to prepare a memorial for action of the Institute in relation to a proposed State Topographical, Geological and Biological Survey, reported the same, which was referred to the directors, with authority to act.

ARCHAEOLOGICAL RESEARCHES IN KENTUCKY.

Mr. F. W. PUTNAM gave an account of some of his recent archaeological investigations in Kentucky, made with the assistance furnished by the Peabody Museum of Archaeology and Ethnology at Cambridge, while he was engaged as Ichthyologist of the Kentucky State Geological Survey, of which Prof. Shaler is chief.

Confining his remarks to researches made in the caves, and in connection with a peculiar form of burial in circular graves, he first exhibited a number of skulls and other bones found under various conditions, and described the peculiarities of each group, comparing them with

those of undoubted Mound Builders, and with those of the New England Indians. While the skulls of the New England Indians are long and narrow, those from the mounds, the circular graves, the stone graves and the caves, were of the short, broad and high type; but in the caves were found two, if not three, classes of burials, and at least two well-marked forms of skulls.

The skulls found in graves which were, as a rule, protected by slabs of stone, were, so far as his researches went, of a form resembling the high, short and broad crania of the typical Mound Builders, while those from caves that contained a large number of skeletons representing bodies that had been thrown into the caves, or perhaps skeletons which had been placed there after the flesh had decayed, were quite characteristic from the very marked depression of the frontal bone and the equally marked concavity on the anterior part of the parietals. The skulls from the "circular grave" were also distinguished from the others by their decided width and shortness, and the more vertical occipital portion.

A series of shin bones was also exhibited, to show the various degrees of flattening which existed, and to prove, as shown by the researches of others, that platycnemism, while most marked in ancient and uncivilized races, could not be taken as a special race character of any great importance.

The examination of a group of mounds near Glasgow was then described, and though no human remains were found in these particular mounds, a most interesting burial place on a hill close by may have had some connection with them. This burial place consisted of a number of circular graves, most of which had been destroyed by the cultivation of the land; but one that had been undisturbed by the plough was carefully opened. This grave

was nearly a circle of about four feet in diameter, and had been dug to the depth of about three feet. Upright slabs of limestone about three feet in height, from one to two feet in width and three or four inches in thickness, had then been placed round the hole. The bottom of the grave had been covered with pieces of shale brought from Peter's Creek, about a quarter of a mile distant. The bodies, at least ten in number, had been placed in the grave, evidently arranged in a sitting posture, in a circle, with their backs against the upright slabs. A few pieces of stone found on the surface of the grave may indicate that stones had been placed over it. If any slight earth-mound had been formed over the grave, it had been washed away, as the edges of the upright stones were projecting a few inches above the present surface of the soil. From the fact that only a fragment of pottery was found among the stones on the surface of the grave, and no implements of any kind in the grave, it may be that articles since scattered were placed over the grave. The number of these circular graves that once existed at this spot on the homestead of Gen. Jos. H. Lewis, who had taken Mr. Putnam to the place, brings up many thoughts as to their connection with the group of mounds in the little valley below them, and speculations regarding their peculiar position lead Mr. Putnam to consider them as probably indicating a peculiar mode of burial which may yet be found to be as characteristic of the singular mound-building race, as the burial under mounds is now supposed to be. The fact that all the bodies must have been placed in the grave at the same time, and, as shown by the teeth, that they were those of persons of various ages, from two children who had still the first set of teeth, to a person so old as to have many of the *alveoli* closed up, while the majority were evidently of middle age; and

also from the peculiar hole in one of the arm bones, perhaps indicating a blow with some pointed instrument, gives opportunity for speculations which cannot be proved or disproved by these silent relics of a once populous race inhabiting the beautiful country where their bones were laid so long ago that tradition of the more recent Indian tribes gives no clue to them; whence they came or whither they went, all is lost in the great mystery of the past, and only their empty heads and wonderful monuments of industry, with their implements of skill, are left to tell us of their former power. We know not if these burials indicate famine, pestilence, war, or the unholy sacrifice. We can only conjecture that they were not the graves of persons who had died a natural death.

The caves of Kentucky were often used as receptacles for the dead, and many of them contain large numbers of human skeletons; but that they were also used as at least temporary places of habitation is shown by the relics found in Salt Cave, situated near the Mammoth Cave, and belonging to the same proprietors. This cave, which is a rival to the Mammoth in the size of some of its avenues, is difficult of access. A small stream of water flows over its mouth, and runs off, through the loose rocks that have fallen from the roof of the cave, to the passage on the left. After entering the cave, the descent of a steep hill of loose rock to the right leads into a large avenue of several miles in length, the floor of which is covered with jagged rocks which have fallen from above. After climbing over this rough road for some distance, small areas are observed where the rock has not fallen from above, and where the original dirt floor or river bed is seen. In these places there are to be found quite level spots where fires have been kindled, and small piles of stone placed by human hands. Here and there, in favor-

able places, other small piles of stones are to be seen erected in such a way as to leave a small hole in their centre, and at the bottom of this hole ashes and the stubs of burnt sticks can be seen; while on some of the rocks about were found small bundles of fagots tied with bark and of a convenient size to be taken in one hand and placed in the holes of the rock piles, evidently indicating that these bundles of sticks were brought into the cave for use as lights and firewood. Farther on, in side passages and chambers, other indications of habitation were noticed, and in one small chamber, in which the foot of a white man had never stepped before, were seen on the cave earth the imprints of feet that had been shod with peculiar braided moccasins or sandals. Here were in reality the "footprints on the sands of time." The naked heel and toes, and the braided covering to the sole of the foot, have left impressions as distinct in the tenacious and heavy soil of the cave as if made but a few days previous. In these side chambers, in only a few of which Mr. Putnam's guides had been before, were found a number of cast-off sandals, very finely made of the twisted leaves of the cat-tail flag (*Typha*) braided in a careful and artistic way, identical in the manner of braiding with the straw sandals from China, though of a different shape, and having a raised portion from toe to heel, like the sides of a leather slipper, while all the ends of the braids were brought forward and united on the median line over the toes. About twenty-five of these sandal-like moccasins of various sizes and of several slightly varying designs, but all worn through at toe and heel, were found in the interior chambers of the cave. A piece of cloth more than a foot square and finely and regularly woven, probably from the inner bark of some tree, was also found. This cloth was specially inter-

esting, showing as it did that it had been dyed or colored with black stripes, and also in exhibiting at one corner a place where it had been mended by darning. The other articles found in the cave, which were exhibited at the meeting, with those already mentioned, consisted of bunches of the bark such as was used to make the cloth, and of different degrees of fineness; a number of pieces of bark-twine and rope, several showing knots where pieces had been tied together, some made of twisted strands simply, while others were of a five-strand braid, and of a different and more pliable substance than the coarser-twisted kinds; a small piece of quite a delicate fringe or tassel of neatly braided fibres; a number of reed "torches," generally burnt only at one end; a few small fragments of burnt wood, one showing the rough cutting of a flint axe; several fragments of large gourds; two flint arrow points; a few fragments of shells of *Unio*; a few feathers, probably of the wild turkey, and a portion of a wooden platter or dish. No bones of animals indicating the food of these cave people were found, and though the earth in one of the chambers had been disturbed, and looked, in several places, as if burials had been made, no human bones were discovered. Mr. Putnam intended to make further explorations in this cave, but a severe illness, brought on by exposure and fatigue in the caves, prevented him at that time from carrying out his plan. Enough was discovered, however, to show the importance of a thorough exploration of the caves in this country, both to ascertain the facts relating to their having been used as habitations and as sepulchres, and Mr. Putnam stated that it was encouraging to science to feel that the work begun by the Kentucky Survey, with the assistance given by the Peabody Museum of Archæology at Cambridge, will be continued until more is known relat-

ing to the archæology of this large and most important group of American caves.

The discovery, by the saltpetre miners of 1812-15, of bodies buried with care in some of the caves of Kentucky and Tennessee, and the numerous articles which had been found with them, was alluded to by Mr. Putnam, who stated that since his return from Kentucky he had examined the body, and what remained of the very large number of articles found with it, that was so widely known as the "Mammoth Cave Mummy" sixty years ago. This body was, in reality, found in Short Cave, situated about eight miles from the Mammoth Cave, and had been taken to the latter place for the purpose of exhibition. Mr. Putnam had visited the spot from which the body had been taken, and from the location of the grave thought that there was some evidence of the burial having been prior to the fall of the roof rock, which seems to have taken place in many of the caves in this region at a remote time. In some of the caves large stalagmites have formed over these fallen rocks, though in most of the caves where this falling has occurred the passages were dry at the time, and have so continued. He was glad to state that though these priceless relics of a former race had been sadly neglected, and many of the articles found in the grave had been lost and others had gone to decay, still enough remained at the rooms of the American Antiquarian Society at Worcester, to identify the articles found by him in Salt Cave as the same in material, design and structure as those found with the body in Short Cave, so that he had thus secured undoubted osteological characters of the race to go with the articles of clothing, etc., of the people who had made use of Salt Cave as a habitation, and he thought, from all that had been found, we could, with little doubt, class this people

among the more highly civilized and agricultural of the prehistoric races of America, and it was also very probable that Salt Cave had only been used as a temporary retreat. A number of fragments of the twine, cloth, etc., found with the body now in the collection of the Antiquarian Society, were exhibited side by side with similar ones from Salt Cave, and were seen to be of the same character. All the specimens of cloth, etc., from Salt Cave were extremely brittle, and had only been preserved by saturating in gelatine and afterwards mounting between glass, while those from the grave in Short Cave were, from some cause, still in their natural pliable condition. In this connection it is also interesting to record the fact that the wooden bowl from the Mammoth Cave, in the collection of the American Antiquarian Society at Worcester, is the one which tradition gives as having been found in the passage of the Mammoth Cave, still known, from this circumstance, as the wooden-bowl chamber, and it is probable that the fragment of the wooden vessel found in Salt Cave was part of a similar article.

Capt. WM. H. DALL, of the United States Coast Survey, alluded to the mode of burial of the Aleutian Islanders, and of the preparation of the bodies after death, by which they were partially mummified. He also spoke of the beautiful braided grass-work of the Aleuts, and stated that the Eskimos made a kind of a stocking of braided grass, which they wore inside of their boots as an extra protection to the feet.

LISTS OF BIRDS OBSERVED AT VARIOUS LOCALITIES CONTIGUOUS
TO THE CENTRAL PACIFIC RAILROAD, FROM SACRAMENTO
CITY, CALIFORNIA, TO SALT LAKE CITY, UTAH.

BY ROBERT RIDGWAY.

Continued from page 174, Vol. vi.

The following species were found breeding on the adjacent mountains eastward of the Sierra Nevada, in July and August, 1867, and April and May, 1868:—

1. *Sialia arctica*. Abundant.
2. *Lophophanes inornatus*. Common (locally).
3. *Psaltriparus minimus plumbeus*. Abundant (locally).
4. *Salpinctes obsoletus*. Very abundant.
5. *Catherpes Mexicanus conspersus*. Rare.
6. *Myiadestes Townsendi*. Common?
7. *Pipilo erythrophthalmus Oregonus*. Abundant.
8. *P. chlorurus*. Common.
9. *Scotocophagus cyanocephalus*. Very abundant.
10. *Corvus corax carnivorus*. Abundant.
11. *Gymnokitta cyanocephala*. Abundant.
12. *Empidonax obscurus*. Common.
13. *Selasphorus rufus*. Abundant.
14. *Trochilus Alexandri*. Abundant.
15. *Archibuteo lagopus Sanctijohannis*. Common.
16. *Aquila chrysaetus Canadensis*. Common.
17. *Falco saker polyagrus*. Common.
18. *F. columbarius*. Rare?
19. *Nisus Cooperi*. Rare.
20. *Oreortyx pictus plumifera*. Rare.

III. WESTERN NEVADA, ETC.

a. Eagle Valley (November 29, 1867).

In Eagle Valley but one locality was visited, viz., the town of Genoa and vicinity, including marshes in the valley and pine forests on the Sierra Nevada. In the former the usual species of water fowl were found, and also *Circus hudsonius* and *Falco polyagrus*. In the pines the species were the same as those near Carson City, but the mountain quail (*Oreortyx pictus plumifera*) was more common.

b. Carson Valley (Nov. 27-29, 1867; Jan 13-April 29, 1868).

The species breeding in the vicinity of Carson City were divided into three groups—one inhabiting the pine woods of the Sierra Nevada (Washoe Spur), one the cedar and piñon groves of the ranges

to the eastward, and the other the sage brush wastes and other localities in the valleys. The first two sets are included in lists under the head of II, d; the other was composed of the following species, inhabiting chiefly the sage brush and meadows:—

(*Sage-brush plains.*)

1. *Oreoscoptes montanus*. Very abundant.
2. *Eremophila alpestris chrysolæma*. Common.
3. *Collurio Ludovicianus excubitoroides*. Common.
4. *Poospiza Belli Nevadensis*. Very abundant.
5. *P. bilineata*. Rare.
6. *Spizella Breweri*. Abundant.
7. *Chondestes grammaca*. Common.
8. *Antrostomus Nuttalli*. Common.
9. *Chordeiles popetue Henryi*. Common.
10. *Speotyto cunicularia hypogæa*. Rare.
11. *Zenaidura Carolinensis*. Very abundant.
12. *Centrocercus urophasianus*. Rare.

(*River valley.*)

1. *Geothlypis trichas*. Common.
2. *Icteria virens longicauda*. Common.
3. *Pyrranga Ludoviciana*. Common.
4. *Vireo gilvus Swainsoni*. Abundant.
5. *Poocetes gramineus confinis*. Rare.
6. *Passerculus savanna alaudinus*. Common.
7. *Coturniculus passerinus perpallidus*. Common.
8. *Hedymeles melanocephalus*. Common.
9. *Cyanospiza amœna*. Common.
10. *Carpodacus frontalis*. Common.
11. *Melospiza melodia Heerinaumi*. Common.
12. *Pipilo erythrophthalmus Oregonus*. Common.
13. *Agelaius phoeniceus*. Abundant.
14. *Xanthocephalus icterocephalus*. Abundant.
15. *Sturnella neglecta*. Abundant.
16. *Icterus Bullocki*. Abundant.
17. *Pica melanoleuca Hudsonica*. Very abundant.
18. *Tyrannus verticalis*. Very abundant.
19. *Contopus Richardsoni*. Abundant.
20. *Empidonax pusillus*. Abundant.
21. *Otus vulgaris Wilsonianus*. Common.
22. *Bubo Virginianus arcticus*. Rare.
23. *Falco sparverius*. Very abundant.
24. *Ægialitis vociferus*. Abundant.

25. *Tringoides macularius*. Abundant.
 26. *Herodias alba egretta*. Rare.
 27. *Nyctiardea grisea navia*. Rare.
 28. *Botaurus minor*. Common.
 29. *Grus Canadensis*. Common.
 30. *Porzana Carolina*. Common.
 31. *Fulica Americana*. Common.
 32. *Anas boschas*. Common.
 33. *Querquedula cyanoptera*. Common.

(*In suitable localities.*)

1. *Progne subis*. Common.
 2. *Tachycineta bicolor*. Abundant.
 3. *Cotyle riparia*. Common.
 4. *Stelgidopteryx serripennis*. Abundant.
 5. *Hirundo horreorum*. Common.
 6. *Petrochelidon lunifrons*. Very abundant.
 7. *Sayornis Sayus*. Common.
 8. *Ceryle alcyon*. Common.

Farther down the river, where the cottonwood trees increase in number, the fauna was augmented by *Nephaecetes niger* (extremely abundant), *Buteo Swainsoni* and *B. borealis calurus*, thus becoming essentially like that of the lower Truckee Valley (see table f.).

CATALOGUE OF WINTER RESIDENTS IN THE VICINITY
OF CARSON CITY.

No.	Species.	Numbers.	Localities frequented.
1	<i>Turdus migratorius</i> . . .	Common	Willows.
2	<i>Cinclus Mexicanus</i> . . .	Rare	Streams.
3	<i>Sialia Mexicana</i>	Abundant	Fields and pines.
4	<i>S. arctica</i>	Abundant	Cedars and open fields.
5	<i>Regulus calendula</i> . . .	Abundant	Willows.
6	<i>Lophophanes inornatus</i>	Abundant	Pines and cedars.
7	<i>Parus montanus</i>	Abundant	Pines only.
8	<i>Psaltriparus minimus</i> <i>plumbeus</i>	Sometimes met with	Brushy ravines.
9	<i>Sitta Carolinensis aculeata</i>	Abundant	Pines only.
10	<i>S. pygmaea</i>	Abundant	Pines only.
11	<i>Certhia Americana</i>	Not common	All wooded places.
12	<i>Catherpes Mexicana</i> <i>conspersus</i>	Common	Secluded rocky places.
13	<i>Telmatodytes palustris</i> <i>paludicola</i>	Common	Tules and rushes.
14	<i>Troglodytes aedon</i> <i>Parkmanni</i>	Not common	Brushwood and willows.
15	<i>T. hyemalis Pacificus</i> . .	Rare	River bottoms.
16	<i>Anthus Ludovicianus</i> . . .	Extremely abundant.	All wet open portions.
17	<i>Dendroica Auduboni</i>	Common	Willows and cotton woods.
18	<i>Collurio borealis</i>	Not common	Open situations.

No.	Species.	Numbers.	Localities frequented.
19	<i>C. Ludovicianus</i>	Abundant	Open situations.
20	<i>excubitoroides</i>	Rare	Mixed with flocks of <i>Ere-</i> <i>mophila</i> .
21	<i>Plectrophanes Lapponicus</i>		
21	<i>Zonotrichia leucophrys</i>	Abundant	Willows and brushwood.
22	<i>intermedia</i>	Abundant	All wooded places.
23	<i>Junco hyemalis Oregonus</i>	Abundant	Sage-brush only.
23	<i>Poospiza Belli Nevadensis</i>	Abundant	Sage-brush and brush-
21	<i>Spizella monticola</i> . . .	Common	wood.
25	<i>Melospiza melodia</i>		
26	<i>Heermanni</i>	Abundant	Willows and fules.
26	<i>Passerella schistacea</i> .	Rare	Willows along streams.
27	<i>Pipilo erythrophthalmus</i>		
28	<i>Oregonus</i>	Abundant	All bushy places.
28	<i>Eremophila alpestris</i>		
29	<i>chrysolama</i>	Exceedingly abund't.	All open portions.
30	<i>Agelaius phoeniceus</i> . .	Abundant	Vicinity of corrals.
30	<i>Xanthocephalus</i>		
31	<i>icterocephalus</i>	Not common	Vicinity of corrals.
31	<i>Sturnella neglecta</i>	Abundant	Sage-brush and fields.
32	<i>Scolecophagus</i>		
32	<i>cynocephalus</i>	Extremely abundant	Vicinity of corrals.
33	<i>Pica melanoleuca</i>		
33	<i>Hudsonica</i>	Abundant	Everywhere, particularly
34	<i>Cyanura Stelleri frontalis</i>	Abundant	around slaughter-houses.
35	<i>Gymnokitta cyanocephala</i>	Abundant	Pines and brushy ravines.
36	<i>Picicorvus Columbianus</i>	Abundant	Pine and cedars only.
37	<i>Corvus corax carnivorus</i>	Abundant	Pines only.
38	<i>Corvus villosus Harrisii</i> .	Common	About slaughter-houses.
38	<i>Picus villosus Harrisii</i> .	Common	All wooded places.
39	<i>P. albolarvatus</i>	Rather common	Pines only.
40	<i>Picoides arcticus</i>	Rare	Pines only.
41	<i>Sphyrapicus thyroideus</i>	Common	Pines only.
42	<i>Colaptes auratus</i>		
42	<i>Mexicanus</i>	Abundant	Everywhere.
43	<i>Speotyto cunicularia</i>		
43	<i>hypogaea</i>	Rare	Sage-brush and fields.
44	<i>Bubo Virginianus arcticus</i>	Rare	Woods.
45	<i>Otus vulgaris Wilsonianus</i>	Common	Willows.
46	<i>Falco saker polyagrus</i> .	Common	Open situations.
47	<i>F. columbarius</i>	Rare	Open situations.
48	<i>F. sparverius</i>	Very abundant	Woods chiefly.
49	<i>Circus cyaneus Hudsonius</i>	Common	Marshes and streams.
50	<i>Nisus Cooperi</i>	Rare	General.
51	<i>Aquila chrysaetos</i>		
51	<i>Canadensis</i>	Common	Mountains.
52	<i>Archibuteo lagopus</i>		
52	<i>Sanctijohannis</i>	Common	General.
53	<i>Buteo borealis calurus</i>	Common	Woods chiefly.
54	<i>B. Swainsoni</i>	Common	River valley.
55	<i>Oreortyx pictus plumifera</i>	Rare	Mountains.
55	<i>Agelaius vociferus</i> . . .	Rare	streams.
57	<i>Botaurus minor</i>	Rare	Marshes and streams.
58	<i>Branca Canadensis</i> . . .	Abundant	Lakes, etc.
59	<i>B. Hutchinsi</i>	Abundant	Lakes, etc.
60	<i>Anas boschas</i>	Abundant	Lakes, etc.
61	<i>Aythya Americana</i> . . .	Abundant	Lakes, etc.
62	<i>A. vallisneria</i>	Abundant	Lakes, etc.
63	<i>Bucephala Americana</i> . .	Abundant	Lakes, etc.
64	<i>B. albeola</i>	Abundant	Lakes, etc.
65	<i>Fulix marila</i>	Abundant	Lakes, etc.
66	<i>F. collaris</i>	Abundant	Lakes, etc.
67	<i>Eris-matura rubida</i> . . .	Abundant	Lakes, etc.
68	<i>Podiceps occidentalis</i> . .	Common	Lakes, etc.
69	<i>P. auritus Californicus</i> .	Common	Lakes, etc.
70	<i>Podilymbus podiceps</i> . .	Common	Lakes, etc.

d. Washoe Valley (May 9, 1868).

In passing by the shore of Washoe Lake, large numbers of the following species were seen:—*Fulica Americana*, *Sterna regia*, *S. Forsteri* and *Hydrochelidon fissipes*. Among the open pine groves and scattered pine trees which reached from the slope of the lofty and heavily timbered Washoe Mountains out some distance upon the valley, the characteristic birds were *Cyanura Stelleri frontalis*, *Melanerpes torquatus*, *Sialia Mexicana* and *Turdus migratorius*; penetrating a short distance into the forest, *Picus albolarvatus* and *Passerella iliaca megarhynchus* were found to be common.

e. Truckee Meadows (July 16-20; November 5-7 and 11-20, 1867).

The characteristic birds of the summer fauna were chiefly numerous water-fowl, especially *Querquedula cyanoptera*, *Chaulelasmus streperus*, *Anas boschas*, *Fulica Americana*, *Recurvirostra Americana*, and *Himantopus nigricollis*, all found in the greatest abundance. In the fall the following species not met with in the summer, were observed:—*Anthus Ludovicianus* (excessively abundant), *Corvus Americanus* (common), *Archibuteo lagopus Sanctijohannis* (abundant). A yellow-winged *Colaptes*, probably *C. chrysoides*, was seen.

f. Catalogue of the Birds breeding in the Truckee Valley (May and June, 1868 and July and August, 1867.)

1. *Oreoscoptes montanus*. Common.
2. *Troglodytes ædon Parkmanni*. Abundant.
3. *Telmatodytes palustris paludicola*. Abundant.
4. *Dendroica æstiva*. Abundant.
5. *Geothlypis trichas*. Common.
6. *Icteria virens longicauda*. Common.
7. *Pyrranga Ludovicianus*. Common.
8. *Hirundo horreorum*. Common.
9. *Tachycineta bicolor*. Very abundant.
10. *Progne subis*. Rare.
11. *Stelgidopteryx serripennis*. Abundant.
12. *Cotyle riparia*. Abundant.
13. *Petrochelidon lunifrons*. Abundant.
14. *Vireo gilvus Swainsoni*. Abundant.
15. *Collurio Ludovicianus exaubitoroides*. Common.
16. *Carpodacus frontalis*. Common.
17. *Chrysomitris tristis*. Rare.
18. *Passerculus savanna alaudinus*. Common.
19. *Poocetes gramineus confinis*. Rare.

20. *Melospiza melodia* Heermanni. Abundant.
21. *Poospiza bilineata*. Common.
22. *P. Belli* Nevadensis. Abundant.
23. *Spizella socialis* Arizonae. Abundant.
24. *S. Breweri*. Abundant.
25. *Chondestes grammacus*. Abundant.
26. *Hedymeles melanocephalus*. Common.
27. *Cyanospiza amoena*. Rare.
28. *Pipilo erythrophthalmus* Oregonus. Common.
29. *P. chlorura*. Rare.
30. *Molothrus pecoris*. Rare.
31. *Agelaius phoeniceus*. Abundant.
32. *Xanthocephalus icterocephalus*. Abundant.
33. *Sturnella neglecta*. Abundant.
34. *Icterus Bullocki*. Abundant.
35. *Pica melanoleuca* Hudsonica. Abundant.
36. *Tyrannus Carolinensis*. Common.
37. *T. verticalis*. Abundant.
38. *Myiarchus crinitus cinerascens*. Rare.
39. *Sayornis Sayus*. Rare.
40. *Contopus Richardsoni*. Abundant.
41. *Empidonax pusillus*. Abundant.
42. *Chordeiles popetue* Henryi. Common.
43. *Nephœcetes niger borealis*. Rare.
44. *Chætura Vauxi*. Common.
45. *Trochilus Alexandri*. Abundant.
46. *Ceryle alcyon*. Common.
47. *Coccyzus Americanus*. Rare.
48. *Picus villosus* Harrisii. Common.
49. *Colaptes auratus* Mexicanus. Abundant.
50. *Bubo Virginianus arcticus*. Common.
51. *Otus vulgaris* Wilsonianus. Common.
52. *Circus cyaneus* Hudsonius. Abundant.
53. *Falco sparverius*. Very abundant.
54. *Buteo borealis* calurus. Common.
55. *B. Swainsoni*. Common.
56. *Pandion haliaëtus* Carolinensis. Rare.
57. *Rhinogryphus aura*. Abundant.
58. *Zenaidura Carolinensis*. Very abundant.
59. *Ægialitis vociferus*. Common.
60. *Recurvirostra Americana*. Common.
61. *Himantopus nigricollis*. Common.
62. *Rhyacophilus glareola solitarius*. Rare.
63. *Tringoides macularius*. Common.

64. *Numenius longirostris*. Rare.
65. *Herodias alba egretta*. Rare.
66. *Nyctiardea grisea naevia*. Rare.
67. *Botaurus minor*. Common.
68. *Ardetta exilis*. Rare.
69. *Grus Canadensis*. Common.
70. *Rallus Virginianus*. Common.
71. *Porzana Carolina*. Common.
72. *Fulica Americana*. Abundant.
73. *Branta Canadensis*. Common.
74. *Anas boschas*. Very abundant.
75. *Dafila acuta*. Common?
76. *Chaulelasmus streperus*. Very abundant.
77. *Mareca Americana*. Common.
78. *Querquedula cyanoptera*. Abundant.
79. *Q. discors*. Rare?
80. *Spatula clypeata*. Common?
81. *Aix sponsa*. Rare?
82. *Erismatura rubida*.
83. *Graculus dilophus*.
84. *Sterna regia*.
85. *S. Forsteri*.
86. *Podiceps occidentalis*.
87. *P. auritus Californicus*.
88. *Podilymbus podiceps*.

g. Species breeding on adjacent plateaux.

1. *Eremophila alpestris chrysolæma*. Common.
2. *Antrostomus Nuttalli*. Common.
3. *Speotyto cunicularia hypogæa*. Rare.
4. *Centrocercus urophasianus*. Common.

h. Species breeding on the rocky islands in Pyramid Lake.

1. *Tachycineta thalassina*. Abundant.
2. *Falco communis anatum*. One pair.
3. *Haliaëtus leucocephalus*. One pair.
4. *Ardea herodias*. Abundant.
5. *Pelecanus erythrorhynchus*. Excessively abundant.
6. *Larus Californicus*. Excessively abundant.

The following notes relate further to the bird-fauna of Western Nevada:

List of species observed in the Lower Truckee Valley in
May and not at other times.

1. *Nephœcetes niger borealis*. Rare.
2. *Chætura Vauxi*. Common.
3. *Trochilus Alexandri*. Common.
4. *Turdus Swainsoni ustulatus*. Rare.
5. *Carpodacus frontalis*. Abundant.
6. *Molothrus pecoris*. Rare.

Species seen only in July and August.

1. *Selasphorus rufus*. Very abundant.
2. *Tyrannus Carolinensis*. Several pairs.
3. *Myiodiocetes pusillus*. Rare.

Species seen only in December.

1. *Regulus calendula*. Very abundant.
2. *Anthus Ludovicianus*. Very abundant.
3. *Dendroica Auduboni*. Very abundant.
4. *Sialia arctica*. Rare.
5. *Troglodytes parvulus hyemalis*. Rare.
6. *Certhia familiaris fusca*. Rare.
7. *Zonotrichia leucophrys intermedia*. Very abundant.
8. *Junco hyemalis Oregonus*. Very abundant.
9. *Spizella monticola*. Common.

SPRING ARRIVAL OF BIRDS IN WESTERN NEVADA IN 1868.

a. Carson City.

1. <i>Sayornis Sayus</i>	March 12.
2. <i>Salpinctes obsoletus</i>	" 20.
3. <i>Oreoscoptes montanus</i>	" 24.
4. <i>Tachycineta bicolor</i>	" 25.
5. <i>Poocætes gramineus confinis</i> . . .	April 1.
6. <i>Rhinogryphus aura</i>	" 2.
7. <i>Hirundo horreorum</i>	" 8.
8. <i>Spizella Breweri</i>	" 9.
9. <i>Stelgidopteryx serripennis</i>	" 15.
10. <i>Empidonax obscurus</i>	" 21.
11. <i>Tyrannus verticalis</i>	" 22.
12. <i>Progne subis</i>	" 23.
13. <i>Zenaidura Carolinensis</i>	" 23.
14. <i>Pipilo chlorurus</i>	" 25.

15. <i>Melanerpes torquatus</i>	April	25.
16. <i>Spizella socialis Arizonae</i>	"	29.
17. <i>Cyanocitta Floridae Californica</i>	"	29.
18. <i>Melospiza Lincolni</i>	"	29.
19. <i>Tringoides macularius</i>	"	29.
20. <i>Vireosylva gilva Swainsoni</i>	"	29.
21. <i>Chondestes grammacus</i>	May	3.
22. <i>Myiadestes Townsendii</i>	"	4.
23. <i>Petrochelidon lunifrons</i>	"	4.

b. Washoe Valley.

24. <i>Fulica Americana</i>	May	9.
25. <i>Sterna regia</i>	"	9.
26. <i>Hydrochelidon fissipes</i>	"	9.

(These were all abundant at this date.)

c. Steamboat Valley.

27. <i>Dendroica aestiva</i>	May	9.
28. <i>Cyanospiza amœna</i>	"	9.
29. <i>Icterus Bullocki</i>	"	9.

d. Truckee Meadows.

30. <i>Geothlypis trichas</i>	May	10.
31. <i>Icteria virens longicauda</i>	"	10.
32. <i>Pyrrhuloxia ludoviciana</i>	"	10.

e. Truckee Reservation, near Pyramid Lake.

33. <i>Carpodacus frontalis</i>	May	13.
34. <i>Poospiza bilineata</i>	"	13.
35. <i>Rhyacophilus glareola solitarius</i>	"	13.
36. <i>Hedymeles melanocephalus</i>	"	14.

IV. EASTERN NEVADA, ETC.

a. Birds found in the West Humboldt Mountains,
Sept. 3-Oct. 23, 1867.

1. *Turdus migratorius*. Common.
2. *Sialia arctica*. Common.
3. *Cinclus Mexicanus*. Common.

4. *Psaltriparus minimus plumbeus*. Abundant.
5. *Salpinctes obsoletus*. Common.
6. *Troglodytes ædon Parkmanni*. Common.
7. *Anthus Ludovicianus*. Common.
8. *Eremophila alpestris chrysolæma*. Common.
9. *Helminthophaga celata*. Common.
10. *H. celata lutescens*. Rare.
11. *Dendroica æstiva*. Common.
12. *D. Auduboni*. Common.
13. *Geothlypis Macgillivrayi*. Common.
14. *Icteria virens longicauda*. Common.
15. *Myiodioctes pusillus*. Abundant.
16. *Vireosylva gilva Swainsoni*. Abundant.
17. *Lanivireo solitaria Cassini*. Rare.
18. *L. solitarius*. Very rare.
19. *Collurio Ludovicianus excubitoroides*. Rather common.
20. *Carpodacus frontalis*. Rare.
21. *Passerculus savanna alaudinus*. Common.
22. *Melospiza melodia fallax*. Common.
23. *M. melodia guttata*. One specimen.
24. *Zonotrichia leucophrys intermedia*. Abundant.
25. *Z. coronata*. One specimen.
26. *Poospiza Belli Nevadensis*. Rare.
27. *P. bilineata*. Rare.
28. *Junco hyemalis Oregonus*. Common.
29. *Hedymeles melanocephalus*. Common.
30. *Pipilo erythrophthalmus Oregonus*. Common.
31. *P. chlorura*. Common.
32. *Agelaius phœniceus*. Common.
33. *Sturnella neglecta*. Common.
34. *Icterus Bullocki*. Rare.
35. *Scolecophagus cyanocephalus*. Very abundant.
36. *Corvus corax carnivorus*. Common.
37. *Pica melanoleuca Hudsonica*. Abundant.
38. *Cyanocitta Floridana Woodhousii*. Common.
39. *Sayornis Sayus*. Common.
40. *Empidonax obscurus*. Rare.
41. *Colaptes auratus Mexicanus*. Common.
42. *C. chrysoides?* One specimen.
43. *Nisus Cooperi*. Rare.
44. *Ectopistes migratoria*. One specimen.
45. *Zenaidura Carolinensis*. Abundant.
46. *Centrocercus urophasianus*. Common.
47. *Regulus calendula*. Common.

b. Species breeding on Toyabe Mountains, at an altitude of about
6,500-7,000 feet (Austin, July 2-4, 1868).

1. *Oreoscoptes montanus*. Rare.
2. *Turdus migratorius*. Common.
3. *Pipilo chlorurus*. Very abundant.
4. *Empidonax obscurus*. Abundant.
5. *Eremophila alpestris* (*leucolæma*?) Common.
6. *Spizella Breweri*. Abundant.
7. *Cyanospiza amœna*. Common.
8. *Poocætes gramineus confinis*. Common.
9. *Panyptila saxatilis*. Rare.

c. Eastern slope of Ruby Mountains (July 13-Sept. 1).

1. *Turdus migratorius*. Common.
2. *Oreoscoptes montanus*. Rare.
3. *Sialia arctica*. Abundant.
4. *Parus montanus*. Rare.
5. *Psaltriparus minimus plumbeus*. Rare.
6. *Salpinctes obsoletus*. Common.
7. *Catherpes Mexicanus conspersus*. Rare.
8. *Troglodytes ædon Parkmanni*. Common.
9. *Eremophila alpestris* (*chrysolæma*?) Common.
10. *Helminthophaga Virginiae*. Common.
11. *Dendroica æstiva*. Abundant.
12. *D. nigrescens*. Common.
13. *Geothlypis Macgillivrayi*. Common.
14. *Icteria virens longicauda*. Rare.
15. *Myiodytes pusillus*. Rare.
16. *Pyrranga Ludoviciana*. Common.
17. *Tachycineta thalassina*. Abundant.
18. *Hirundo horreorum*. Common.
19. *Petrochelidon lunifrons*. Very abundant.
20. *Vireo solitarius plumbeus*. Common.
21. *Vireosylva gilva Swainsoni*. Abundant.
22. *Collurio Ludovicianus excubitoroides*. Common.
23. *Carpodacus Cassini*. Very abundant.
24. *Loxia leucoptera*. One specimen.
25. *Chrysomitris pinus*. Very abundant.
26. *C. tristis*. Rare.
27. *Poocætes gramineus confinis*. Common.
28. *Melospiza melodia fallax*. Common.

¹What was taken to be *P. melanotis*, a North Mexican species, was seen here.

29. *Poospiza Belli Nevadensis*. Common.
30. *Spizella Breweri*. Common.
31. *S. socialis Arizonae*. Very abundant.
32. *Chondestes grammaca*. Common.
33. *Hedymeles melanocephalus*. Common.
34. *Cyanospiza amœna*. Common.
35. *Pipilo erythrophthalmus megalonyx*. Rare.
36. *P. chlorura*. Rare.
37. *Icterus Bullocki*. Common.
38. *Scolecophagus cyanocephalus*. Rare.
39. *Corvus corax carnivorus*. Common.
40. *Picicorvus Columbianus*. Common.
41. *Gymnokitta cyanocephala*. Common.
42. *Cyanocitta Floridana Woodhousii*. Common.
43. *Tyrannus verticalis*. Abundant.
44. *Myiarchus crinitus cinerascens*. Common.
45. *Sayornis Sayus*. Common.
46. *Contopus borealis*. Rare.
47. *C. Richardsoni*. Abundant.
48. *Empidonax obscurus*. Abundant.
49. *E. pusillus*. Abundant.
50. *Antrostomus Nuttalli*. Common.
51. *Chordeiles popetue Henryi*. Abundant.
52. *Panyptila saxatilis*. Excessively abundant.
53. *Stellula calliope*. Common.
54. *Selasphorus platycercus*. Excessively abundant.
55. *Trochilus Alexandri*. Common.
56. *Picus villosus Harrisi*. Rare.
57. *Colaptes auratus Mexicanus*. Common.
58. *Falco saker polyagrus*. Common.
59. *F. sparverius*. Abundant.
60. *Aquila chrysaëtus Canadensis*. Common.
61. *Buteo borealis calurus*. Common.
62. *B. Swainsoni*. Common.
63. *Nisus Cooperi*. Rare.
64. *Zenaidura Carolinensis*. Abundant.
65. *Centrocercus urophasianus*. Common.

d. Species found on the eastern slope of the East Humboldt
Mountains (September 4-10, 1868.)

1. *Troglodytes aëdon Parkmanni*. Common.
2. *Helminthophaga ruficapilla*.² One specimen.

² The species in italic were met with no farther west than this locality.

3. *H. celata*. Very abundant.
4. *H. celata lutescens*.³ Very rare.
5. *Dendroica Townsendi*. Rare.
6. *D. occidentalis*. Rare.
7. *Geothlypis trichas*. Common.
8. *G. Macgillivrayi*. Common.
9. *Turdus Swainsoni*. Common.
10. *Chrysomitris pinus*. Abundant.
11. *Pooecetes gramineus confinis*. Abundant.
12. *Contopus Richardsoni*. Common.
13. *Empidonax obscurus*. Abundant.
14. *E. Hammondi*. Common.
15. *Selasphorus rufus*.³ One pair.
16. *S. platycercus*. Abundant.
17. *Melanerpes torquatus*. Common.
18. *Canace obscura*. Common.

e. Species observed in the Upper Humboldt Valley

(September 10-19).

1. *Turdus Pallasi nanus*. One specimen.
2. *T. Swainsoni*. Common.
3. *Helminthophaga celata*. Common.
4. *Sitta Canadensis*. Rare.
5. *Ampelis cedrorum*. Rare.
6. *Vireo solitarius*. Rare.
7. *Passerculus savanna alaudinus*. Common.
8. *Zonotrichia leucophrys intermedia*. Abundant.
9. *Melospiza melodia fallax*. Abundant.
10. *M. Lincolnii*. Common.
11. *Passerella iliaca schistacea*. Common.
12. *Junco hyemalis Oregonus*. Abundant.
13. *Pipilo chlorura*. Common.
14. *Empidonax obscurus*. Common.
15. *Antrostomus Nuttalli*. Common.
16. *Picus villosus Harrisii*. Common.
17. *P. pubescens Gairdneri*. Rare.
18. *Sphyrapicus varius nuchalis*. Rare.
19. *Melanerpes torquatus*. Rare.
20. *Nisus fuscus*. Common.
21. *Pediocetes phasianellus Columbianus*. Abundant.

³ These species were seen no farther east than this locality.

f. Species found in the Lower Humboldt Valley (at the "Sink,"
August 20-27, 1867).

1. *Passerculus savanna alaudinus*. Abundant.
2. *Eremophila alpestris chrysolæma*. Abundant.
3. *Corvus corax carnivorus*. Abundant.
4. *Recurvirostra Americana*. Abundant.
5. *Himantopus nigricollis*. Abundant.
6. *Actodromus minutilla*. Abundant.
7. *A. Bairdi*. Abundant.
8. *Ereunetes pusillus*. Abundant.
9. *Ibis thalassinus*. Abundant.
10. *Sterna regia*. Abundant.
11. *S. Forsteri*. Abundant.

At the town of Oreana, about a day's journey above, *Ibis thalassinus* was found, and also several species of land birds, in addition to the above, as *Oreoscoptes montanus*, *Poospiza Belli Nevadaensis*, *Melospiza melodia fallax*, *Xanthocephalus icterocephalus*, *Agelaius phœniceus*, *Sturnella neglecta*, etc.

g. List of species found at Soda Lake, Carson Desert
(June 23, 1868).

1. *Phænopepla nitens?* One specimen.
2. *Himantopus nigricollis*. Abundant.
3. *Recurvirostra Americana*. Abundant.

h. Species found at Ruby and Franklin Lakes, Ruby Valley
(July 13-September 4, 1868.)

1. *Geothlypis trichas*. Common.
2. *Telmatodytes palustris paludicola*. Common.
3. *Coturniculus passerinus perpallidus*. Common.
4. *Passerculus savanna alaudinus*. Abundant.
5. *Agelaius phœniceus*. Abundant.
6. *Xanthocephalus icterocephalus*. Abundant.
7. *Dolichonyx oryzivorus*. Abundant.
8. *Ibis guarauna?* Abundant.
9. *Ardea herodias*. Abundant.
10. *Fulica Americana*. Abundant.
11. *Branta Canadensis*. Abundant.
12. *Anas boschas*. Abundant.
13. *Sterna Forsteri*. Abundant.
14. *Hydrochelidon flssipes*. Abundant.

i. Species seen in Thousand Spring Valley (Sept. 20-25).

1. *Dendroica Townsendi*.
2. *Zonotrichia leucophrys intermedia*.
3. *Empidonax obscurus*.
4. *Picus villosus Harrisii*.
5. *Sphyrapicus varius nuchalis*.
6. *Nyctale acadica*.

j. Species observed at "City of Rocks," southern Idaho
(October 3, 1868).

1. *Corvus corax carnivorus*. Common.
2. *Gymnokitta cyanocephala*. Abundant.
3. *Cyanocitta Florida Woodhousii*. Abundant.
4. *Centrocercus urophasianus*. Common.
5. *Rhinogryphus aura*. Common.

k. Species found at Deep Creek, Northwestern Utah (Oct. 5, 1868.)

1. *Telmatodytes palustris paludicola*. Abundant.
2. *Geothlypis trichas*. Common.
3. *Zonotrichia leucophrys intermedia*. Abundant.
4. *Melospiza melodia fallax*. Abundant.
5. *M. Lincolnii*. Common.

V. EASTERN UTAIL.⁴

a. Species breeding in the Salt Lake Valley (May 20-June 2, and
June 16-21, 1869).

1. *Turdus migratorius*. † Rare?
2. *Oreoscoptes montanus*. Common.
3. *Galeoscoptes Carolinensis*. Common.
4. *Sialia arctica*. † Common.
5. *Troglodytes ædon Parkmanni*. Common.
6. *Telmatodytes palustris paludicola*. Very abundant.
7. *Eremophila alpestris chrysolæma*. Common.
8. *Dendroica æstiva*. Abundant.
9. *Geothlypis trichas*. Common.
10. *Icteria virens longicauda*. Common.
11. *Setophaga ruticilla*. Common.

⁴ See Bulletin of the Essex Institute, V. Nov., 1873, pp. 168-173, for paper entitled "Notes on the Bird Fauna of the Salt Lake Valley and adjacent portions of the Wahsatch Mountains."

† Species so marked have been attracted from the adjoining mountains by the protection and accommodations provided by man.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., FEBRUARY, 1875. No. 2.

One Dollar a Year in Advance. 10 Cents a Single Copy.

REGULAR MEETING, MONDAY, JANUARY 18, 1875.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From E. J. Attinelli, New York, Jan. 5; F. H. Appleton, Boston, Jan. 7; W. S. Barton, Worcester, Jan. 14; Hayden Brown, West Newbury, Jan. 9; G. W. W. Dove, Andover, Jan. 9; D. A. Gleason, Boston, Jan. 16; Julia Ward Howe, Boston, Jan. 19; Jacob Leamon, Croton, Ohio, Dec. 29.

The LIBRARIAN reported the following additions to the library:—

By Donation.

COLE, Mrs. N. D. Salem Gazette for 1874.

GREEN, S. A., of Boston. Miscellaneous pamphlets, 21.

HUNT, T. F. Spirit of the Fair. 1 vol. 4to. 1864. Our Daily Fare. 1 vol. 4to. 1864. Hamilton's Genealogical Tables of the Hindus. 1 vol. folio.

PERKINS, SAM'L C., of Phila. Proceedings at the Laying of the Corner Stone of the New Public Buildings in Penn. Square, in Phila., July 4, 1874. 8vo pamph.

U. S. PATENT OFFICE. Official Gazette, Dec. 15, 22, 29.

WATERS, J. LINTON. The External Aspects of the Sun, by Prof. S. P. Langley.

By Exchange.

HARVARD COLLEGE. Forty-ninth Annual Report of the President. 1873-74.

HISTORICAL AND PHILOSOPHICAL SOCIETY OF OHIO. Annual Report. 1874.

ESSEX INST. BULLETIN.

VII

3

NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Genealogical and Biographical Record. Jan., 1875. 8vo pamph.

NEW YORK LYCEUM OF NATURAL HISTORY. Annals, Vol. xi, Nos. 1-2, July, 1874.

ROYAL CORNWALL POLYTECHNIC SOCIETY. Forty-First Annual Report, 1873. 1 vol. 12mo.

PUBLISHERS. American Journal of Science and Art. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Public Spirit. Quaritch's Catalogue. Salem Observer. Salem Post.

The meeting was principally occupied in listening to a very interesting and instructive presentation of the subject of comb manufacturing, by Hayden Brown, Esq., of West Newbury, who has been engaged for many years in the business. He gave a detailed account of the process of the manufacture of horn combs, interspersed with many entertaining anecdotes and pithy sayings. The first combs made in America were manufactured by hand, and with rude implements, in 1759, by Enoch Noyes, of Newbury, a self-taught mechanic, who cut horn buttons and coarse combs as well as he was able. He continued at this business until 1778, when William Cleland, a deserter from Burgoyne's army, a comb-maker by profession and a skilful workman, sought out Mr. Noyes and engaged with him, greatly increasing the production of combs, the manufacture of which has been continued in Newbury to this day, and immensely increased by the use of the most ingenious machines, one of which, he stated, tended by a lad of twelve years, can do the work which formerly required thirty-five men, and with his present force of fifty men, he could turn out more and better combs than a regiment of men could a half or three-quarters of a century ago.

Mr. Brown thought the earliest combs used must have been made of wood. Specimens were exhibited of the crude horn, of the material after it had gone through the several processes required, and of the several varieties of combs manufactured, beautifully finished and polished.

He referred to the immense number of cattle slaughtered every year, giving some interesting statistics to show where the horns required for such an immense manufacture came from, and stated some of his experiences abroad and at home in connection with the business. He was listened to with great attention, and the thanks of the Institute were voted to him for his entertaining and instructive address.

Mr. F. W. PUTNAM stated that combs made of various materials were in use among uncivilized nations, and mentioned the bronze combs of prehistoric times in Europe as similar to those now in use.

On motion of Mr. Putnam the thanks of the Institute were tendered to Mr. Brown for his remarks, and for his kindness in promoting the technological department of the Institute.

Arthur S. Gray, of Danvers, Jerome Horton Fiske and D. Henry Taylor of Salem, were duly elected resident members.

Adjourned.



REGULAR MEETING, MONDAY, FEBRUARY 1, 1875.

MEETING this evening at 7.30 o'clock. Vice President F. W. PUTNAM in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From J. W. Dean, Boston, Jan. 18, 21; F. H. Johnson, Andover, Jan. 13; J. F. Mayer, New York, Jan. 18; A. W. Morgan, New York, Jan. 28; A. T. Perkins, Boston, Jan. 21; Charles Phillips, Philadelphia, Jan. 20; R. Ridgway, Washington, D. C., Jan. 29.

Among the donations to the cabinets announced were the commission of a letter of marque, bearing the signatures of Madison and Munroe, presented by Rev. Mr. Atwood, and a unique Indian stone implement from Peabody, presented by Mr. John V. Stevens, for each of which thanks were voted to the donors.

Prof. A. GRAHAM BELL, now a resident in Salem, occupied the evening with a singularly interesting and curiously instructive address on the subject of speech, with illustrative experiments of various kinds, and the aid of Rev. E. C. Bolles with his camera. Prof. Bell has practically introduced into this country the system of Visible Speech invented by his father, Prof. A. M. Bell of University College, London. Mr. Bell, in conjunction with Dr. Clarence J. Blake, the aurist, of Boston, has conducted a series of experiments, the remarkable results of which were now first exhibited to a public audience.

Mr. Bell had succeeded in using the *membrana tympani* of the human ear as a phonautograph. An ear from a dead subject had been experimented upon. A small style of hay was attached to one of the ossiculæ, and a hearing tube was inserted in the outer ear. When any sound was uttered into the tube, the *membrana tympani* was set in vibration, and its motion was communicated to the style. This latter was then caused to record its vibration upon a plate of smoked glass passed rapidly underneath. Mr. Bell stated that each different vowel uttered into the tube caused the style to trace a different curve upon the glass. A large number of these tracings were exhibited to the audience by means of the camera.

Mr. Bell was provided with accurate representations and models of the vocal organs and organs of hearing so as clearly to point out their several parts, even to the

most delicate, and showed how sound was produced. He averred that each note was not a single tone, as it appears to be, but a composite of several, including the fundamental, or loudest, with the addition of overtones and undertones; there was no such thing as a tone pure and simple. He explained the pitch, the quality, timbre, and resonance of tones, and showed how they were produced. He showed that, as ripples are produced in the water, so wave ripples are produced in the air by different sounds, each sound causing a combination of wavelets, the curves of which can be made visible to the eye and many of which are of exceeding beauty. These were exhibited to the audience by means of a gas jet, whose vibrations were reflected in a mirror, through an ingeniously contrived apparatus, the manometric capsule invented by Scott and Kœnig. He explained how the notes of different musical instruments operated in the vibrations of the air, and what caused the differences in the sounds. In short, he gave a most attractive and instructive exposition of the mysteries of speech as it affects the air, the vocal organs, and the ear, and was listened to with the most absorbed attention.

After some complimentary remarks from Mr. W. P. UPHAM and the presiding officer, the thanks of the audience were unanimously voted to Prof. Bell for his able and excellent lecture.

LISTS OF BIRDS OBSERVED AT VARIOUS LOCALITIES CONTIGUOUS
TO THE CENTRAL PACIFIC RAILROAD, FROM SACRAMENTO
CITY, CALIFORNIA, TO SALT LAKE CITY, UTAH.

BY ROBERT RIDGWAY.

[Continued from page 24.]

12. *Pyrranga Ludoviciana*. Common.
13. *Progne subis*. † Common.
14. *Petrochelidon lunifrons*. † Abundant.
15. *Tachycineta bicolor*. † Common.
16. *Hirundo horreorum*. † Common.
17. *Cotyle riparia*. Common.
18. *Stelgidopteryx serripennis*. Abundant.
19. *Vireosylva gilva Swainsoni*. Abundant.
20. *Carpodacus frontalis*. Common.
21. *Chrysomitris tristis*. Common?
22. *Passerculus savanna alaudinus*. Common.
23. *Coturniculus passerinus perpallidus*. Common.
24. *Melospiza melodia fallax*. Common.
25. *Poospiza bilineata*. Common.
26. *Spizella Breweri*. Abundant.
27. *S. socialis Arizonae*. Common.
28. *Chondestes grammaca*. Abundant.
29. *Hedymeles melanocephalus*. Common.
30. *Cyanospiza amœna*. Common.
31. *Pipilo erythrophthalmus megalonyx*. Abundant.
32. *Dolichonyx oryzivorus*. Common?
33. *Molothrus pecoris*. Common.
34. *Agelaius phœniceus*. Very abundant.
35. *Xanthocephalus icterocephalus*. Very abundant.
36. *Sturnella neglecta*. Common.
37. *Icterus Bullocki*. Common.
38. *Cyanocitta Floridaana Woodhousii*. Rare?
39. *Tyrannus verticalis*. Abundant.
40. *T. Carolinensis*. Common.
41. *Sayornis Sayus*. Common.
42. *Contopus Richardsoni*. Abundant.
43. *Empidonax pusillus*. Abundant.
44. *Antrostomus Nuttalli*. Common.
45. *Chordeiles popetue Henryi*. Common.
46. *Selasphorus platycercus*. † Common.
47. *Trochilus Alexandri*. † Common.
48. *Ceryle alcyon*. Common.

49. *Melanerpes erythrocephalus*. One specimen.
50. *Colaptes auratus Mexicanus*. Common.
51. *Speotyto cunicularia hypogæa*. Rare?
52. *Circus cyaneus Hudsonius*. Common.
53. *Falco saker polyagrus*. Common.
54. *F. sparverius*. Abundant.
55. *Buteo Swainsoni*. Abundant.
56. *Zenaidura Carolinensis*. Abundant.
57. *Centrocercus urophasianus*. Common?
58. *Pediocætes phasianellus Columbianus*. Common?
59. *Ægialitis vociferus*. Common.
60. *Æ. cantianus nivosus*. Very abundant.
61. *Recurvirostra Americana*. Very abundant.
62. *Himantopus nigricollis*. Very abundant.
63. *Steganopus Wilsoni*. Common.
64. *Ereunetes pusillus*. Common.
65. *Actodromus minutilla*. Common.
66. *Tringoides hypoleucus macularius*. Common.
67. *Symphemia semipalmata*. Abundant.
68. *Numenius longirostris*. Abundant.
69. *Ibis guarauna*. Abundant.
70. *Ardea herodias*. Common.
71. *Herodias alba egretta*. Rare?
72. *Botaurus minor*. Common.
73. *Grus Canadensis*. Common.
74. *Rallus Virginianus*. Common.
75. *Porzana Carolina*. Common.
76. *Fulica Americana*. Abundant.
77. *Anas boschas*. Abundant.
78. *Dafila acuta*. Common?
79. *Chaulelasmus streperus*. Abundant.
80. *Mareca Americana*. Abundant.
81. *Spatula clypeata*. Abundant?
82. *Querquedula cyanoptera*. Abundant.
83. *Q. discors?* Rare?
84. *Nettion Carolinensis*. Rare?
85. *Erismatura rubida*. Common.
86. *Graculus dilophus*. Common.
87. *Sterna regia*. Common.
88. *S. Forsteri*. Abundant.
89. *Hydrochelidon fissipes*. Abundant.
90. *Podiceps occidentalis*. Abundant.
91. *P. auritus Californicus*. Abundant.
92. *Podilymbus podiceps*. Common.

b. Species breeding only on the islands in Great Salt
Lake (June, 1869).

1. *Branta Canadensis*. Common.
2. *Pelecanus erythrorhynchus*. Abundant.
3. *Larus Californicus*. Very abundant.

c. List of the species breeding in Parley's Park, Wahsatch Mountains,
Utah (June 23-July 2; July 16-Aug. 16, 1869).

1. *Turdus migratorius*. Common.
2. *T. Swainsoni*. Abundant.
3. *T. Pallasi Auduboni*. Common.
4. *Galeoscoptes Carolinensis*. Common.
5. *Sialia arctica*. Common.
6. *Cinclus Mexicanus*. Common.
7. *Regulus calendula*. Common.
8. *Parus montanus*. Common.
9. *Sitta Carolinensis aculeata*. Rare.
10. *S. Canadensis*. Rare.
11. *S. pusilla pygmæa*. Rare.
12. *Certhia familiaris fusca*. Rare.
13. *Troglodytes ædon Parkmanni*. Abundant.
14. *Telmatodytes palustris paludicola*. Common.
15. *Eremophila alpestris (chrysolæma?)*. Common.
16. *Helminthophaga celata*. Common.
17. *H. Virginiae*. Abundant.
18. *Dendroica æstiva*. Abundant.
19. *D. Auduboni*. Common.
20. *D. nigrescens?* Rare.
21. *Geothlypis Macgillivrayi*. Abundant.
22. *G. trichas*. Rare.
23. *Icteria virens longicauda*. Very rare.
24. *Myiiodiotes pusillus*. Rare.
25. *Setophaga ruticilla*. Rare.
26. *Pyrranga Ludoviciana*. Rare.
27. *Progne subis*. Abundant.
28. *Petrochelidon lunifrons*. Common.
29. *Hirundo horreorum*. Common.
30. *Tachycineta bicolor*. Abundant.
31. *T. thalassina*. Common.
32. *Cotyle riparia*. Common.
33. *Stelgidopteryx serripennis*. Common.
34. *Vireosylva gilva Swainsoni*. Abundant.

35. *Lanivireo solitaria plumbea*. Rare.
36. *Collurio Ludoviciana excubitoroides*. Common.
37. *Carpodacus Cassini*. Abundant.
38. *C. frontalis*. Common.
39. *Chrysomitris tristris*. Rare.
40. *C. psaltria*. Rare.
41. *C. pinus*. Very abundant.
42. *Passerculus savanna alaudinus*. Rare.
43. *Pooecetes gramineus confinis*. Common.
44. *Coturniculus passerinus perpallidus*. Rare.
45. *Melospiza Lincolni*. Common.
46. *M. melodia fallax*. Abundant.
47. *Junco caniceps*. Common.
48. *Spizella socialis Arizonae*. Abundant.
49. *S. Breweri*. Common.
50. *Zonotrichia leucophrys*. Abundant.
51. *Chondestes grammaca*. Common.
52. *Passerella iliaca schistacea*. Abundant.
53. *Calamospiza bicolor*. One specimen.
54. *Hedymeles melanocephalus*. Common.
55. *Cyanospiza amœna*. Common.
56. *Pipilo erythrophthalmus megalonyx*.
57. *P. chlorura*.
58. *Molothrus pecoris*.
59. *Agelaius phœniceus*.
60. *Xanthocephalus icterocephalus*.
61. *Icterus Bullocki*.
62. *Sturnella magna neglecta*.
63. *Scolecophagus cyanocephalus*.
64. *Corvus corax carnivorus*.
65. *Cyanocitta Floridana Woodhousii*.
66. *Cyanura Stelleri macrolopha*.
67. *Picicorvus Columbianus*.
68. *Tyrannus verticalis*.
69. *T. Carolinensis*.
70. *Myiarchus crinitus cinerascens*.
71. *Contopus borealis*.
72. *C. Richardsoni*.
73. *Empidonax obscurus*.
74. *E. flaviventris difficilis*.
75. *E. pusillus*.
76. *Antrostomus Nuttalli*.
77. *Chordeiles popetue Henryi*.
78. *Trochilus Alexandri*.
79. *Stellula calliope?*

80. *Selasphorus platycercus*.
81. *Ceryle alcyon*.
82. *Picus villosus* Harris.
83. *P. pubescens* Gairdneri.
84. *Sphyrapicus varius nuchalis*.
85. *Sphyrapicus thyroideus*. Rare.
86. *Colaptes auratus Mexicanus*. Common.
87. *Bubo Virginianus arcticus*. Rare.
88. *Falco saker polyagrus*. Rare.
89. *F. sparverius*. Common.
90. *Circus cyaneus Hudsonius*. Rare.
91. *Nisus Cooperi*. Rare.
92. *N. fuscus*. Rare.
93. *Buteo borealis calurus*. Common.
94. *B. Swainsoni*. Abundant.
95. *Archibuteo lagopus Sanctijohannis*. Rare.
96. *Aquila chrysaetos Canadensis*. Common.
97. *Rhinogryphus aura*. Common.
98. *Zenaidura Carolinensis*. Abundant.
99. *Canace obscura*. Abundant.
100. *Bonasa umbellus umbelloides*. Rare?
101. *Centrocercus urophasianus*. Common.
102. *Pediocætes phasianellus Columbianus*. Common.
103. *Ægialitis vociferus*. Common.
104. *Gallinago gallinaria Wilsoni*. Common.
105. *Ereunetes pusillus*. Rare.
106. *Actodromus minutilla*. Rare.
107. *Symphemia semipalmata*. Rare.
108. *Tringoides hypoleucos macularius*. Common.
109. *Rhyacophilus glareola solitarius*. Rare.
110. *Numenius longirostris*. Rare.
111. *Grus Canadensis*. Rare.
112. *Porzana Carolina*. Common.
113. *P. Jamaicensis?* Common.
114. *Fulica Americana*. Rare.
115. *Anas boschas*. Rare.
116. *Querquedula cyanoptera*. Rare.

d. Pack's Cañon, western spur of Uintah range (July 3-8, 1869).

The fauna of this locality was exactly like that of Parley's Park, with the exception that *Cyanura Stelleri macrotopha* was more abundant.

e. Kamas Prairie (July 9, 1869).

The only species seen in this grassy valley, which was not noticed elsewhere, was the *Actiturus Bartramius*.

f. Cañon of the Provo River (July 10, 1869).

The following species not found by us elsewhere were abundant among the willows bordering the river:

1. *Turdus fuscescens*.
2. *Parus atricapillus septentrionalis*.

There were also found *Setophaga ruticilla* and *Galeoscoptes Carolinensis* in plentiful numbers, and *Pica melanoleuca Hudsonica*, which in other localities in Utah was found to be rare or entirely wanting.

CATALOGUE OF THE BIRDS ASCERTAINED TO OCCUR IN NEVADA.

The following is a complete list of the birds known at the present time to occur within the limits of the State of Nevada. The number will doubtless be considerably increased in the course of time, when portions of the state not visited by us shall have been explored. Those marked with an asterisk (*) breed within the limits of the State; those distinguished by a dagger (†) belong to the western portion, and those with a ‡ are more abundant in the eastern part, being stragglers from the Rocky Mountains.

- *1. *Turdus migratorius* L.
2. *T. Pallasi* Cab., *var. nanus* Aud.†
3. *T. Swainsoni* Cab.‡
- *4. *T. Swainsoni* Cab., *var. ustulatus* Nutt.†
- *5. *Oreoscoptes montanus* (Town.).
- *6. *Sialia Mexicana* Sw.†
- *7. *S. arctica* Sw.
- *8. *Cinclus Mexicanus* Sw.
- *9. *Regulus calendula* (L.).
10. *R. satrapa* Licht.
- *11. *Lophophanes inornatus* (Gamb.).†
- *12. *Parus montanus* Gamb.
- 13? *P. atricapillus* L., ‡ *var. septentrionalis* Harris.
- *14. *Psaltriparus minimus* (Town.), *var. plumbeus* Baird.
- 15? *Psaltriparus melanotis* (Hartl.)‡
- *16. *Sitta Carolinensis* Gm., *var. aculeata* Cassin.‡
- *17. *S. Canadensis* L.
- *18. *S. pusilla* Lath., ‡ *var. pygmæa* Vig.
- *19. *Certhia familiaris* L., *var. fusca* Bart.
- *20. *Campylorhynchus brunneicapillus* (Laf.).
- *21. *Salpinctes obsoletus* (Say).
- *22. *Catherpes Mexicanus* (Sw.), *var. conspersus* Ridgw.

- *23. *Troglodytes aëdon* V., *var.* *Parkmanni* Aud.
- 24. *T. parvulus* Koch, *var.* *hyemalis* Wils.
- *25. *Telmatodytes palustris* (Wils.), *var.* *paludicola* Baird.
- 26. *Anthus Ludovicianus* (Gm.).
- *27. *Helminthophaga Virginiae* Baird.‡
- 28. *H. ruficapilla* (Wils.).‡
- *29. *H. celata* (Say).
- 30. *H. celata* (Say), *var.* *lutescens* Ridgw.†
- *31. *Dendroica æstiva* (Gm.).
- 32? *D. occidentalis* (Townns.).
- 33. *D. Townsendi* (Nutt.).
- *34. *D. nigrescens* (Townns.).‡
- *35. *D. Auduboni* (Townns.).
- *36. *Geothlypis trichas* (L.).
- *37. *G. Philadelphia* (Wils.), *var.* *Macgillivrayi* Aud.
- *38. *Icteria virens* (L.), *var.* *longicauda* Lawr.
- *39. *Myiodytes pusillus* (Wils.).
- 40. *M. pusillus* (Wils.), *var.* *pileolata* Pall.†
- *41. *Pyrrhuloxia ludoviciana* (Wils.).
- *42. *Hirundo horreorum* Barton.
- *43. *Tachycineta bicolor* (V.).
- *44. *T. thalassina* (Sw.).
- *45. *Cotyle riparia* (L.).
- *46. *Stelgidopteryx serripennis* (Aud.).
- *47. *Petrochelidon lunifrons* (Say).
- *48. *Progne subis* (L.).
- 49. *Ampelis cedrorum* (V.).‡
- *50. *Phænopepla nitens* (Sw.).
- *51. *Myiadestes Townsendi* (Aud.).
- *52. *Vireosylva gilva* (V.), *var.* *Swainsoni* Baird.
- 53. *Lanius solitaria* (Wils.).
- 54. *L. solitaria* (Wils.), *var.* *Cassini* Baird.†
- *55. *L. var. plumbeus* Coues.‡
- *56. *Collurio Ludovicianus* (L.), *var.* *excubitoroides* Sw.
- *57. *Carpodacus Cassini* Baird.
- *58. *C. frontalis* (Say).
- *59. *Loxia leucoptera* (Wils.).
- 60. *L. curvirostra* L., *var.* *Americana* (Wils.).
- 61. *Leucosticte tephrocotis* Sw., *var.* *littoralis* Baird.
- *62. *Chrysomitris tristis* (L.).
- *63. *C. pinus* (Wils.).
- 64. *Plectrophanes lapponicus* (L.).
- *65. *Passerculus savanna* (Wils.), *var.* *alaudinus* Bonap.
- *66. *Poocetes gramineus* (Gm.), *var.* *confinis* Baird.

- *67. *Coturniculus passerinus* (Wils.), *var. perpallidus* Ridgw.
- *68. *Melospiza Lincolni* (Aud.).
- *69. *M. melodia* (Wils.).‡
- *70. *var. fallax* Baird.
- *71. *var. Heermanni* Baird.†
- 72. *var. guttata* Nutt.
- *73. *Poospiza bilineata* (Cass.).
- *74. *P. Belli* (Cass.), *var. Nevadensis* Ridgw.
- *75. *Junco hyemalis* (L.), *var. Oregonus* (Townsend)†
- 76. *Spizella monticola* (Gm.).
- *77. *S. socialis* (Wils.), *var. Arizonae* Coues.
- *78. *S. Breweri* (Cass.).
- 79. *Zonotrichia leucophrys* (Forst.).‡
- *80. *Z. leucophrys* (Forst.), *var. intermedia* Ridgw.†
- 81. *Z. coronata* (Pall.).†
- *82. *Chondestes grammaca* (Say).
- *83. *Passerella iliaca* (Merrem),‡ *var. schistacea* Baird.
- *84. *Passerella iliaca* (Merrem), *var. megarhynchus* Baird.†
- *85. *Hedymeles melanocephalus* (Sw.).
- *86. *Cyanospiza amœna* (Say).
- *87. *Guiraca cœrulea* (L.).
- *88. *Pipilo erythrophthalmus* (L.), *var. Oregonus* Bell.†
- *89. *var. megalonyx* Baird.‡
- *90. *P. chlorurus* (Townsend).
- *91. *Eremophila alpestris* (Forst.).
- 92. *E. alpestris* (Forst.), *var. leucolæma* Coues.
- *93. *var. chrysolæma* Wagl.
- 94. *Dolichonyx oryzivorus* (L.),‡ *var. albiucha* Ridgw.
- *95. *Agelaius phœniceus* (L.).
- *96. *A. phœniceus* (L.), *var. gubernator* Wagl.†
- *97. *anthocephalus icterocephalus* (Bonap.).
- *98. *Molothrus pecoris* (Gm.).
- *99. *Sturnella magna* (L.), *var. neglecta* Aud.
- *100. *Icterus Bullocki* (Sw.).
- *101. *Scolecophagus cyanocephalus* (Wagl.).
- *102. *Corvus corax* L., *var. carnivorus* Bartr.
- 103. *C. Americanus* Aud.
- *104. *Picicorvus Columbianus* (Wils.).
- *105. *Gymnokitta cyanocephala* Max.
- *106. *Pica melanoleuca* V., *var. Hudsonica* Sab.
- *107. *Cyanura Stelleri* (Gm.),† *var. frontalis* Ridgw.
- *108. *Cyanocitta Florida* (Bartr.), *var. Californica* Vig.
- *109. *var. Woodhousii* Baird.‡
- *110. *Tyrannus Carolinensis* (L.).

- *111. *T. verticalis* Say.
- *112. *Myiarchus crinitus* (L.), *var. cinerascens* Lawr.
- *113. *Sayornis Sayus* (Bonap.).
- *114. *Contopus borealis* (Sw.).
- *115. *C. Richardsoni* (Sw.).
- *116. *Empidonax pusillus* (Sw.).
- *117. *Empidonax flaviventris* Baird, *var. difficilis* Baird.
- *?118. *E. Hammondi* Baird.
- *119. *E. obscurus* (Sw.).
- *120. *Antrostomus Nuttalli* (Aud.).
- *121. *Chordeiles popetne* (V.), *var. Henryi* Cass.
- *122. *Panyptila saxatilis* (Woodh.).‡.
- *123. *Nephæetes niger* (Gm.), *var. borealis* Kennerly.†
- *124. *Chaetura Vauxi* (Town.).†
- *125. *Trochilus Alexandri* Bourc.
- *126. *Selasphorus rufus* (Gm.).
- *127. *S. platycercus* (Sw.).
- *128. *Stellula calliope* Gould.
- *129. *Ceryle alcyon* (L.).
- *130. *Coccyzus Americanus* (L.).
- *131. *Picus albolarvatus* (Cass.).†
- *132. *P. villosus* L., *var. Harrisii* Aud.
- *133. *P. pubescens* L., *var. Gairdneri* Aud.
- 134. *Picoides arcticus* (Sw.).
- *135. *Sphyrapicus varius* (L.), *var. nuchalis* Baird.
- *136. *var. ruber* Gm.†
- *137. *S. thyroides* (Cass.).
- *138. *Melanerpes torquatus* (Wils.).
- 139. *Colaptes auratus* (L.), *var. hybridus* Baird.
- *140. *var. Mexicanus* Sw.
- *?141. *C. chrysoides* Malb.
- *142. *Bubo Virginianus* (Gm.), *var. Arcticus* Sw.
- *143. *Otus vulgaris* (L.), *var. Wilsonianus* Less.
- 144. *Nyctale acadica* (Gm.).
- *145. *Speotyto cunicularia* (Mol.), *var. hypugæa* Bonap.
- *146. *Falco communis* Gm., *var. anatum* Bonap.
- *147. *F. saker* Schl., *var. polyagrus* Cass.
- *148. *F. Columbarius* L.
- *149. *Falco sparverius* L.
- *150. *Pandion haliaëtus* (L.), *var. Carolinensis* Gm.
- *151. *Circus cyaneus* L., *var. Hudsonius* L.
- *152. *Nisus Cooperi* (Bonap.).
- *153. *N. fuscus* (Gm.).
- *154. *Buteo borealis* (Gm.), *var. calurus* Cass.

- *155. *B. Swainsoni* Bonap.
- *156. *Archibuteo ferrugineus* (Licht.).
- *157. *A. lagopus* (Brunn.), *var. Sancti-Johannis* Gm.
- *158. *Aquila chrysaetos* (L.), *var. Canadensis* L.
- *159. *Haliaeetus leucocephalus* (L.).
- *160. *Rhinogryphus aura* (L.).
- 161. *Ectopistes migratoria* (L.).‡
- *162. *Zenaidura Carolinensis* (L.).
- *163. *Canace obscura* (Say).
- *164. *Bonasa umbellus* (L.), *var. umbelloides* Dougl.‡
- *165. *Pediæcetes phasianellus* (L.), *var. Columbianus* Ord.
- *166. *Centrocercus urophasianus* (Bonap.).
- *167. *Oreortyx pictus* (Dougl.), † *var. plumifera* Gould.
- *168. *Ægialitis vociferus* (L.).
- *169. *Recurvirostra Americana* Gm.
- *170. *Himantopus nigricollis* V.
- *171. *Steganopus Wilsoni* (Sab.).
- *172. *Gallinago gallinaria* (Gm.), *var. Wilsoni* Temm.
- *173. *Ereunetes pusillus* (L.).
- 174. *Actodromus Bairdi* Coues.
- *175. *A. minutilla* (V.).
- 176. *Pelidna alpina* (L.), *var. Americana* Cass.
- *177. *Symphemia semipalmata* (Gm.).
- *178. *Rhyacophilus glareola* (L.), *var. solitarius* Wils.
- *179. *Tringoides hypoleucus* (L.), *var. macularius* L.
- *180. *Numenius longirostris* (Wils.)
- 181. *Tantalus loculator* L.
- *182. *Ibis guarauna* (Gm.).
- *183. *I. thalassinus* Ridgw.†
- *184. *Ardea herodias* L.
- 185. *Herodias alba* (L.), *var. egretta* Gm.
- *186. *Nyctiardea grisea* (L.), *var. naevia* Bodd.
- *187. *Botaurus minor* (Gm.).
- *188. *Ardetta exilis* (Gm.).
- *189. *Grus Canadensis* (L.).
- *190. *Rallus Virginianus* L.
- *191. *Porzana Carolina* (L.).
- *192? *P. Jamaicensis* (Gm.).‡
- *193. *Fulica Americana* Gm.
- 194. *Cygnus buccinator* Rich.
- 195. *Anser hyperboreus* Pall.
- *196. *Branta Canadensis* (L.).
- 197. *B. Hutchinsi* Rich.
- 198. *B. bernicla* (L.), *var. nigricans* Lawr.

- *199. *Anas boschas* L.
- *200. *Chaulelasmus streperus* (L.).
- *201. *Mareca Americana* (Gm.).
- *202. *Nettion Carolinensis* (Gm.).
- *203. *Querquedula cyanoptera* (V.).
- *204. *Q. discors* (L.).
- *205. *Dafila acuta* (L.).
- *206. *Spatula clypeata* (L.).
- 207. *Aix sponsa* (L.).
- 208. *Fulix marila* (L.).
- 209. *F. marila* (L.), *var. affinis* Eyton.
- 210. *F. collaris* (Donov.).
- 211. *Aythya vallisneria* (Wils.).
- 212. *A. ferina* (L.), *var. Americana* Eyton.
- 213. *Bucephala albeola* (L.).
- 214. *B. clangula* (L.), *var. Americana* Bonap.
- *215. *Erismatura rubida* (Wils.).
- 216. *Mergus merganser* (L.), *var. Americanus* Cass.
- 217. *Mergus serrator* L.
- 218. *Lophodytes cucullatus* (L.).
- *219. *Pelecanus erythrorhynchus* Gm.
- *220. *Graculus dilophus* (Sw.).
- *221. *Larus argentatus* Brünn., *var. Californicus* Lawr.
- 222. *L. Delawarensis* Ord.
- *223. *Sterna regia* Gambel.
- *224. *S. Forsteri* Nutt.
- *225. *Hydrochelidon fissipes* (L.).
- *226. *Æchmophorus occidentalis* (Lawr.)
- *227. *Podiceps auritus* (L.), *var. Californicus* Heerm.
- *228. *Podilymbus podiceps* (L.).

Total number of species known to breed in Nevada, 179.

BULLETIN
OF THE
ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., MARCH, 1875. No. 3.

One Dollar a Year in Advance. Ten Cents a Single Copy.

QUARTERLY MEETING, WEDNESDAY, FEB. 10, 1875.

MEETING this afternoon at three o'clock. VICE PRESIDENT F. W. PUTNAM in the chair. Records of the preceding quarterly and regular meetings were read.

Frank L. Smith, of Salem, was elected a resident member.

Mr. PUTNAM mentioned that the Misses Mary E. and Abby O. Williams, of Salem, would be willing to deposit, in the rooms of the Institute, temporarily, their valuable collection of paintings, many of which were copied by them from the "old masters," during a residence in Rome of several years.

After some conversation, the subject was referred to the Curators of the Department of Art, to make such arrangements with the Misses Williams as may be deemed advisable; on the understanding that the collection shall be

properly cared for by the curators, and that the Institute be not held responsible in case of fire or accident; also to tender to the Misses Williams the sincere thanks of the Institute for this liberal proposal.

The committee appointed at a previous meeting presented as their report a new draft of the Constitution and By-laws of the Institute. After some discussion it was

Voted, That a copy of the report be placed in the rooms of the Institute, and that the same be presented at the Annual Meeting in May, for further action.



REGULAR MEETING, MONDAY, FEBRUARY 15, 1875.

MEETING this evening at 7.30 o'clock. VICE PRESIDENT F. W. PUTNAM in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From E. J. Attnelli, New York, Feb. 6; Francis H. Appleton, Boston, Feb. 13; Charles H. Bell, Exeter, N. H., Feb. 5; E. P. Boon, New York, Feb. 2; John M. Bradbury, Ipswich, Feb. 1, 4; C. H. Dall, Boston, Feb. 13; W. H. Dall, Washington, Feb. 1; George Haskell, Ipswich, Feb. 11; A. H. Hoyt, Boston, Feb. 8; Joseph K. Jenness, Haverhill, Feb. 12; Jacob Leamon, Croton, Ohio, Jan. 25; J. H. Leavitt, Feb. 2; E. J. Maynard, Newtonville, Feb. 11; Henry Morton, Hoboken, N. J., Jan. 26; J. W. Moulton, Feb. 10; Nathaniel Paine, Worcester, Feb. 12; W. S. Perry, Geneva, N. Y., Feb. 9; B. Perley Poore, Indian Hill Farm, near Newburyport, Feb. 1; Cyrus Woodman, Cambridge, Feb. 10; Bern, Die Naturforschende Gesellschaft, Aug. ; Dresden, K. Leopoles caro, Deutschen Acad. der Naturforschende. Nov. 17; Emden, Naturforschende Gesellschaft, Sept. 11; Freiburg, Die Naturforschende Gesellschaft, Sept. 8; Genève Société de Physique et d' Histoire Naturelle, Sept. 15; Neuchatel Société des Sciences Naturelles, Oct. 19; Yale College, Feb. 9; Zurich, Naturforschende Gesellschaft, Oct. 1.

The LIBRARIAN reported the following additions to the library:—

By Donation.

- BOLLES, E. C. Miscellaneous pamphlets, 5.
 HUMPHREYS, Brig. Gen. A. A. Annual Report of the Chief of Engineers. Pts. 1, 2, 1874. 2 vols. 8vo.
 LEE, JOHN C. Commercial Bulletin, Jan. 2, 9, 16, 1875.
 MASS. HORTICULTURAL SOCIETY. Schedule of Prizes offered by the Mass. Horticultural Society for 1875.
 PEABODY INSTITUTE, Danvers. Seventh Annual Report of the Trustees of the, Year ending March 31, 1874.
 PHILLIPS, CHAS., of Germantown, Penn. Railroad Report of Penn., 1863. 1 vol. 8vo. The American Historical Record, 8 numbers. Miscellaneous pamphlets, 91. Almanacs, 1870, 1871.
 PUTNAM, H. W. Directory of Peabody, Danvers, Marblehead, 1873. 1 vol. 8vo. N. E. Business Directory, 1873. 1 vol. 8vo. Essex County Directory, 1873. 1 vol. 8vo. Mass. Register and Business Directory, 1872. 1 vol. 8vo.
 ROPES, W. L., of Andover, Mass. Catalogue of Andover Theol. Seminary, 1874-75.
 U. S. PATENT OFFICE. Official Gazette, Jan. 5, 12, 1875.
 WATERS, J. L. Miscellaneous pamphlets, 59.
 WILLIAMS, JAMES, of Columbus, Ohio. Annual Report of the Auditor of the State of Ohio, 1874. 1 vol. 8vo.

By Exchange.

- ACCADEMIA D' AGRICOLTURA COMMERCIO ED ART DI VERONA. Memoire, Vol. L, II Serie, Fasc. II, 1874. Vol. L, II Serie, Fasc. I, II, 1874.
 CROSSE ET FISCHER. Journal de Conchyliol. 3e Série, Tome xiv, No. iv, 1874.
 INSTITUT HISTORIQUE, PARIS. L' Investigateur. 40 Année. No. vi, Nov., 1874.
 KAISERLICHE LEOPOLDINISCH-CAROLINISCHE DEUTSCHEN AKADEMIE DER NATURFORSCHER IN DRESDEN. Leopoldina, Heft vii, viii, ix, 1871, 1872, 1873.
 NATURFORSCHENDE GESELLSCHAFT IN BERN. Mittheilungen, Nos. 812-827, 1873.
 NATURFORSCHENDE GESELLSCHAFT IN FREIBURG. Berichte, Band vi, Heft II, III, 1873. 2 pamphlets.
 NATURFORSCHENDE GESELLSCHAFT, ZURICH. Vierteljahrsschrift, Jahrg. xviii, 1873.
 NATURFORSCHENDE GESELLSCHAFT IN EMDEN. Jahresbericht, 1873. 8vo. 1874.
 NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. New England Historical and Genealogical Register. Jan., 1875.
 SOCIÉTÉ D' ACCLIMATION, Paris. Bulletin Mensuel, 3me Série, Tome i, No. 10, Oct., 1874.
 SOCIÉTÉ D' ANTHROPOLOGIE, Paris. Bulletins, Tome ix, IIe Série, 2e Fascicule, 1874.
 SOCIÉTÉ DES SCIENCES NATURELLES, Neuchâtel. Bulletin, Tome x, 1873-4. Memoires, Tome iv, 2nd pt., 1874.
 SOCIÉTÉ DE PHYSIQUE ET D' HISTOIRE NATURELLE, Genève. Memoires, Tome xxiii, 2nd pt., 1873-74.
 PUBLISHERS. American Journal of Science. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Public Spirit. Sailors' Magazine and Seamen's Friend. Salem Post. Salem Observer.

Mrs. C. A. Carlton, of Salem, was elected a resident member.

Rev. GEORGE BATCHELOR presented a memoir of our late associate, Hon. BENJAMIN F. BROWNE, of Salem. Referred to the publication committee.

Mr. JOHN ROBINSON read the following paper, illustrating the same with diagrams and specimens :—

FERNS OF ESSEX COUNTY, MASS.

ONE of the most important objects of the Essex Institute is the collecting and investigation of Essex County products of every sort. Oakes, Russell, Nichols, Fowler, Putnam, Packard, Hyatt, Tracy and others have each in turn worked at this, and all seem to have agreed in leaving the ferns for some one else to look up. The rocks, insects, fishes, birds, mammals, early inhabitants and Indian remains, flowering plants, mosses, and lichens, have been more or less fully reported upon; but the ferns, even so abundant and conspicuous as they are, were omitted. Searching the publications of Essex County societies, no notice or list of ferns is to be found; even Tracy's "Plants of Lynn" stops just upon them. I have for some years been interested in these curious and beautiful plants, and have given special notice to those in our county and have searched myself with friends in the following localities, thoroughly or in part :—Lynn, Swampscott, Saugus, Lynnfield, Danvers, Peabody, Salem, Beverly, Manchester, Essex, Gloucester, Rockport, Ipswich, Newbury, North Andover, Bradford, Wenham, Topsfield, Marblehead, Groveland, Middleton, and have had the assistance of Mrs. C. N. S. Horner, of Georgetown, who kindly gives me the localities for that region, about which I know very little myself.

Among the older botanists, now gone, who gave ferns some particular notice, was William Oakes, of Ipswich, and judging from looking over the beautifully prepared

specimens he left to tell of his earnest labor as a botanist, I should think he had noticed about two-thirds of our county ferns.

The arrangement in this paper is according to Gray's botany, fifth edition, where full descriptions of each species will be found.¹

We have represented in the county, so far as is now known, sixteen genera, including twenty-nine species and about eight book varieties. A very few species may possibly be added after a careful search, but that is extremely doubtful.

I will take these species in order, and notice each separately, commencing with:—

1. ONOCLEA SENSIBILIS L.

Sensitive Fern.

So called on account of the habit of quickly turning black after the first frosts. The fertile and sterile fronds are entirely different in appearance, the former not showing themselves till August and then becoming rigid and remaining perfect almost through a second season, while the sterile fronds commence to unfold early in May, are very broad, and perish at the first frost. Common everywhere.

2. A very curious abnormal form is the var. *obtuselobata* of Torrey, not a true variety but only an occasional state of a frond of the ordinary plant. This illustrates how the sterile and fertile fronds in dimorphous ferns can be shown to resemble each other and is only a half-way state between sterile and fertile, so to speak. Frequent, with No. 1.

3. STRUTHIOPTERIS GERMANICA Willd.

Ostrich Fern.

This is the tallest of all New England ferns, growing to a height of six feet, and yet it is one of the most graceful of our species. It is not coarse, and spreads by numerous underground runners, filling whole fields in parts of New Hampshire and Vermont, where I have

¹ It should be noted that this paper was illustrated by perfect herbarium specimens of each species and variety referred to, rendering botanical descriptions unnecessary. English names are added for each species, though many are poor enough.

walked among plants, though not of the largest growth, with only my head above them. Like the last, the fruit spike is separate and rigid, often found the second year black and persistent, while the spikes of that season are new and green. I included this in the list of Essex County ferns, as the place from which I knew it was but just beyond the county line in North Reading, towards Middleton, not nearer one town than the other. I have since heard from Mrs. Horner, who reports it from Georgetown; she, therefore, is first to add this truly noble fern to our county list.

4. WOODSIA ILVENSIS R. Br.

Hairy Woodsia.

This is a rare fern in Europe, but here is very abundant, particularly on the hills about Salem. A short, woolly plant growing in tufts. It is found in Danvers, Swampscott, Wenham, and in fact in almost every hilly town.

5. WOODSIA OBTUSA Torrey.

Blunt Woodsia.

Not so abundant as the last, taller and more delicate. The small forms resemble *Cystopteris fragilis*, with which it often grows. There is a fine locality for this at Peabody, on the Swampscott road, and it is to be found in Salem pastures, Beverly, Middleton and elsewhere.

6. DICKSONIA PUNCTILOBULA Kunze.

Hay-scented Fern.

This is the only American representative of a genus which in the tropics boasts of the noblest of tree ferns, including the *D. antarctica* of Tasmania, the trunk of which rises to the height of thirty or forty feet, crowned by a circle of enormous fronds, some even twenty feet to their tips. Our humble Dicksonia is one of our most common and yet most beautiful ferns. It grows by creeping, underground stems, and sometimes is found with fronds three or four feet high; the fruit is very small on the little lobes of the pinnules, the fronds are much dissected and almost always widest at the base. When crushed it has a very pleasant aromatic odor, and after a frost this is quite noticeable in the woods where the plants grow.

7. CYSTOPTERIS FRAGILIS Bernh.

Delicate Bladder Fern.

This will be found in old stone walls where the earth is banked up high at the back, and in damp, rocky woods or ravines. There are many fine localities in Salem, Beverly, Essex, Swampscott and else-

where. This is an early fern and often in dry seasons by August the fruit will have perfected and the fronds entirely have disappeared (it should be looked for in June). I found at Essex in September, 1873, a plant that, thinking the dry summer was its winter rest, had with the September rains again started; I collected several fine young fronds at that late date.

This varies considerably; the less cut form is var. *dentata*, but not approving of naming every variation, as some seem to do, the most prominent ones only are given in this list.

8. ADIANTUM PEDATUM L.

Maiden Hair.

By many considered our most beautiful fern, and when seen in the grand clumps two feet or more high, as I have seen them in this county at the fine locality in North Andover, one can hardly find in any conservatory a more elegant, graceful or delicate fern. It grows sparingly in Salem, Danvers, Lynnfield, Georgetown and some other places. In the western part of this state, Vermont and southward, it is found by the acre. It varies but slightly even in Californian specimens.

9. PTERIS AQUILINA L.

Eagle Fern. Bracken.

Common along railroad tracks and gravelly places skirting and in the woods. This is in England one of the rankest growing ferns, sometimes attaining a height of twelve feet. I think six feet from the ground to the tip, when lifted up, is the extreme that has been noticed here. Most beautifully crisped forms and often strange developments of the pinnules may be found in the county specimens, some of which approach the var. *caudata* which grows south.

10. WOODWARDIA VIRGINICA Smith.

Chain Fern.

(The fruit upon the underside of the fertile pinnules is in short lines, resembling the links of a chain.)

In searching for this fern I spent three days before finding it in a locality now nearly destroyed, known to Mr. Russell. Since then I have found it growing profusely around many ponds or in swamps at Beverly, Hamilton, Essex, Manchester, Wenham, Georgetown (Mrs. Horner), etc. This is the only fern I have ever observed growing *under* water. Many grow near the water, but this I have repeatedly found growing, even at low water seasons, with the rhizome creeping

out into the pond, with little if any earth over it, which seems at variance with the rest of the ferns hereabouts.

11. ASPLENIUM TRICHOMANES L.

Dwarf Spleenwort.

A charming little fern growing upon the rocks, with its black, thread-like roots working their way so deep into the crevices that it is with difficulty removed without breaking them off. This varies greatly in size, but in the cutting very slightly. Not rare; good localities in Peabody, Marblehead, Georgetown, etc.

12. ASPLENIUM EBENEUM Ait.

Ebony Spleenwort.

Found in pine woods near rocks, but not so much on and in them as No. 11, which in general style it resembles, although never to be mistaken for it. A much serrated form is frequently met with, and the fronds are often found split, forming a double apex. Found in nearly every town; fine localities in Beverly, Essex, etc.

13. ASPLENIUM THELYPTEROIDES Michx.

Silvery Spleenwort.

This is a rare fern with us but very abundant in Vermont and western Massachusetts, particularly near the eastern end of the Hoosac tunnel, on the path to the "twin cascades." The fruit on the fertile pinnules is very regular and distinct, a very beautiful object under the microscope. The only plant I know of this is at Swampscott. It is at Georgetown (Mrs. Horner), Lynnfield (Russell), and "with Mr. Oakes it was a favorite fern and found by him at Ipswich." (Prof. Tuckerman.)

14. ASPLENIUM FILIX-FEMINA Bernh.

Lady Fern.

The most abundant and variable of all our ferns, except, perhaps, *Aspidium spinulosum*. It grows everywhere, in sun and shade, and often so much fruited that the fronds will look black. It sometimes is found nearly four feet high, and one quite marked variety has the lower pinnæ as long, if not longer than the rest, while in the common form they are conspicuously reduced.

Some will confound this with *Dicksonia*, when not in fruit, and with *Aspidium spinulosum*, but the difference will be readily seen upon examination. Common everywhere.

15. ASPIDIUM ACROSTICHOIDES Swartz.

Christmas Fern.

It is found abundantly near the first pond on the road to the Chabacco house, Essex: also in Beverly woods; near the turnpike and floating bridge; Andover; Danvers, etc. This is a rigid, evergreen species, and is very abundant north and south; one of the best for decorative purposes, as it keeps well. There is some variation to the cutting of the fronds, and one is called var. *incisum*. The peculiar fruiting of this fern distinguishes it from all others of our species, hence the name *acrostichoides*, for the fruit dots becoming confluent, the pinnæ curl, and the whole looks as if one mass of spore cases, as it is with the genus *Acrostichum*, hence resembling *Acrostichum*, or *Acrostichoides*.

16. ASPIDIUM THELYPTERIS Swartz.

Marsh Fern.

Formerly this fern was confused with *A. Noveboracense*, but the conspicuously reduced pinnæ of the latter, as well as the lighter color, should have been noticed as distinguishing points; it is also quite different in the fruiting. Found in every meadow and by every roadside as well as in deep woods and in bogs. Perfect specimens can be found in full fruit from *six inches to five feet high*, and from one inch to one foot wide. Where it grows exposed to the sun the pinnæ are curled up and quite angular, while in the shade they are less fruited, wide spreading and more delicate.

17. ASPIDIUM NOVEBORACENSE Swartz.

New York Fern.

More delicate than the last, not revolute when well fruited, and growing in less wet places. Common in the woods. By the latter part of September this and the *Dicksonia* become, under favorable circumstances, pure white, and form a very beautiful addition to the decorating ferns for winter.

18. ASPIDIUM SPINULOSUM Swartz.

Prickly Toothed Wood Fern.

This is the typical form of a most protean species, varying from plants perfectly fruited only six inches high to heavy forms four feet high; and in width from six inches on a plant four feet high to more than a foot on a plant but two feet high. And here is not all; the variations in cutting are as great as those of height and width. We

find it not twice pinnate and fully three times so, with fruit scarcely visible, and dots so large as to be plainly seen at quite a distance. Sometimes the lower pinnæ are much reduced, sometimes very much extended. To take prominent varieties one would at a glance pronounce them very different species, so much more do they vary in appearance than many species which are distinct; but I can show a suite of specimens which run so gradually from one to another that it will at once be seen that to draw a separating line would be quite impossible, and the best that can be done is to name the prominent forms as varieties. The typical plant is rare and as yet I have only found it at Essex. Doubtless other localities will be discovered.

19. Var. *intermedium*. The common form will be found in nearly every patch of woods.

20. Var. *dilatatum* is a larger and more cut form, most common at the mountain regions of New Hampshire. A near approach to it can be obtained at Essex, Beverly, Georgetown (Mrs. Horner), etc.

21. Var. *Boottii* is much more narrow, reduced at the base. This, to judge from the specimens I find, which are very numerous, seems to resemble much more closely *A. cristatum* than *A. spinulosum*. The sterile fronds particularly resemble each other in these two species and it is often very difficult to decide to which they belong. Is it possible that this can be a hybrid between *A. spinulosum* and *A. cristatum*? Found in shady, swampy land.

22. ASPIDIUM CRISTATUM Swartz.

Crested Buckler Fern.

Not so common as some varieties of the last. It grows in similar localities, but seldom more than one or two clumps in a place together. The fertile fronds are usually much taller than the sterile and perish during the winter, while the sterile ones of the previous year are found quite perfect the next spring.

Found in nearly every town in localities similar to the last.

23. ASPIDIUM MARGINALE Swartz.

Marginal or Evergreen Wood Fern.

(So called as the fruit is close to the edge or margin of the pinnule, and the fronds are often found as perfect in spring as they were before winter ca me.)

This fern is of a beautiful blue-green and is found in rocky woods, where the foliage is not thickest. The fronds are twice pinnate and occasionally found still more cut. Eight years since I collected in Swampscott a plant with very broad and much cut fronds. This I

have had under cultivation ever since. It keeps its distinct character, which is strikingly different from the ordinary form. For convenience I have ticketed herbarium specimens from this as var. *elegans*. Small forms scarcely six inches high and perfectly fruited are often met with.² It grows in almost every town in the county.

24. POLYPODIUM VULGARE L.

Common Polypody.

One of our most common ferns, found on rocks and in mossy woods. This fern has a great many curious forms and in the English fern books as many as twenty varieties are described, but as it is useless to undertake to book varieties which are likely to rise to the hundreds it is best to throw out all but those which are well established as being sufficiently different from the typical form and constantly remain so. Found everywhere.

25. PHEGOPTERIS POLYPODIOIDES Fée.

Beech Fern.

Grows in the Essex woods and I have found it in two places in Common lane, Beverly; it grows in Danvers (Miss Page). This is a White and Green Mountain fern and, with the next, is rare here. These two species of Phegopteris usually are found in about the same localities, growing together in Essex, and quite near each other in Beverly. This one almost runs into *P. hexagonoptera* which occurs about us, and which I hope may yet be found here.

26. PHEGOPTERIS DRYOPTERIS Fée.

Oak Fern.

This as the last is a mountain fern and is found in localities with it. Both are European Ferns as well as American. Found in Essex, Beverly, Georgetown (Mrs. Horner).

27. OSMUNDA REGALIS L.

Royal Flowering Fern.

Common in almost all meadows. Sometimes six feet high. Called flowering fern on account of its having the upper pinnae changed to a

² This comes nearer being a tree fern than any of our species, the caudex covered by the bases of the fronds of previous seasons, sometimes resting upon bare rocks for four or five inches without roots or fronds.

spike of fruit. Sometimes it will be found with fertile and sterile pinnules on the same little division of the frond.

28. OSMUNDA CLAYTONIANA L.

Interrupted Flowering Fern.

(So called as the fruit is found in the middle of the frond, with sterile pinnae above and below the fruited ones.) A sterile frond closely resembles that of the next, but is more delicate, broader towards the top, and the segments more rounded. Specimens are found fruited nearly all the way up from the base and one I believe clear to the top. Common; fine localities in North Andover, Topsfield and Salem.

29. OSMUNDA CINNAMOMEA L.

Cinnamon Fern.

(So called from its color when coming into fruit.) Familiar to all in pastures and by the roadside, throwing up its tall spikes of fruit in the centre of a whorl of sterile fronds. Often when in the shade I have found sterile fronds of this six feet long.

30. Var. *frondosa* is a state where a portion of the sterile frond becomes fertile, very curiously imitating the fertile fronds of No. 28. Found everywhere.

31. LYGODIUM PALMATUM Swartz.

Climbing Fern.

Found at Saugus. I have not searched for it myself, but add it on the authority of Mr. G. E. Emery, of Lynn, a specimen being in the Institute collection from him.³ All know this fern, and a description is unnecessary. Judging by the way it is sold in Boston one can hardly help thinking that if the practice of tearing it up so recklessly continues, it will soon be quite scarce, even at the Windsor and Concord localities.

32. OPHIOGLOSSUM VULGATUM L.

Adder's Tongue Fern.

I know of but one locality for this in the county, in Beverly, where it was first noticed by J. H. Emerton, 1872. No doubt others are to be found, as owing to its inconspicuous habits the fern is easily overlooked. Meadows and wet ground about the clumps of bushes and hummocks are the places to be searched for it.

³ The above locality is endorsed by Mr. C. M. Tracy.

33. BOTRYCHIUM TERNATUM Swartz.

Ternate Grape Fern.

The Botrychiums form one of the most interesting genera of ferns we here have represented. There are but ten recognized species of Botrychium known in the world, seven of which grow in America. Our two larger forms are very distinct, but the smaller ones seem to run into each other, though there are distinctions not at once noticeable to a casual observer. *B. ternatum* has two perfect fronds, one sterile and one fertile, distinct to the ground. The typical form is found in California growing to great size, while here the fertile frond seldom exceeds ten inches in height, with a sterile frond five inches across. Found at Essex, 1872-4.

34. Var. *lunarioides* has more rounded segments than the typical. The finest specimen I ever saw was found by Mrs. Horner, in Georgetown.

35. Var. *obliquum*. The segments are longer, and are quite oblique to the rachis.

36. Var. *dissectum*. The whole frond is cut and recut till almost entirely reduced to points. Nos. 34, 35, 36, are found both in wet shady places, and in pastures.

37. BOTRYCHIUM VIRGINIANUM Swartz.

Rattlesnake Fern.

Found in Beverly, and also in Georgetown (Mrs. Horner). This beautiful and delicate fern is the largest of all the Botrychiums and is found from Canada to the tropics. Not rare, yet (owing to its never spreading except by spores) it is seldom found abundant except as a number of specimens scattered through the woods. In this the fertile spike is on the same stalk with the sterile frond, all the limbs springing from a common centre much above the ground. There are one or two of the small species of Botrychium which possibly may be found in the county.

FERNS THAT POSSIBLY MAY YET BE FOUND GROWING
NATURALLY IN ESSEX COUNTY, MASS.

1. WOODWARDIA ANGUSTIFOLIA Smith. Now found in Hingham and Dedham.

2. PHEGopteris HEXAGONOPTERA Fée. Found in Portland, Brattleboro and South.

3. ASPIDIUM CRISTATUM var. CLINTONIANUM D. C. Eaton. Found in Vermont and New Hampshire.

4. *ASPIDIUM GOLDIANUM* Hook. Found in New Hampshire, Vermont and Connecticut.

5. *BOTRYCHIUM SIMPLEX* Hitch. Found on Long Island, Deerfield, Mass., etc.

6. *BOTRYCHIUM MATRICARIFOLIUM* A. Br. Found in New Hampshire, New York, Dedham, Mass.

7. *BOTRYCHIUM LANCEOLATUM* Angström. Found in Sudbury, Mass., etc.

LYCOPODS FOUND IN ESSEX COUNTY.

LYCOPODIUM LUCIDULUM Michx. Essex, Peabody, Georgetown.

L. INUNDATUM L. Beverly, Beaver pond; Chebacco pond.

L. ANNOTINUM L. Chebacco woods (1872, J. R.); probably the locality of this rare species was known to Wm. Oakes about 1840.

L. DENDROIDEUM Mx. also *var. OBSCURUM*. Common in almost every town.

L. CLAVATUM L. Common North Andover, Georgetown, Essex, Beverly, etc.

L. COMPLANATUM L. Very common, including a variety.

SELAGINELLA APUS Spring. West Boxford and Georgetown, abundant (Mrs. Horner).

S. RUPESTRIS Spring. Common on rocky, bare hills.

HYDROPTERIDES.

MARSILIA QUADRIFOLIA L. Has become fully established in a little pond by Leggs Hill, where it was planted years ago by Mr. Russell (S. B. Buttrick).

EQUISETACEÆ.

EQUISETUM ARVENSE L. Common everywhere.

E. SYLVATICUM L. Not rare in the woods.

E. LIMOSUM L. Wenham, Topsfield, etc.

E. HYEMALE L. Danvers (J. H. Sears.)

REGULAR MEETING, MONDAY, MARCH 1, 1875.

MEETING this evening at 7.30 o'clock. VICE PRESIDENT F. W. PUTNAM in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From Mary J. Safford Blake, Boston, Feb. 20; John M. Bradbury, Ipswich, Feb. 24; J. Colburn, Boston, Feb. 20; C. F. Crocker, Lawrence, Feb. 17; S. G. Drake, Boston, Feb. 25; S. A. Green, Boston, Feb. 27; Frederick A. Lucas, Rochester, N. Y., Feb. 28; Alfred Osgood, Newburyport, Feb. 24; Nathaniel Paine, Worcester, Feb. 19; A. A. Scott, Saugus, Feb. 18; Boston Public Library, Feb. 25; Buffalo Historical Society, Feb. 25; Portland Institute, Feb. 18; Worcester Lyceum and Natural History Association, Feb. 24.

The LIBRARIAN reported the following additions to the library :—

By Donation.

BOLLES, E. C. Sunday School Helper, 63 numbers. Christian Leader, 12 numbers. Sunday School Journal, 5 numbers. Sunday School Teacher, 3 numbers. Miscellaneous pamphlets, 27.

BROOKS, H. M. Woman's Journal, Apr., June, July, Aug., Oct., Nov., Dec., 1874.

CITY OF BOSTON. City Documents, 1874. 3 vols. 8vo.

CUTTER, A. E., of Charlestown, Mass. Ninth Annual Report of the Winchester Home Corporation for Aged Women, Jan., 1875. 8vo pamph.

FOOTE, H. W., of Boston, Mass. Sermon preached at King's Chapel, Sunday, Jan. 3, 1875. 8vo pamph.

GREEN, S. A., of Boston, Mass. Miscellaneous pamphlets, 70.

LEE, JOHN C. Commercial Bulletin, Feb. 13, 20, 27, 1875.

MASS. CHARITABLE MECHANIC ASSOCIATION. Twelfth Exhibition of the, Sept. Oct., 1874. 8vo pamph.

By Exchange.

AMERICAN PHILOSOPHICAL SOCIETY. Proceedings of. Vol. xiv. June-Dec. No. 93. 1874.

NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Proceedings of the, Jan. 6, 1875. 8vo pamph.

WISCONSIN ACADEMY. Transactions of the. Vol. li. 1873-4.

PUBLISHERS. Forest and Stream. Gloucester Telegraph. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Salem Post.

After remarks by the chair in relation to the very interesting photographs of ancient stone houses on the cliffs of the Mancos Valley, which had been taken by Messrs. Jackson and Ingersoll, of the Hayden Expedition, it was

Voted, To invite Mr. ERNEST INGERSOLL, of the Hayden Expedition, to give an illustrated lecture on the recent archaeological discoveries of the expedition.

Mr. PUTNAM then called Dr. G. A. PERKINS to the chair, and occupied the evening by giving an account of the fortifications, and other enclosures, made by the Indians and the older races in North America. First, calling attention to the fortifications which, from historical evidence, were known to have been made and occupied by the different Indian tribes at the early period of the settlement of North America by the white race, he described their characteristic structure, which, generally, was that of low earth embankments, with, or without, an outside ditch, and these embankments were generally surmounted by palisades. In other instances the walls were of stone in the place of earth, and in many forts palisades were used without additional defence. He then described those which, for several reasons, were considered as having been erected by the mound builders. These were, so far as yet known, confined to the great Mississippi valley, the Ohio valley, and the southern and south-western parts of the country. These structures are far more imposing than those made by the Indians, and are built with more regard to permanence. Many are so situated as to have formed almost impregnable positions, and we cannot but believe that their defenders must have maintained them for years, until finally they were forced, by continued battles and probably from lack of subsistence, to migrate farther to the southwest, or were so reduced by starvation as to become exterminated.

Many interesting comparisons were made between the fortifications in different parts of the country, and also those of South America, the Pacific Islands and the ancient parts of the old world, showing that in all lands, and during nearly all time, there had been a continued system of warfare and extermination of races.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., APRIL, 1875. No. 4.

One Dollar a Year in Advance. Ten Cents a Single Copy.

CATALOGUE OF THE FIRST ART EXHIBITION, MARCH, 1875.

No.		<i>Contributor.</i>	<i>Artist.</i>
1	Marriage of St. Catherine.*	Mary E. Williams.	Antonio Balestra.
2	View from Taormina in Sicily, looking towards Messina.*	"	A. O. Williams.
3	Copy of St. Margaret dispelling the Dragon with the Cross in the Church of San Pietro in Vincoli at Rome, by Guercino.*	"	Mary E. Williams.
4	Copy of the Madonna Enthroned, by Pinturicchio, at Perugia.*	"	Mary E. Williams.
5	Copy of the Marriage of St. Catherine by Murillo in the Vatican Gallery.*	"	Mary E. Williams.
6	View of Ischia from Capri.*	"	A. O. Williams.
7	Erithrean Sibyl.*	"	Mary E. Williams.
8	View on the Road to Vallombrosa.*	"	A. O. Williams.
9	Lake Como from San Giovanni.*	"	A. O. Williams.
10	Lake Maggiore from Bayeno.*	"	A. O. Williams.
11	Lake Como from Bellagio.*	"	A. O. Williams.
12	Study of Capuchin Monks.*	"	Mary E. Williams.
13	Sans Souci.*	"	Mary E. Williams.
14	View of Sorrento and Bay of Naples.*	"	A. O. Williams.
15	Un Bajocco per Carità.*	"	Mary E. Williams.
16	A Roman Maiden.	"	Mary E. Williams.
17	Heidelberg Castle and Town.*	"	A. O. Williams.
18	Cloister Life in the Olden Time.*	"	Mary E. Williams.
19	The Roman Forum at Sunset; view from the Capitol.*	"	Moretti.
20	Copy of some Angels in the Coronation of the Virgin, by Raphael, in the Vatican.*	"	Mary E. Williams.
21	View of Mount Etna from Taormina.*	"	A. O. Williams.
22	Roman Beggar.*	"	Mary E. Williams.
23	View of Tivoli and its Falls.*	"	A. O. Williams.
24	Study of an Arab, from life.*	"	Mary E. Williams.
25	Roman Peasant Girl.*	"	Mary E. Williams.

No.		Contributor.	Artist.
26	Tomb of Cecilia Metella and the Via Appia looking towards Rome.*	Mary E. Williams.	A. O. Williams.
27	Study of an Arab's Head, from life.*	"	Mary E. Williams.
28	Little Wild Flower.*	"	Mary E. Williams.
29	Bay of Salerno; view on the road to Amalfi.*	"	A. O. Williams.
30	Palermo.*	"	A. O. Williams.
31	American Autumn.*	"	A. O. Williams.
32	Old Joanna.*	"	Mary E. Williams.
33	The Alchemist.*	"	Mary E. Williams.
34	The Tenants of our Kitchen.*	"	Mary E. Williams.
35	Italian Kitchen.*	"	Mary E. Williams.
36	Angel of the Annunciation; copied from Pinturicchio.	"	Mary E. Williams.
37	Madonna; copied from Pinturicchio.	"	Mary E. Williams. }
38	Papyrus growing on the River Anapo in Sicily.*	"	A. O. Williams.
39	Saracenic Tombs at Taormina.	"	A. O. Williams.
40	Stella, Roman Costume.*	"	Mary E. Williams.
41	Roman Peasant.*	"	Mary E. Williams.
42	Pifferaro.*	"	Mary E. Williams.
43	Capuchin Monk.*	"	Mary E. Williams.
44	Star Grass.	"	Mary E. Williams.
45	Fringed Gentian.	"	Mary E. Williams.
46	Mallows.	"	Mary E. Williams.
47	Lady's Slipper.	"	Mary E. Williams.
48	Mountain Laurel.	"	Mary E. Williams.
49	Lysimachia and Lobelia.	"	Mary E. Williams.
50	Harebell.	"	Mary E. Williams.
51	Painted Cup.	"	Mary E. Williams.
52	Cardinal Flower.	"	Mary E. Williams.
53	Closed Gentian.	"	Mary E. Williams.
54	Gay Feather and Burnett.	"	Mary E. Williams.
55	Nodding Lily.	"	Mary E. Williams.
56	Meadow Lily.	"	Mary E. Williams.
57	A Copy by Farrar, from a Water Color Sketch by Jno. W. Turner.*	G. L. Chandler.	
58	A view on the Androscoggin River in Bethel, Me., a sketch in oils by Butman.*	"	F. W. Butman.
59	Crayon drawing from a cast of an antique head.	"	G. L. Chandler.
60	Millbrook Falls—Thornton, N. H.—pencil sketch.	"	G. L. Chandler.
61	Water color drawing; Lake Winnipisaukee.*	"	Wheelock.
62	Landscape.*	"	S. L. Gerry.
63	Landscape.*	"	W. A. Gay.
64	Photograph from a portrait.*	"	W. M. Hunt.
65	Etching, by Vandyke; portrait of Paul Pontius.	"	Vandyek.
66	Photograph from a portrait of the Duke d'Olivares.	"	Velasquez.
67	Paul preaching at Athens; engraving by Dorigny, after Raphael.	"	Raphael.
68	Landscape.*	"	R. H. Fuller.
69	The Transfiguration; engraved by Dorigny after Raphael.*	"	Raphael.
70	Landscape; engraved by Woollett, after Claude.*	"	Claude.
71	Engraving; "Comfort the Fatherless and the Widow," from a design by Flaxman.	"	Flaxman.
72	Landscape; Livermore Falls, Plymouth, N. H.*	"	G. L. Brown.
73	Landscape; Medford Salt Marshes.*	"	G. L. Brown.

No.	Contributor.	Artist.
74	Four photographs; Landscapes from Turner's Liber Studiorum.	Ira W. Turner.
75	Crevasse on the Mer de Glace; Chromo-lithograph.	G. L. Chandler.
76	Head of Daniel Webster; a photograph from a relieve in marble, life size.	"
77	The Prophet Zachariah; carbon photograph, from the fresco by M. Angelo.	"
78	Italian Shepherd.*	George Newcomb.
79	View in Conway, N. H., near Artists' Mill.*	George Newcomb.
80	Kiarsarge Brook, Conway.*	George Newcomb.
81	Artists' Brook, Conway.*	George Newcomb.
82	Moonrise and Sunset, White Head Harbor, Portland.	E. S. Morse.
83	Out-door Sketch. Campton. N. H.	"
84	Palette Knife Sketch.	"
85	American Bittern; Pastel from Still Life.	Mrs. Osgood.
86	Woodecock from Still Life.	"
87	Water Color, Autumn Leaf and Maidenhair.	Mrs. G. P. Osgood. Mrs. G. P. Osgood.
88	Water Color, Autumn Leaves.	Miss L. H. Cleveland
89	Lake Lucerne.	Miss L. H. Cleveland
90	Autumn Scene.	Helen Philbrick.
91	Water Color.	Eliza Philbrick.
92	Sketch in Oil.	G. W. Alston Jenkins
93	Clytie, Charcoal.	Miss Ida Caller.
94	Copy from Photograph, Charcoal.	Miss Ida Caller.
95	Head — original.	"
96	Child's Head, Charcoal.	"
97	Eastern Beauty, Charcoal.	"
98	Fruit Piece.	Mrs. Metcalf.
99	Lamb bound for Slaughter.	"
100	Italian Doves.	"
101	La Cucitrice.	"
102	Landscape.	Mrs. J. S. Cabot.
103	Portrait of Danish Prince, Copy.	"
104	Grapes.	Mrs. Kemble.
105	Table Top.	"
106	Table Top.	"
107	Table Top.	"
108	Tile.	"
109	Tile.	"
110	Derby Mansion.	E. S. Morse.
111	The Lookout.	"
112	Norman's Woe near Gloucester, Mass. Scene of the Wreck of the Hesperus.*	Mrs. Kindler.
113	Study of Cattle.*	"
114	Eastern Point.	"
115	Marine View.*	"
116	Full Military Record of Gen. U. S. Grant executed on the Principle of Reynold's Escutcheon of Military Service.	J. P. Reynolds.
117	Military Record.	"
118	Military Record.	"
119	Shadow Dance.	Miss Caller.
120	Terrier.	"
121	Pen and Ink Composition.	George Flint.
122	Peace.	John Robinson.
123	Pond Lilies.	"
124	Ifonse Seven Gables.	"

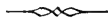
No.		Contributor.	Artist.
125	Copy of Portrait of Raphael (purchased at Florence).	A. J. Archer.	Abel Nichols.
126	Castle of St. Angelo.	Elijah W. Upton.	Joseph Ames.
127	Fancy Head.	"	
128	Landscape, Head Waters of the Saco River.	"	Champney.
129	Off Cape Race.	W. D. Northend.	S. G. W. Benjamin.
130	Fairy Tales.	"	Miss H. F. Osborne.
131	Dominican Nun.	"	T. T. Spear.
132	Sherwood Oaks; English Water Color Chrono.	John Robinson.	
133	Bridge at Bassée.	N. Ropes.	Dufresne.
134	John Brown.	A. G. Browne.	T. S. Noble.
135	Crayon from Model.	Mr. Whitney.	Charles F. Whitney.
136	The Winnower.	Miss Johnson.	Miss Kate Johnson.
137	Fuchsia on Rice Paper.	Miss M. E. Briggs.	Miss Kate Johnson.
138	Painted Cup.	Miss Johnson.	Miss Kate Johnson.
139	Wistaria.	M. G. Wheatland.	Gay.
140	Sketch.	"	L. E. Merrill.
141	Water Color.	"	Rebecca Munroe.
142	Water Color.	"	Miss Forrester.
143	View on the Hudson.	"	
144	Portland Harbor from Cushing's Island.	"	Miss E. Gardner.
145	Motto in Water Colors.	Mr. Dodge.	William B. Dodge.
146	Violets.	Miss Johnson.	Miss Kate Johnson.
147	Water Color.	Miss Quimby.	Miss A. M. Quimby.
148	Charcoal Sketch near Readville.	Miss Smith.	Miss S. E. Smith.
149	Copy from an Oil Painting.	"	Miss S. E. Smith.
150	The Monk, after Hunt.	"	Miss S. E. Smith.
151	Pine Grove, Blue Hill.	"	Miss S. E. Smith.
152	Copy of Head by Hunt.	"	Miss S. E. Smith.
153	Italian Boy.		Miss S. S. Kimball.
154	Oak Bluff, Water Color.	Miss Kimball.	Miss S. S. Kimball.
155	Bird and Nest.	"	
156	Medallion; Europe; photograph.	Geo. R. Chapman.	
157	Medallion; Asia; photograph.	"	
158	Medallion; Africa; photograph.	"	
159	Medallion; America; photograph.	"	
160	Sunset.	E. S. Atwood.	Loemons.
161	The Mountain Brook.	"	
162	Cape Elizabeth.	Mrs. F. H. Lee.	Miss M. T. Hersey.
163	Lucrece.	O. P. Lord.	Goodman.
164	Artists' Reunion.	"	Hauman.
165	Socrates instructing Alcibiades.	"	Schopin.
166	Lily, charcoal copy.	Miss Peirson.	Pupil of S. E. Smith.
167	Hand from a cast.	"	S. E. Smith.
168	Grapes from cast.	"	Miss Williams.
169	Japan Lily, Charcoal.	Miss Osgood.	Miss S. E. Smith.
170	Currants.	Miss Smith.	George M. White.
171	Autumn.	T. F. Hunt.	George M. White.
172	Early Morning at Sea.	"	S. G. W. Benjamin.
173	Path in the Woods.	"	J. J. Enneking.
174	Fruit.	"	Italian.
175	Gorge near Stowe, Vt.	"	George M. White.
176	Wild Cattle, Engraving.	W. D. Northend.	Landseer.
177	Panel; Apple Blossom.	Miss Caller.	Miss Alice Caller.
178	Panel; Lilac.	"	Miss A. Caller.
179	Panel; Wild Rose.	"	Miss A. Caller.
180	Panel; Violets.	"	Miss A. Caller.
181	Panel; Golden Rod.	"	Miss A. Caller.
182	Blue Gentian, Water Color.	Miss H. Putnam.	Miss H. G. Carlton.
183	Thistle Piece,*	Miss Grant.	Miss C. L. Grant.
184	Table Top. Pen and Ink.	Mrs. Davis.	Mrs. H. H. Davis.
185	Panel.	Mrs. G. Z. Silsbee.	Miss Silsbee.
186	Panel.	"	Miss Silsbee.

No.		Contributor.	Artist.
187	Nath'l Hawthorne at age of 36.	R. C. Manning.	Charles Osgood.
188	Portrait.	"	E. L. Custer.
189	Afternoon on L. Wallansee, Switzer'd.	"	E. L. Custer.
190	Cascade, Franconia.	"	S. P. Hodgdon.
191	Fruit.	"	
192	Study, Landscape.	"	E. L. Custer.
193	Horse, Pencil Drawing.		Benj. Henderson.
194	Portland Light.	E. C. Bolles.	H. B. Browne.
195	Flower Piece.		A. E. Whitmore.
196	Flower Piece.		A. E. Whitmore.
197	Sketch in Conway.	C. H. Weston.	George Newcomb.
198	A Study.	Miss K. Brooks.	Miss Kitty Brooks.
199	View in South Salem.	Miss K. Pierson.	Miss C. C. Lawrence.
200	Seven Pen Sketches.	Miss Saltonstall.	
201	Portrait, painted 1790.	Gardner Barton.	
202	Head of a Horse, after Landseer.	Mrs. Merritt.	Mrs. E. S. Merritt.
203	Roman Boy (copy after W. M. Hunt).	Miss Smith.	Miss S. E. Smith.
204	Italian Boy, a study from life.	"	Miss S. E. Smith.
205	Motto, Water Color.	"	Miss Dunning.
206	Baby (copy after W. M. Hunt).	"	Miss Smith.
207	Rainbow Creek, Florida (copy after Hunt).	"	
208	Pansies.	"	Miss S. E. Smith.
209	Red Rose.		Miss S. E. Smith.
210	Flower Panel.		Miss S. E. Smith.
211	Flower Panel.		Miss S. E. Smith.
212	Flower Panel.		Miss S. E. Smith.
213	Flower Panel.		Miss S. E. Smith.
214	Fruit.		S. E. C. Oliver.
215	Ship Rock.	C. Cooke.	George M. White.
216	Study.	"	George M. White.
217	White Mountains.	J. A. Gillis.	Gerry.
218	Winter Landscape.	Miss H. H. Silsbee.	Miss E. Gardner.
219	Engraving, Sistine Madonna.	B. H. Silsbee.	
220	Engraving, The descent from the Cross.	"	
221	Engraving, St. Michael slaying the Dragon.	"	
222	Engraving, Christ bearing the Cross.	"	
223	Valley of the Pemigewasset.	"	S. L. Gerry.
224	Copy of Madonna by Murillo.	"	
225	Engraving, Marriage of St. Catherine.	"	
226	Ferns, etc.		Lucy E. Merrill.
227	Water Color, Cat o' Nine Tail.		Helen F. Ayres.
228	Pink Spirea, Hardhack.		Helen F. Ayres.
229	Water Color, Flower piece.		Ellen Robbins.
230	Flower Piece.		Ellen Robbins.
231	Convolvulus.		Ellen Robbins.
232	Gladioli.		Ellen Robbins.
233	Winter Scene.		M. Macpherson.
234	Landscape.		M. Macpherson.
235	Loon.		M. Macpherson.
236	Echo Lake.		J. W. Averill.
237	Group of Cattle.		J. W. Averill.
238	Fruit Piece.	I. Fellows.	Miss S. E. Fellows.
239	Landscape.*	Miss Perkins.	Miss Annie Perkins.
240	Water Color.*	"	Miss Annie Perkins.
241	Water Color.	I. Fellows.	Miss S. E. Fellows.
242	Ezekiel.	Mrs. Nourse.	
243	Joel.	"	
244	Spanish Lady.	"	
245	Panel in Oil.	E. W. Upton.	Miss J. A. Stetson.
246	Shylock and Jessica.	"	Ames.
247	Feeding Chickens.		Miss H. F. Osborne.
248	Panel, Pansies.		Miss H. F. Osborne.

No.		Contributor.	Artist.
249	Poet's Dream.	C. A. Ropes.	Alex. Vion.
250	Canadian Winter.	"	Creighoff.
251	Kitchen and chicken.	"	Conterier.
252	Dessert.	"	X. L. Marsh.
253	The Dumb Donkey.	"	Lalaisse.
254	The First Ride.	"	Lalaisse.
255	Madonna.	"	Shraeder.
256	The Transfiguration.	"	S. B. Waugh.
257	Resignation.	"	Unknown.
258	Eastern Point.	"	Lane.
259	English Inn.	"	D. F. Notermay.
260	Barn Yard.	"	
261	Sir Galahad's Guest, from Tennyson's "Holy Grail."	Miss Osborne.	Miss H. F. Osborne.
262	Portrait of Daniel Webster, a relief in marble.*	Mr. Chandler.	G. L. Chandler.
263	Portrait of Washington.	Mr. Southward.	George Southward.
264	Marine View.	"	George Southward.
265	George Washington.	E. W. Upton.	J. Ames.
266	Fruit Piece.	Miss Pratt.	Miss Pratt.
267	Fruit Piece.	"	Miss Pratt.
268	Rev. Dr. Cutler's Barn, Hamilton, Ms.	F. Lamson.	H. S. Fiske.
269	View Belknap, N. H.	"	H. S. Fiske.
270	Lamson's Bridge, Topsfield.	"	C. C. Marcy.
271	Cymbeline, Water Color.	W. H. Foster.	H. L. Burchmore.
272	Interior.	"	Unknown.
273	Interior.	"	Unknown.
274	Fruit Piece.	Miss Saltonstall.	John Sutton.
275	Lynnfield Pond.	"	R. D. Wilkie.
276	Copy and Design, Breast-plate and War Mantle. Minerva.	Miss Carlton.	Miss H. E. Carlton.
277	Flowers from Nature.	D. B. Hagar.	Miss H. E. Carlton.
278	Table Top, Roman Mosaic.	Mrs. J. O. Safford.	
279	Fancy Carved Ink Stand.	Willie Safford.	
280	Marine View.	Mrs. John N. Mott.	Dr. Ruggles.
281	Roses.	"	Miss Sindberg.
282	Venice, Moonlight.	"	
283	Venice, Moonlight.	"	
284	Water Fall.	Mrs. G. H. Wood.	Griggs.
285	Early Autumn.*	Mrs. Kindler.	Mrs. Kindler.
286	A Sibyl; copy from Guercino.	Mrs. J. H. Silsbee.	
287	Rabbits, copy.	Miss Grant.	Miss Lydia Grant.
288	Lion, copy, charcoal.	Miss Pickering.	Miss Pickering.
289	Azalia and Vase.	"	Miss Pickering.
290	Cupid from Cast, charcoal.	Miss Brown.	Miss Alice Brown.
291	Winter Scene, copy.	Miss Nichols.	C. F. A. Nichols.
292	Flowers, copy.	"	C. F. A. Nichols.
293	Spools, from object.	Miss Oliver.	Miss Lizzie Oliver.
294	Venetian Scene.	J. M. Callier.	Defaux.
295	Church and Piazza of St. Peter's at Rome.	Miss Williams.	Moretti.
296	View on the Tiber near Rome.	Geo. R. Emmerton.	J. M. Emmerton.
297	Monastery in Gottenberg.	J. M. Callier.	Defaux.
298	Artist's Brook, North Conway.	Daniel Low.	George Newcomb.
299	Panel.	Mrs. F. C. Butman.	Miss Butman.
300	Apple Blossom.	"	Miss Butman.
301	Original painting of Cleopatra, by Guido.	Miss E. Gardner.	Guido.
302	Terrier Study.	Miss Agge.	Miss A. Agge.
303	Abd El Kadir, from Bronze.	"	Miss Agge.
304	Contentment, water color.	Miss Brown.	C. P. Brown.
305	The Little Foxes.	W. D. Northend.	Carter.
306	Autumn Leaves.	Miss Allen.	Miss Allen.
307	Naugus Head.	Prof. A. S. Packard	Mrs. Hyatt.
308	Portraits.	J. Peirce.	Charles Osgood.
309	Water Color.		Miss A. M. Quimby.

No.		Contributor.	Artist.
310	Photograph of bust of Wendell Phillips.	A. G. Brown.	
311	Water color. Roses.		Pupil of S. E. Smith.
312	Painting, Rose.		Pupil of S. E. Smith.
313	Sepia Tree Study.		Pupil of S. E. Smith.
314	Head of an Armenian Priest.		Miss M. E. Williams.
315	Head of a Pilgrim.		Miss M. E. Williams.
316	Copy of picture in Boston Athenæum.		Miss M. E. Williams.
317	Picture wrought on silk with chenille and floss.	Mrs. F. C. Butman.	Lucy Ropes, 1819.
318	Glaze Portraits.		J.W. & J. S. Moulton.
319	Albumen Portraits.		J.W. & J. S. Moulton.
320	Albumen Portraits.		J.W. & J. S. Moulton.
321	Spring Flowers.		Miss E. Gardner.
322	Portrait.	Mrs. E. Putnam.	Mrs. Wayland Hoyt.
323	Portrait.	Alfred Peabody.	Mrs. Wayland Hoyt.
324	Intervale at North Conway.	"	Miss E. Gardner.
325	Winter's Farewell. This is for sale for the benefit of the Salem Hospital.*	Miss Gardner.	Miss E. Gardner.
326	Island of Pico.	"	G. W. S. Benjamin.
327	English Channel.	A. H. Johnson.	G. W. S. Benjamin.
328	Apple Blossoms.	"	Miss Alice Callier.
329	Roses.	J. M. Callier.	Miss Alice Callier.
330	Charcoal Sketches.	"	Miss Ida Callier.
331	Prayer in the Desert.	"	Pupil of Vernet.
332	Portrait, Cromwell.	C. A. Ropes.	
333	Landscape.	A. G. Brown.	
334	Flowers.	C. H. Higbee.	E. Burrill, jr.
335	Cattle.	Miss Gardner.	Mrs. Gardner.
336	Landscape.	W. P. Upham.	O. W. H. Upham.
337	Water Color.	Geo. Newcomb.	Geo. Newcomb.
338	Landscape.	Miss M. Allen.	Miss M. Allen.
339	Landscape.	H. Kilburn.	H. Kilburn.
340	M. Angelo; engraving.	"	H. Kilburn.
		C. H. Higbee.	

Pictures marked thus* were for sale. The exhibition was continued from Thursday, March 11, to Friday evening, March 19.



REGULAR MEETING, MONDAY, MARCH 22, 1875.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

Mr. J. H. STEVENS delivered an interesting lecture upon a subject with which he has become pretty thoroughly acquainted by long and patient study.

He commenced by stating that he should treat experimen-

tally the applications of galvanic electricity to a few of the arts of every day life. Electricity, he said, is one of the more newly developed of the wonderful and beautiful forces that nature offers with a lavish hand, and in this great awakening on scientific subjects, the efforts to invade the penetralia of her domain have been amply rewarded by the glorious revelations she has vouchsafed of the operations carried on in the mysterious depths of her aerial and subterranean laboratories.

Electricity, though long known, has always been, and is now, very imperfectly understood. It is true it can be liberated from its elemental prison house, measured and sent laden with intelligence to the uttermost parts of the earth in a moment of time, but should the question be raised, "What is electricity?" the lecturer said that he for one should have to say, he did not know. It is simply known that it is one of the most powerful of the natural forces, but the intensity which can carry it, upon a free conductor, entirely around the circumference of the earth four times in one second is utterly beyond comprehension.

It is customary to speak of it as a fluid, and talk of a current of electricity flowing through a wire. But that cannot be, for certainly a fluid and a solid cannot occupy the same space at the same time. However, that is a convenient way of speaking, and to call it a current also hides our ignorance on the subject. As one of the natural forces it is of very vital importance in every day life. It pervades all things. The air we breathe is vitalized by its presence. The food we eat is rendered palatable and nutritious by its power. It attends the rising and the setting of the sun, and the midday solar heat causes a surging of vast electric and magnetic forces, which exert a powerful influence in the great economy of nature.

The methods of developing electricity in considerable

quantities for practical use are abundant. As the time for experiments was necessarily short, the lecturer proceeded at once with them. He took, at first, one of the simplest methods of developing a galvanic current. He said this is done most effectually by subjecting to an acid solution two metals of an entirely opposite nature, one of which shall be most easily oxidized by the acid, and the other not oxidized at all. The easily oxidized or positive metal is commercial zinc; the other or negative metal is pure platinum, the most refractory and valuable of metals to the chemist and the electrician. If the two metals were alike, they would be acted upon equally, thus offering no inducement for a transfer of force from one to the other, and consequently no electrical action.

The lecturer then placed the metals in a glass of water, slightly acidulated with sulphuric acid. The zinc plate was amalgamated with mercury, so that no local action should take place until the condition required for a transfer of the tension or electro motive force from one plate to the other was fulfilled. That condition is to place a metallic connection from one plate to the other, outside of the solution, as a conductor for the current to travel upon. This was done with a piece of copper wire. The current then was flowing rapidly along the wire, from the platinum to the zinc plate. Through the solution it was flowing from the zinc to the platinum. The water was decomposing, the oxygen evolving at the zinc plate and the hydrogen at the platinum. The sulphur attacking the zinc was precipitated in the form of crystallized sulphate of zinc.

The wire conductor may be one inch long or one thousand miles long, and the electric force will be felt equally along its whole length, the strength of battery being equal to the resistance of the wire. Now to utilize this

current of electricity for a motive power, it must be converted into magnetism, which is easily done by wrapping insulated copper wire, in many turns, around soft iron of any convenient shape.

One of the many practical uses of the electric current he explained by the use of apparatus which was put up in a circuit about the hall. It represented a circuit of street gas-lights, such as have been in use in Ward Three in this city since last fall, and though the winter has been an unusually severe one, they have proved themselves equal to it, and have worked with perfect success through the severest storms. The apparatus consisted substantially of an electro magnet, an armature, ratchet wheel and pawl. Two wires led from the battery at the central station to the first light in the circuit, and thence to each one in its turn. When a current was sent out on the lighting wire, the magnet was charged, the armature of which actuates the pawl and ratchet wheel, thus opening the cock to let on the gas, at the same time, by an interruption of the current at the tip, lighting the gas. At the expiration of the half second of time which it takes to turn on and light the gas, the current was sent forward, by the action of a cam and spring, to the next light, and so on to the end of the circuit. A reversal of the switch at head quarters sent out a current on the other wire, which by a similar operation turned off the gas at the rate of four burners in one second.

After explaining the apparatus very fully and minutely, in its capacity as a burglar alarm, etc., the lecturer passed on to the consideration of some other branches of electrical science. The subject of ocean telegraphy was taken up and treated as fully as the time would permit, by the use of actual working apparatus and diagrams.

After speaking of the importance of international tele-

graphic communication, in a political and commercial light, the lecturer introduced some very delicate receiving apparatus, to show the great difference between ocean and land telegraphy. He explained that instead of the noise, glare of light, clicking and bustle of an ordinary telegraph office, the cable office was silent and dark, to enable the watchful operator to detect the slight deflection of the tiny pencil of light which was to impart to him the intelligence which had flashed along under a thousand watery leagues from a distant part of the world. After explaining the reversing key and the different methods of working cables, by reversal and change of potential, the lecturer explained by diagrams some of the methods of locating a fault or a break a hundred or a thousand miles away from the shore, down deep upon the bottom of the ocean; also how a steamer would go almost directly over the spot, find, take up and repair the fault. Several specimens of cables were exhibited.

A very sensitive tangent galvanometer with a small reflector within its coils was arranged to receive a small ray of light coming from a lamp, through a small hole in the side of a box. On the back of the reflector was fastened a very small magnetic needle, which was deflected to the right or left in obedience to the positive or negative current sent through the wire by the reversing key at the sending station. The ray of light from the darkened box falling upon the reflector through a convex lens, was reflected upon a screen at the top of the box.

A positive current through the galvanometer would throw the little spot of light to the right of zero on the screen. A negative current would throw it to the left, thus producing the combination, which to the practised eye formed the letters of the alphabet.

The lecturer then gave an illustration of the very delicate and difficult process of finding a break or fault in the

cable in mid-ocean. For instance, a very slight abrasion occurs in the insulation of the conductor at some point in the ocean. It is just sufficient to allow enough of the current to escape to prevent intelligent communication. The test is made by disconnecting both ends of the cable from all apparatus. A test battery and sensitive galvanometer are then applied to one end, and the resistance in OHMS of that portion is obtained, which is the resistance of the conductor to the fault, plus the resistance of the fault itself to the earth. Then the same process is repeated from the other end.

The resistance of the fault itself must be eliminated from both tests, and as it will be the same in both cases, the process will be as follows :

To the known resistance of the whole cable add the obtained resistance of one test, deduct from that the obtained resistance of the other test, divide that result by two and you have the resistance of the conductor in the first test from the office to the fault, in OHMS, which is easily reduced to miles and fractions of a mile.

The chart then gives its locality in the ocean. A steamer then goes as near to the spot as possible and drags for the cable until it is fished up. By cutting the cable it is easily ascertained which side of the steamer the fault lies.

The cable is then picked up by machinery and passed along across the deck as the steamer proceeds. By passing it through a tank of water connected by very delicate test apparatus to the sea, the fault announces itself the moment it reaches the tank of water on deck. It is then cut out. Communication is established with both sides of the ocean, the cable is joined, the insulation is completed, and it is dropped down into its bed of infusoria, to throb again with those mysterious international impulses.

The finding of a break in the cable is similar in some respects, he said, to the process just described.

The lecturer then explained by diagrams the duplex or double transmission system, where two messages are sent at the same time in opposite directions upon the same wire without interference.

The lecture was closed by a series of brilliant experiments in electro-magnetism, the electric light, the deflagration of metals by the electric current, and the explosion of electric torpedoes.



REGULAR MEETING, MONDAY, APRIL 5, 1875.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair. Records of preceding meeting read.

The SECRETARY announced the following correspondence :—

From George H. Allen, Boston, March 2, 22; Samuel L. Boardman, Augusta, Me., March 17; John M. Bradbury, Ipswich, March 1; Waldo Higginson, Boston, March 2; Frank M. Caryl, Franklin, N. J., March 22; A. P. Mayer, Hoboken, N. J., March 1; George B. Gavett, Boston, March 10; Rufus King, New York, March 24; C. F. Maynard, Newtonville, March 5; Thomas E. Proctor, Boston, March 4; R. Ridgway, Washington, D. C., March 21, 29; Smith & Co., Woburn, April 1; Bristol Naturalist Society, Feb. 28; Liverpool Literary and Philosophical Society, Jan. ; Rhode Island Historical Society, March 9; Buffalo Historical Society, March 24; Iowa State Historical Society, March 30; Maryland Historical Society, March 26; New York Historical Society, March 26; Wein, K. Akademie der Wissenschaften, Mun 9, 16; Worcester, Public Library, March 24.

The LIBRARIAN reported the following additions to the library :—

By Donation.

KELLEY, JAMES H. Essex Register for 1828, 1829. 1 vol. folio.
 MACKENZIE, S. S., of Topsfield. Miscellaneous pamphlets, 15.
 MASS. HORTICULTURAL SOCIETY. Transactions of. 1874, pt ii.
 MERCANTILE LIBRARY ASSOCIATION OF SAN FRANCISCO. Twenty-Second Annual Report. 1874.

MERCANTILE LIBRARY COMPANY OF PHILA. Fifty-Second Annual Report. Jan., 1875.

OFFICE OF THE CHIEF OF ENGINEERS. Report in reference to the Canal to connect the Chesapeake and Ohio Canal with the City of Baltimore, by Col. J. J. Abert. 1838. 4to pamph. Preliminary Report upon Invertebrate Fossils collected by the Expeditions of 1871, 1872, 1873, by C. A. White. Svo. 1874. Progress Report upon Geographical and Geological Explorations and Surveys west of the 100th meridian.

PERRY, W. S., of Geneva, N. Y. Miscellaneous pamphlets, 25.

PHIPPEN, GEO. D. Josephus. 1 vol. 4to. Scientific American, 1862. 2 vols. folio. History of Provençan Poetry. 1 vol. Svo. Life of A. Lincoln in German. 1 vol. Svo. Mechanics' Magazine. 4 vols. Svo. Harmer's Observations. 4 vols. Svo. Li-le's Husbandry, 1757. 1 vol. Svo. Greek and English Dictionary. 1 vol. Svo. Kempton's History. 4 vols. Svo. Antiquities of Rome. 1 vol. Svo. The Modern Jesuits. 1 vol. Svo. American Atlas. 1 vol. folio. Log Books, 4. Miscellaneous pamphlets, 150.

U. S. NAVAL OBSERVATORY. Washington Astronomical and Meteorological Observations, 1872. 1 vol. 4to.

U. S. PATENT OFFICE. Official Gazette, Jan. 26. Feb. 2, 9, March 9, 16, 1875.

WOODMAN, CYRUS, of Cambridge, Mass. Buxton Centennial, 1772-1872. By J. M. Marshall. 1 vol. Svo.

By Exchange.

ST. LOUIS ACADEMY OF SCIENCE. Transactions. Vol. iii. No. ii. Svo. 1875.

AMERICAN GEOGRAPHICAL SOCIETY. Journal. Vol. iv, 1872. 1 vol. Svo.

BRISTOL NATURALIST SOCIETY. Proceedings of. Vol. i, pt. I. New Series. 1874. Svo.

GEOLOGICAL SURVEY OF CANADA. Report of Progress for 1873-4. Svo.

N. E. HISTORIC-GENEALOGICAL SOCIETY. Register for April, 1875.

NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Genealogical and Biographical Record. April, 1875.

PEABODY INSTITUTE, Peabody, Mass. Twenty-Second Annual Report of the Trustees.

PHILA. ACADEMY OF NATURAL SCIENCES. Proceedings. Pt. iii, Oct., Nov., Dec., 1874.

PUBLISHERS. American Journal of Education. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Observer. Salem Post.

Among the donations announced were a collection of glass ware made at the works of, and donated by, the Boston and Sandwich Glass Company, through Mr. John C. Lee, of Salem, illustrative of glass manufacture.

Horace Brown, Oliver D. Way and Daniel C. Manning, of Salem, and George W. Grader, of Marblehead, were elected resident members.

Rev. E. C. BOLLES presented to the Institute about seventy-five examples of East Indian and Japanese paper, the former obtained in London through the kindness of M. C. Cooke, Esq., and the latter derived from exchange with the Agricultural Department at Washington. After speaking of the ancient paper made by expanding sections of the cellular tissues of plants, as the papyrus of the Egyptians and the rice paper of the Chinese, Mr. Bolles called attention to the fact that the Japanese paper exhibited to the Institute was made from the bark of the Paper Mulberry (*Broussonetia papyrifera*), the same substance which, beaten out without pulping, forms the Tappa cloth of the Sandwich Islanders. One remarkable thing about the series of paper presented was its range of texture and weight; as the examples exhibited the most delicate and beautiful tracing paper, the coarsest "board," and most of the intermediate grades. Many specimens, especially those used for book-binding and box-covering, were profusely and artistically ornamented in color. A very fine and gauzy paper was shown as the goldsmiths' substitute for cotton. Perhaps the most curious was the vegetable leather, not to be distinguished in weight, color or flexibility from the best morocco for binders' use. A description of the manufacture of this may be found in the "Journal of the Franklin Institute" for January, 1875.

The East Indian paper was manufactured from a greater variety of substances. Some from Cashmere was from waste silk and examples from Berar from bamboo. A very delicate, highly colored and tough paper was the "kite paper" of Oude. Accompanying this series were the bark of *Broussonetia papyrifera* and *Daphne cannabina*, with the pulps made from both.

It is understood that these series are only in commence-

ment of a cabinet illustrating paper-making of all countries and ages, to which the Institute solicits contributions.

Mr. Bolles, when in England, procured a large number of specimens of vegetable fibres, which have been handsomely mounted, and will be properly arranged for exhibition, in the new department of Technology, which has been organized by the Institute, and which cannot fail to prove both interesting and instructive. He also obtained, through the courtesy of M. C. Cooke, Esq., a variety of models in clay, showing the different classes of workmen engaged in the various processes of paper manufacture as practised in India. Specimens of each were shown to the audience.

Mr. F. W. PUTNAM called attention to the fact that very similar materials (the inner bark of trees, leaves of rushes, etc.), described by Mr. Bolles as used by the ancient races of the East for the manufacture of paper, were also used by the prehistoric races of this country for the purpose of making garments, as proved by the specimens which he had exhibited at a former meeting.

BULLETIN
OF THE
ESSEX INSTITUTE.

VOL. 7.

SALEM, MASS., MAY, 1875.

No. 5.

One Dollar a Year in Advance. Ten Cents a Single Copy.

SYNONYMY, DESCRIPTION, HISTORY, DISTRIBUTION AND HABITS OF
THE PRAIRIE HARE (*LEPUS CAMPESTRIS*).

BY DR. ELLIOTT COUES, U. S. A.

Synonymy.

Lepus virginianus var.?, HARL., Fn. Amer. 1825, 310 (based entirely on the "Varying Hare of LEWIS and CLARK," *infra*; description from these authors).

Lepus virginianus ["HARL.,"], RICH., F. B. A. i. 1829, 224 (Saskatchewan; N. to 55°. Not of HARLAN. *op. cit.* 196, which is *L. americanus*).—MAXIM., Reise, i, 1839, 508.

Lepus campestris, BACH., J. A. N. S. P. vii, pt. ii, 1837, 349; viii, pt. i, 1839, 80 (in white pelage). WATERH., N. H. Mamm., ii, 1848, 127. GIEB., Säugeth. 1855, 449. BD., M. N. A. 1857, 585. NEWB., P. R. R. Rep. vi, 1857, 63 (upper California and Oregon). COOP. and SICKL., N. H. W. T. 1860, pp. 104, 131 (Columbia to the Missouri). HAYD., Tr. Am. Phil. Soc. xii, 1862, 148 (upper Missouri). MAXIM., Arch. f. Naturg. xviii, 1862, ; Verz. N.-A. Säug. 1862, 193. ALLEN, Bull. Ess. Inst. vi, 1874, pp. 52, 58, 61, 66 (Kansas, Colorado, Wyoming and Utah). AMES, Bull. Minn. Acad. Nat. Sci. 1874, 70 (Minnesota).

Lepus townsendii, BACH., J. A. N. S. P. viii, pt. 1, 1839, 98, pl. 2 (Columbia R., in summer pelage). TOWNS., Narr. 1839, 325. AUD. and BACH., Q. N. A. i, 1849, 25, pl. 3. STEV., U. S. Geol. Surv. Terr. 1870, 462 (Wyoming).

Varying Hare, LEWIS and CLARK, ii, 179 (earliest identifiable account). HARL., *op. et l. c.* (Not of authors generally.)

Prairie Hare of the Fur Traders. RICH., *op. et l. c.*

Jackass Rabbit, VULG., in the regions it inhabits.

Description (from various specimens collected by the writer in July and August, in Montana, lat. 49°).

With the general form of the other large, long-limbed, great-eared hares of the west. Ears, measured from extreme base, decidedly longer than head from nose to occiput. Tail vertebræ about as long as ears from their extreme base — longer than height of ear above its notch. Hind foot rather longer than ears or tail, about twice as long as fore foot from the wrist. Tail with its hairs longer than ear or foot. Width of ear, pressed flat, about one-half its height. Soles and palms densely hairy throughout, the pads reaching to the ends of the nails. Whiskers as long as the head, some black, others white. A few black bristles over the eyes, the lower series constituting true eyelashes. Edges of the eyelids naked. Muzzle completely clothed. Ears softly and closely furry both sides, excepting the deeper portions of the concavity, and with a long thin hairy fringe on the anterior folded over edge. General pelage extremely long, loose and fluffy.

General color of the upper parts pale dull yellowish gray, greatly predominating over a dusky brown with which it is mingled. The bases of the hairs are plumbeous-white, to which succeeds a dusky interval, the yellowish gray furnishing the tip. This predominant tone is pretty uniform, but there is an obscurely darker median dorsal area; while back of the ears, on the sides, hips, buttocks, and in fact all around the general dorsal area, the color lightens, by extinction of the dusky, into a pale plumbeous gray, with a faint yellowish gray tinge. The throat band is of this latter character, and so are the outer surfaces of the limbs for some distance. Toward the extremities, however, the limbs become more decidedly yellowish brown, slightly toned with dusky. The feet-pads are dirty brown, as if soiled by continued contact with the ground. The under side of the head, and, indeed, all the under parts excepting the throat band, are pure cottony white. The tail is pure white, too — a strong character of the species — the dark dorsal area which obtains in its allies being wholly wanting, or merely indicated by a slight plumbeous line, prolonged part way down the top of the tail. The crown of the head agrees with the upper parts in general, but owing to the closeness of the fur, the pattern is finer, and the darker annulations of the hairs gives a heavy ground upon which the yellowish tips of the hairs are more sharply displayed. This darker coronal area is enclosed between light transocular stripes, not well defined, but still showing plainly by contrast. The eyelids themselves are white. The extreme muzzle and the cheeks for a short distance, are light buffy brown, or pale lawn color, well contrasted against the pure white of the chin.

The ears are strongly particolored. The back of the ear is snow-white to within about an inch of the tip, where it is abruptly black. The very edge of the posterior border of the ear is snow white at base, but generally tinged with tawny in the rest of its extent. The broadly folded over anterior border of the ear, and the furriest part of the inside of the ear opposite are like the crown of the head, but the pattern is still finer. The anterior edge of the ear gives a delicate fawn-colored stripe all the way along, supplemented by a pure white fringe of longer hairs. The tip of the ear in front is black like the back, but this black tipping is of less extent than it is behind. The shortest pilous hairs of the concavity of the ear are white, tending to pale fawn color towards the end of the ear. Sometimes that portion of the concavity of the ear which is not covered by the fold of the anterior border shows a quite blackish area, only less conspicuous than the black tip.

The sexes of this species are not distinguished by any constant color-marks, nor have I been able to satisfy myself that there are any other than the purely sexual external characters, though the male may average rather the larger, longer-limbed and greater-eared. Nor are the young, from the time they are a few weeks old, materially different from the adults. The very young rabbits, however, have distinguishing color-marks. The dark portions of the hairs are extensive and intense; while the fur is so remarkably long, loose and straggling that this dark color is more apparent than it is in the adults. There are also some curious special head markings. The most conspicuous of these is a small pure white spot, exactly on the middle of the crown; which is usually accompanied by a white eye stripe, a white patch in front of the eyes, and white on the side of the nose. These markings are diffuse and irregular, but still quite noticeable; and the coronal spot persists usually until the animal is well grown. The foot-pads are white or whitish until they become gradually discolored by contact with the ground. The incisors are white. On comparing very young animals with individuals of the same size of the cotton tail of the region (the latter must be a week or so older to attain corresponding dimensions) the differences are very obvious. The larger species already displays the longer limbed and seemingly "looser-jointed" characteristics of its kind, in comparison with the close-set, chubby form of the smaller rabbit; the fur is very notably longer, looser and fluffier, without the smoothness and gloss of that of the other species; while the coloration is entirely mixed blackish and yellowish gray, without any of the rich ruddy tints of the limbs, breast and nape, which appear from the first in the smaller species. The black tips of the ears and their fawn colored margins are also characteristic.

Winter pelage. White, more or less mixed with gray underneath, and with rusty markings, especially on the legs and ears. The species probably never becomes entirely pure white, like *L. glacialis*.

M E A S U R E M E N T S .

Cone's Number.	From tip of nose to				Tail to end of		Length of		Arm to end of claws.	Knee to end of claws.	Height of ear above notch.
	Eye.	Ear.	Occip.	Tail.	Verteb.	Hairs.	Fore ft.	Hind ft.			
4134 ¹	2.40	4.00	4.50	19.00	4.50	6.50	2.75	6.00	7.00	10.00	4.30
4200 ²	2.20	3.50	4.50	19.00	4.50	7.00	2.75	5.75	7.50	10.75	5.00
4269 ³	2.25	4.00	4.50	18.00	5.00	7.00	2.75	5.75	7.25	11.00	4.00

The written history of this species, though somewhat involved, may be fully elucidated. As in the cases of so many of our western animals, we owe our first recognizable account of this species to Lewis and Clark, whose description, though not entirely correct, is perfectly recognizable as belonging here. In 1825, Dr. Harlan copied their accounts in substance, querying the animal as a variety of his *L. virginianus* (the *L. americanus* of authors). In 1829, Sir John Richardson gave an accurate description, as far as his slight material went, supplemented with the account of Lewis and Clark, and from his whole article it is evident he had this species in view, although he miscalled it *L. virginianus*, supposing it to be the same as Harlan's animal, which it is not. The Prince Maximilian repeated Richardson's mistake of nomenclature; his account is otherwise accurate and unmistakable. In 1837, Dr. Bachman described it

¹ A fresh male specimen from near Milk River, July 5, 1874. Testes elongate, loosely pendulous, inguinal. Ear above occiput, 5.50. Eye grayish yellow. Humerus, 4.00. Femur, 5.00.

² A fresh female specimen from near Milk River, July 10, 1874. Ear above head, 6.00; width, pressed flat, 3.00.

³ A fresh female specimen from Three Buttes, Montana, Aug., 9, 1874. Ear above head, 5.00; width, 2.25.

in winter dress as *L. campestris*, the first tenable specific name. Shortly afterward, receiving it in summer dress, and being assured that it was not a "varying" hare, he redescribed it as *L. townsendii*. His subsequent suspicion, that his two names applied to the same animal in different vestures, as strongly expressed in the later work above quoted, has been amply verified. Since the rectified collation of synonymy by Prof. Baird in 1857, we find this well marked, abundant and widely distributed species noticed at greater or less length, and under its proper name, by nearly all the naturalists who have visited the northwestern or western territories, and reported the result of their observations. It may now be considered as a well known and thoroughly established species.

Its geographical distribution may be given with an undoubted close approximation to accuracy of detail. In British America, according to our chief if not only authority, Sir John Richardson, it has been traced north to 55°; "it is a common animal on the plains through which the north and south branches of the Saskatchewan flow, and which extend as far eastward as the Winepegoosis and southern extremity of Winepeg Lake." Along the northern border of the United States I have myself observed it from the beginning of the great plains just west of the Red River of the north, in eastern Dakota, to the base of the Rocky Mountains. It was most abundant in the region of the Upper Missouri and Milk River; but I have traced it in southeastern Dakota almost to the Iowa border. According to my observations it is the only jackass rabbit of Dakota and Montana. In Kansas, Mr. Allen states, "a few were seen in summer on the plains north of Fort Hays, and in winter from the western border of the state as far east as Bunker Hill Station." In this region they are associated with *L. callotis*. In Colo-

rado, the same author mentions that the species occurs in the parks, another species being there characteristic of the timbered mountainous region. Mr. Allen also found it "more or less common everywhere" in southwestern Wyoming, and extremely abundant in certain localities. To conclude with this gentleman's observations, he furthermore noted its common presence in the valley of the Salt Lake, Utah, where, as in Kansas, it is associated with *L. callotis*. So far as we have gone, we now see that the animal inhabits the prairie region of more than the northern half of the United States, from the eastern limit of the great plains westward. Our advices from west of the Rocky Mountains are equally explicit. Dr. Suckley reports it from the Blue Mountains of Oregon, and Mr. George Gibbs states that it is common on the plains of the Columbia east of the Cascades. In California, Dr. Newberry has indicated the limit of the range, at the point where the species is replaced by the ordinary "jack-ass" of that state, *L. californicus*. "The Prairie or Townsend's Hare is unknown in the valleys of California, though we found it a short distance south of the parallel of 42°, so that it may be said to inhabit that state. In the upper part of the Sacramento Valley, and even in the hills northeast of Fort Reading, we found the 'jackass rabbit' (*L. californicus*) everywhere abundant, the only hare, in the common acceptation of the term, known to exist there — *L. artemisiæ*, *audubonii* and *townsendii* being all called rabbits. Crossing the 'divide' between Lassen's butte, and coming down into the interior or Klamath basin, on the upper branches of Pitt River, we lost sight of the Californian species, to see no more of it till our return south months afterward. In its place another species * * * began to be occasionally seen, at first very rarely, afterwards oftener, as we approached the

Columbia, but never anywhere, in the region we visited, becoming so abundant as the Californian hare in some parts of its habitat. I saw the first individual of this species on the shores of Wright Lake." From this the limit of southward extension in California would seem to be more restricted than it is in the regions farther east. We have nothing to show that it occurs on the immediate Pacific slopes, and it probably does not. Nor did I ever ascertain its presence in New Mexico or Arizona, where *L. callotis* is found.

This, then, is the characteristic hare of the great plains—towards its southern limit associated with *L. callotis* and *L. californicus*, and on its mountainous confines meeting with the hare of the timber of those regions—but throughout vastly the greater portion of its range occupying the territory as the only representative of the several great hares of the west, all of which are known, wherever found, as "jackass rabbits," to distinguish them from the small species of the *L. sylvaticus* type. It is further notable as the only one of the very large long-limbed and great-eared group which, like *L. americanus*, regularly turns white in winter. The change probably occurs, in most cases, throughout the range of the species; in northern parts it appears to be universal; and, in fact, the only advices we have that it does not change are from Kansas, where, Mr. Allen states, that about half the specimens he secured in December and January retained their summer colors. There may, however, be some localities where the change is the exception rather than the rule. But even in the most northerly portions of its range, the change does not appear to be complete. There remains much bluish-gray about the roots of the hairs, and brown, rusty or yellowish tinges in places. The pale brown or fawn colored borders of the ears, and the similar colors

of the limbs towards their extremities, appear to be always retained. This is much as in *L. americanus*. The periods of the change are April and November.

In noting the habitat of the Prairie Hare, we must exclude from its range those portions which are wooded. Emphatically an animal of the plains, it never, so far as I have observed, enters timber, though ranging up to the very edge of the woods. Thus, we find it in the underbrush, sometimes quite heavy, of the river bottoms of the larger water courses in the west, but not in the woods that immediately fringe the rivers. It remains with us as we approach the timbered foot-hills of the Rocky Mountains, but we lose it in half a day's journey as we fairly enter the timber belt. It is as characteristic of the great sage barrens of the west as the sage cock itself; and in the more favored, grassy regions it is equally abundant. I have found it also in vast alkaline deserts I have traversed, and in those scarcely less forbidding tracts where a scanty herbage struggles with patches of prickly pear, mile after mile. In the more desolated regions, the only associate of its kind is the sage rabbit; near most of the water courses it will be found that the timber contains another ally, the common cottontail; but out on the broad rolling prairie, peculiarly its home, it flourishes almost alone.

Nor is the prairie hare in the least gregarious. I have never seen nor heard of several together, and indeed it is rare to find even two together, at any season whatever. It is one of the most solitary animals with which I have become acquainted. As we measure the weary miles of a day's march, a hare springs almost from beneath our feet, and another and another appears in succession, but always separated and independent of each other. I have never found any kind of locality even, which, presenting

special attractions, might invite many hares together. All places are alike to them; the oldest frontiersman, probably, could never guess with any degree of certainty where the next hare to bound off before him would appear. If it have any preference, however, it is for "weedy" tracts of which the sage brush regions furnish the best examples; there it finds shelter which the low, crisp, grass of rolling prairie does not afford, and also doubtless secures a greater variety of food. Like many other animals of the great plains, it appears independent of water; but we must judge this to be only an appearance.

In the regions where I have studied this hare, the female brings forth in June and early July—oftener the latter—and apparently only one litter is produced each season. The number of young is five or six, as a rule. The form is simply constructed, without burrowing, in the grass beneath some low, thick bush or tuft of weeds. The young are said to suckle and follow the mother for a month or more. They are agile little creatures, even when only a week or two old, and it is only when very young that they can be caught by hand. In travelling along the Milk River (where the species was abundant), early in July, I had several little ones brought to me, and some I kept for a time in a box. They had been stumbled upon as they dodged about in the grass, disturbed from their nest by the passage of our party. Though only five or six inches long, they had all the motions and attitudes characteristic of the parents, and made shift to run about quite cleverly. They could not eat, but some of them could be coaxed to lick a little milk. Their appearance, even at this early age, was unmistakable; the differences between them and young sage rabbits of the same size are elsewhere given. By the end of July we happened upon no prairie hares still so young as to be

taken in hand, though the third or half grown ones used often to stray about our camps, affording great amusement in the attempts instantly made by "all hands" to catch them.

I have not been eye-witness of the peculiar habits which doubtless mark the rutting period in this as in other species of the genus, having only been in the regions they inhabit later in the season. The period is over, I think, before June. Males taken during that month and the next are generally poor; the sexual organs are very apparent, as two long, linear masses in the inguinal region. After the care of the young, in July and August, the females are found much emaciated; and in fact, at no time during the summer, are these hares in good condition for the table. At other seasons the reverse may be considered the case by those who, unlike myself, are fond of rabbit-meat, the flesh, when in proper condition, being light colored, tender and not unpalatable. During the summer both sexes are terribly infested by a kind of tick, which fastens anywhere upon the body, but particularly about the ears, where I have found them almost in clusters. This tick appeared to me so different from any of those I had noticed on other rabbits, that I supposed it to be a new species, which I lately named *Ixodes leporis-campestris* ("Amer. Sportsm.," vol. iv, No. 22, Aug. 29, 1874). I regret that when I had the opportunity I did not make the necessary dissections, to see whether, like others of the genus, this species commonly harbors intestinal parasites. A tape-worm, *Tenia pectinata* Goeze (Diesing, Syst. Helminth. i, 498), is very frequent in *Lepus aquaticus*.

According to my experience, this hare is not much esteemed, either for its food or for its fur, by the whites of the region it inhabits, and it is accordingly not often an

object of pursuit. I have not known it to be trapped; the few I have seen killed, besides those I secured myself, were shot wantonly, to test skill with the rifle, or decide a trivial wager. In the country of buffalo, elk and antelope, such small game is little heeded, and its pursuit made an object of ridicule. It is not so easy, however, to shoot the animal, except by skilful marksmanship with the rifle; so timorous is it, that when startled it rarely stops within range of a shot-gun; while its always unexpected appearance, and the great bounds it gives as it makes off, render it a difficult mark, notwithstanding its size. Mr. Townsend has described a mode of netting it in numbers, pursued by Indians. "Some one or two hundred Indians, men, women and children, collect, and enclose a large space with a slight net about five feet wide, made of hemp; the net is kept in a vertical position by pointed sticks attached to it and driven into the ground. These sticks are placed about five or six feet apart, and at each one an Indian is stationed, with a short club in his hand. After these arrangements are completed, a large number of Indians enter the circle and beat the bushes in every direction. The frightened hares dart off toward the net, and in attempting to pass are knocked on the head and secured. Mr. Pambrun, the superintendent of Fort Wallawalla, from whom I obtained this account, says that he has often participated in this sport with the Indians, and has known several hundred to be thus taken in a day. When captured alive they do not scream like the common gray rabbit (*L. sylvaticus*)."

The extraordinary agility of this animal, which would be inferred from inspection of its lithe yet muscular and free-limbed shape, has always attracted attention. Lewis and Clark speak of its leaping eighteen to twenty-one

feet, and doubtless this is no exaggeration. Yet this is a matter shared by the allied species, and I do not think that the present surpasses *L. callotis* for example, in this respect. The two animals have always seemed to me alike in their powers of running and leaping. It is difficult to give one who has not seen the animals alive an idea of their singular appearance when at full speed, and the ground they get over in a few seconds is the more remarkable, considering the force they waste in unnecessary height of the leaps. The first sign one has usually of a hare which has squatted low in hopes of concealment, till its fears force it to fly, is a great bound into the air, with lengthened body and erect ears. The instant it touches the ground, it is up again, with a peculiar springy jerk, more like the rebounding of an elastic ball than the result of muscular exertion. It does not come fairly down, and gather itself for the next spring, but seems to hold its legs stiffly extended, to touch only its toes, and rebound by the force of its impact. The action is strikingly suggestive of the "bucking" of a mule, an affair with which people in the west are only too familiar. With a succession of these high jerky leaps the animal makes off generally in a straight course; there is nothing of the dodging and scuttling about that marks the running of the smaller rabbits. As it gains on its pursuers, and its fears subside, the springs grow weaker, just as a flat stone "skipped" on the water diminishes in length of the rebounds, and finally the animal squats in its tracks on its haunches with a jerk, to look and listen. If perfectly reassured, it may then lope on with easy steps, till it is out of sight, or it may squat low and disappear by folding back its ears behind some bunch of weeds. The ears, by the way, are curiously the most conspicuous part of the whole animal; few hares are seen, I fancy, as long as they keep those great

organs folded flat. But more than likely, on its first halt, the hare's natural timidity will not permit it either to squat to steal quietly away. On the contrary it sits erect on its haunches, intent to discover new alarm. The attitude at such times is highly characteristic. One fore foot is advanced a little before the other, and the ears are held pointing in opposite directions. A hare in such an attitude as this is always upon the watch, and the slightest stimulation of its fears at such time is enough to start it on its bounding course. It is a beautiful exhibition of timid watchfulness.

I have never seen this hare stand erect with its fore paws off the ground, as some of its smaller relatives are wont to do, and I doubt that it ever assumes this attitude except perhaps momentarily. The position above described, and the ordinary squatting in its form, are the only motionless attitudes I have observed. On the few occasions when I have seen it feeding quietly, unsuspecting of danger, it moved about with alternate lengthening and doubling of the body, like that of the common rabbit under similar circumstances.



REGULAR MEETING, MONDAY, APRIL 19, 1875.

MEETING this evening at 7.30 o'clock. The PRESIDENT in the chair.

W. P. UPHAM was elected secretary, *pro tem*. Records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From N. J. Bartlett, Boston, Apr. 9; W. H. Whitmore, Boston, Apr. 9, 17; Dr. J. Plason, Wien, Nov. 20, 1874; Daniel A. Rogers, Chicago, Ill., Apr. 9; Brunn,

Naturforschende Verein, Nov., 1871; Minnesota Historical Society, Apr. 3, 9; New Bedford Free Public Library, Apr. 2; Quebec Literary and Historical Society, Apr. 9; Smithsonian Institution, Dec. 30, 1874, Apr. 3; Vermont State Library, Apr. 10; Yale College, Corporation of, April 14.

The LIBRARIAN reported the following additions to the library :—

By Donation.

COLE, C. J. Registers and Programmes of the State Normal School in Salem, from 1856-1875. 73 pamphlets.

HUNTINGTON, A. L. Miscellaneous pamphlets, 6 vols. 8vo. Collection of the American Statistical Association, Vol. i. 1 vol. 8vo. Water Power of Maine. 1 vol. 8vo. Patent Office Reports, 1851, 1855, 1857, 1858, 1859. 5 vols. 8vo. Agriculture of Mass., by C. L. Flint. 3 vols. 8vo. Debates in Mass. Convention, 1853. 3 vols. 8vo. Message and Documents, 1852-3. 2 vols. 8vo. 1855-6. 1 vol. 8vo. History of the Reed Family. 1 vol. 8vo. Commerce and Navigation, 1850. 1 vol. 8vo. History of Lowell. 1 vol. 8vo. Græca Minora. 1 vol. 8vo.

KIMBALL, JAMES. Cape Ann Advertiser, Dec. 18. 1874, Feb. 12, 19, 26, March 5, 12, 19, 26, Apr. 2. 1875.

MERRITT, L. F. Essex County Mercury, Mch. 31, Apr. 7, 14, 1875. Salem City Documents, 1874. 1 vol. 8vo.

TWISING, T., of Twickenham, England. Technical Training, by donor. 1 vol. 8vo. London, 1874.

U. S. BOARD OF EDUCATION. Report of the Commissioner, 1873. 1 vol. 8vo.

U. S. PATENT OFFICE. Official Gazette for March, 1875.

By Exchange.

AMERICAN ANTIQUARIAN SOCIETY. Proceedings of the, No. 63, 1874. 8vo.

CANADIAN INSTITUTE. Canadian Journal, Vol. xiv, No. iv, March, 1875. 8vo.

GESELLSCHAFT NATURFORSCHENDER FREUNDE, BERLIN. Sitzungs-berichte, Jahrg. 1874. 1 vol. 8vo.

NATURFORSCHENDER VEREIN, BRÜNN, AUSTRIA. Verhandlungen, Bd., xii. Heft I, II. 1873. 8vo.

NATURHISTORISCHE VEREIN DER PREUSSISCHEN RHEINLANDE, UND WESTPHALENS, Bonn. Verhandlungen, Jahrg. xxx. III Folge, x Bd. 1873. Jahrg xxxi. iv Folge. I Bd., 1874. 8vo.

NATURWISSENSCHAFTLICHE GESELLSCHAFT "ISIS" IN DRESDEN. Sitzungs-berichte, Jahrg. 1874. Apr.-Sept. 8vo.

VEREIN DER FREUNDE DER NATURGESCHICHTE IN MEKLENBURG NEUBRANDENBURG. Archiv xxviii, Jahrg. 1874. 1 vol. 8vo.

VERMONT HISTORICAL SOCIETY. Registration Reports, 1871-1872. 2 vols. 8vo. Vermont Legislative Documents, Vols. 1, 2, 4, 1874. 3 vols. 8vo. Laws of Vermont, 1874. 1 vol. 8vo. Vermont Legislative Directory, 1874-5. 1 vol. 12mo. Records of the Governor and Council of the State of Vermont. Vol. II 1779-1782. 1 vol. 8vo. Transaction of the Vermont Dairyman's Association, 1873-4. 8vo. pamph.

PUBLISHERS. Forest and Stream. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Observer. Salem Post.

Arthur L. Huntington, of Salem, was elected a resident member.

Voted, That a committee be appointed to prepare a list of officers for the year ensuing, and to report a printed ballot at the annual meeting, May 12.

The chair appointed Messrs. James Kimball, E. C. Bolles, and W. Neilson.

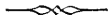


REGULAR MEETING, MONDAY, MAY 3, 1875.

MEETING this evening at 7.30 o'clock. PRESIDENT in the chair. W. P. UPHAM was appointed secretary *pro tem*. Records read.

Arthur W. Foote, Albert H. Smith and John Mangan, all of Salem, were duly elected resident members.

Adjourned.



ANNUAL MEETING, WEDNESDAY, MAY 12, 1875.

ANNUAL meeting this day at 3 P. M. The PRESIDENT in the chair. GEORGE M. WHIPPLE was appointed secretary *pro tem*. Records read.

The SECRETARY announced the following correspondence:—

From C. A. Cutter, Boston, Apr. 29; J. C. Holmes, Detroit, Mich., April 22; B. Quaritch, London, April 22; J. L. Sibley, Cambridge, April 11; W. W. Weidton, Concord, May 1; Bergen. The Museum, Jan. 11; Berlin, Die Gesellschaft Naturforschender Freunde, Feb. 10; Buffalo Historical Society, May 7; Minnesota Historical Society, April 20, May 6; Nassauischen Vereins für Naturkunde, Sept. 1; New England Historic Genealogical Society, May 5; Worcester Lyceum and Natural History Association, May 6.

The LIBRARIAN reported the following additions to the library :—

By Donation.

- ABBOTT, A. A. Salem Gazette, Jan. 28, 1791 to Nov. 3, 1795, Jan. 3, 1797–Dec. 29, 1797. Essex Register, Jan. 11, 1809 (No. 3).
- BOLLES, E. C. Ladies' Repository. 2 vols. 8vo. Paley's Theology. 1 vol. 8vo. Titles of Jesus. 1 vol. 8vo. Ballou's Select Sermons. 1 vol. 8vo. Course of Time, by Pollock. 1 vol. 8vo. Lacon. 1 vol. 8vo. Layman's Legacy. 1 vol. 8vo. Practical Hints to Universalists. 1 vol. 8vo. Chris and Otho. 1 vol. 8vo. Peppy's Diary. 3 vols. 8vo. Louis xiv and Court of France. 1 vol. 8vo. Lectures on Domestic Duties. 1 vol. 12mo. Universalist Magazine, 1821. 1 vol. folio. The Holy Eucharist. 1 vol. 8vo. Bards of the Bible. 1 vol. 8vo. The Old and New. 1 vol. 8vo. Life and Character of A. Lincoln. 1 vol. 8vo. Ancient History by C. Rollins. 8 vols. 12mo. History of Universalism. 1 vol. 12mo. Notes on the Parables. 1 vol. 12mo. History of the Churches of New York. 1 vol. 12mo. Doddridge on Religion. 1 vol. 12mo. Ballou Review. 1 vol. 12mo. Universalist Hymn Book. 2 vol. 12mo. The Prophecies of Daniel. 1 vol. 12mo. Winchester Dialogues. 1 vol. 12mo. Jordan's Review. 1 vol. 12mo. Review on Hall. 1 vol. 12mo. Law of Kindness. 1 vol. 12mo. Rayner's Lectures. 1 vol. 12mo. Pingree's Debate. 1 vol. 12mo. History of the Waldenses. 1 vol. 12mo.
- COLBY UNIVERSITY. Charter of, with Acts and Resolves. 1875. 8vo.
- GOODELL, A. C. Address before the Essex Institute, Oct. 5, 1871, at the Centennial Anniversary of the Meeting of the Provincial Assembly in Salem, Oct. 5, 1771. 1 vol. 8vo.
- HUNT, T. F. Designs for Parsonage Houses, etc. 1 vol. 4to.
- LEE, JOHN C. Commercial Bulletin, Apr. 24, May 1, 1875.
- MASSACHUSETTS HORTICULTURAL SOCIETY. Transactions of, Year 1874. Pt. II.
- PACKARD, A. S., JR. Boston Directory, 1847–8. 1 vol. 8vo.
- PERKINS, GEO. A. Robinson Crusoe, by D. Defoe. 1 vol. 8vo. Siege of Corinth. 1 vol. 18mo. Evelina, by Miss Burney. 1 vol. 18mo. Life of John Wicliff and others, by W. Gilpin. 1 vol. 12mo. Life of T. Scott. 1 vol. 12mo. Bacon's Novum Organum Scientiarum. 1 vol. 12mo. Grey's Hudibras. 2 vols. 8vo. Moore's Zeluco. 2 vols. 8vo. Modern Pilgrims, by Wood. 2 vols. 8vo. Spirit of Missions. 20 numbers. Miscellaneous pamphlets, 120.
- U. S. PATENT OFFICE. Official Gazette, Apr. 6, 13, 1875.
- WHIPPLE, GEO. M. Mass. Special Laws, Vols. 9, 10, 1849–59. 2 vols.

By Exchange.

- ARCHIV FÜR ANTHROPOLOGIE. Band vii, Heft. II, 1875.
- BOSTON PUBLIC LIBRARY. Bulletin for April, 1875.
- BOWDOIN COLLEGE. Seventy-third Annual Catalogue of. 1874–5. 8vo pamph.
- KÖNIGLICHE BAYERISCHE BOTANISCHE GESELLSCHAFT REGENSBURG. Flora, 1874. 1 vol. 8vo.
- LITERARY AND PHILOSOPHICAL SOCIETY OF LIVERPOOL. Proceedings of the. Vol. xxviii, 1873–4.
- NEW JERSEY HISTORICAL SOCIETY. Proceedings of the. Vol. iv, 2d Series, No. 1, 1875. 8vo.
- PUBLISHERS. American Journal of Science. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Observer. Salem Post. The Western. Turner's Public Spirit.

[To be continued.]

BULLETIN
OF THE
ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., JUNE, 1875. No. 6.

One Dollar a Year in Advance. Ten Cents a Single Copy.

ANNUAL MEETING, WEDNESDAY, MAY 12, 1875.

[Continued.]

The annual reports of the officers and curators were read and accepted, and from them the accompanying

RETROSPECT OF THE YEAR

has been compiled, presenting in a concise form the work of the Institute, in its various departments, since the last annual meeting.

MEMBERS.—Changes occur in the list of our associates by the addition of new names, and the withdrawal of some by resignation, removal from the county or vicinity, and by death. In this connection notices of five of the resident and two of the corresponding members, who have deceased during the year, are inserted.

Joseph Sebastian Cabot, died at his residence in Salem, on Monday afternoon, June 29, 1874. He belonged to a

family which has been prominent for a century and three-quarters in the annals of Salem. He was born in Salem October 8, 1796, and was the son of Joseph and Esther Orne (Paine) Cabot, grandson of Joseph and Rebecca (Orne) Cabot, great-grandson of Joseph and Elizabeth (Higginson) Cabot, great-great-grandson of John and Anna (Orne) Cabot. The last named ancestor, John Cabot, came to Salem about the year 1702, from the Isle of Jersey. After graduating from Harvard College, in the class of 1815, he studied law for a while in the office of Hon. Leverett Saltonstall, but did not pursue the study long. In 1829 he became President of the Asiatic Bank, and so continued until his death, with brief intervals while he was Bank Commissioner and during two visits to Europe. Mr. Cabot took a deep interest in the organization of the Harmony Grove Cemetery Corporation in 1840, and was a Trustee and President until his decease. He was also long a President of the Salem Savings Bank, and for many years on one of its most important committees. For several years he was President of the Massachusetts Horticultural Society, and was noted for his enlightened interest in, and taste for, horticultural and kindred pursuits. In 1843 and 1844 he served as an Alderman of the city, and in 1845-6-7 and 8, he was the Mayor of Salem, performing the duties with great efficiency and success. Mr. Cabot was twice married; first, August 2, 1843, to Martha Laurens Stearns, of Worcester, who died April 21, 1844; and secondly, March 3, 1852, to Susan Burley Howes (daughter of the late Frederick Howes, Esq.), who survives him. The deceased was a very companionable and courteous gentleman, and his financial skill was constant'y at the service of his fellow citizens.

Edward Brooks Peirson, M. D., one of our most

skilful surgeons and physicians, died suddenly at his residence on Wednesday evening, November 18, 1874. He was a son of the late Dr. A. L. Peirson, likewise an eminent surgeon and physician, who lost his life by the Norwalk calamity in 1853; and was born Jan. 22, 1820, in this city. He received his early education in the Salem schools, was a graduate of Harvard in the class of 1840, studied his profession with his father and at the Harvard Medical School, and soon entered upon a very large and successful practice, particularly in surgery. For several years he was President of the Essex South District Medical Society, and was an earnest and active coöperator in all our useful local institutions for the benefit of the unfortunate. During the war he went to the southern battle fields to attend a wounded brother, and there acquired the seeds of a malarial disease from which he was never wholly freed. His sudden death will leave a lamentable void in this community. Dr. Peirson was twice married; first, to Catharine Pickman, daughter of Nath'l and Caroline (Sanders) Saltonstall (born May 18, 1823, died June 25, 1852); secondly, to Ellen, daughter of Justus and Hannah (Wood) Perry, of Keenc, N. H.

Daniel Hopkins Mansfield, one of our old and efficient shipmasters, died on Thursday evening, December 24, 1874, in his 74th year. He was for several years previous to 1859, United States Consul at Zanzibar, and in 1863, 1864, and 1865, was an Alderman of this city. He joined the Salem Marine Society in 1849, and was its treasurer from 1860. He was for a quarter of a century or more a member of the First Baptist Church, and was a gentleman of simple habits and great integrity of character. He was son of Daniel Hopkins and Marcia (Tucker) Mansfield, and was born at Salem, January 14, 1801.

William Archer. On New Year's morn we were pained to hear the sudden decease of an associate which occurred during the evening previous (Dec. 31, 1874), having attended to his usual business that afternoon. He was a son of William and Elizabeth (Daniels) Archer, and was born at Salem July 27, 1816. After leaving the High School he served an apprenticeship with the late Edmund Currier, as a jeweller and silversmith, and subsequently established himself in that business, which he continued for several years in Beverly, Gloucester and Salem. In the spring of 1852 he became associated with the late Israel D. Shepard, as an auctioneer, and continued in that occupation till his death, having built up a large business as an auctioneer and real estate and insurance agent. He was industrious, prompt, energetic and faithful, to the interests confided to him. He was twice married; first, to Mary O., daughter of John H. and Lucy (Trafton) Glover; she died 9th September, 1860, aged 44 years. Secondly, June 19, 1862, to Mary J. Brown, of Charlestown.

John Barlow, one of our esteemed citizens, died on Monday afternoon, January 11th, 1875. He was the son of Henry and Catherine (Armstrong) Barlow, and was born in Shercock, Cavan County, Ireland, 10th July, 1813. He came to Salem July 3, 1823, where he has since resided. He engaged in the boot and shoe business, in which he was successful, and from which he retired several years since. He was an intelligent, thoughtful, active and useful citizen; and from his early manhood, had been associated with the military, the masonic and other bodies. He was an Alderman of the city in 1864 and 1865, and a Representative in the General Court in 1869 and 1870. He married Emeline C. Becket, daughter of Jonathan and Jane (Hyland) Campbell Becket.

Jeffries Wyman, M. D., Professor of Anatomy in Harvard College, died from a sudden hemorrhage, at Bethlehem, N. H., Sept. 4, 1874, where he had gone to escape the autumnal catarrh. He was the son of Dr. Rufus and Ann (Morrill) Wyman, and was born at Chelmsford, Mass., Aug. 11, 1814, graduated at Harvard in 1833, and soon after commenced the study of medicine. In 1843 he accepted the chair of anatomy and physiology in the Hampden-Sydney College, in Virginia. In 1847 he was appointed to succeed Dr. Warren as the Hersey Professor of Anatomy in Harvard. From 1856 to 1870 he was President of the Boston Society of Natural History. On the foundation of the Museum of American Ethnology and Archæology at Cambridge, he was named one of the seven trustees, and was at once requested by his fellow members of the board to take charge of the museum as its curator. The seven annual reports on the condition and accessions to the new museum are evidences of what he did in that direction. He also communicated to the Natural History Society, the American Academy of Arts and Sciences, and to various scientific journals, over one hundred important papers, the results of anatomical and anthropological studies. He married in December, 1850, Adeline Wheelwright, who died in June, 1855, leaving two daughters. He married secondly, in August, 1861, Anna Williams Whitney, who died February, 1864, leaving one son.

Nathaniel Bradstreet Shurtleff, M. D., died in Boston (Dorchester District), October, 17, 1874. He was born in Boston June 20, 1810, and was the son of Dr. Benjamin Shurtleff, a veteran practitioner of eminence. After his graduation at Cambridge in 1831, he commenced the study of medicine, taking his degree in 1834. In early life he was interested in anatomical studies, but latterly

his taste lay in other directions, especially in early New England history. His numerous antiquarian and historical works will cause him to be long remembered. He was for many years one of the trustees of the Boston Public Library, a member of the School Committee, and for three years Mayor of the city. He was also member of the Board of Overseers of Harvard College, and for a long period the Secretary. A ceaseless activity characterized his whole life, and no man was more familiarly known, or had connected himself with so many associations, either of a permanent or temporary purpose. In July, 1836, he was married to Sarah Eliza, daughter of Hiram Smith, of Boston.

MEETINGS.—During the summer and early autumn five *Field Meetings* have been held. The first at Ipswich, on Wednesday, June 3, 1874. At the afternoon session, in the First Church, Prof. E. S. Morse, of Salem, spoke on "the fertilization of flowers;" Mr. F. W. Putnam gave an account of the shell heaps at the Light House and at Eagle Hill; Rev. T. Morong an historical notice of the Public Library the gift of Augustine Heard, Esq. *Second*, at Topsfield, Thursday, June 18, 1874. The afternoon session, in the Methodist Church, was attended by a goodly number of the citizens. Rev. James H. Fitts of Topsfield communicated a paper on "Robert B. Thomas, the maker of the Farmer's Almanac;" Vice-president F. W. Putnam gave an account of the fishes taken from Ipswich River; Charles J. Peabody gave a brief history of Topsfield; Dr. Jeremiah Spofford of Groveland, B. P. Adams of Topsfield, Richard Phillips, Samuel Todd and Charles H. Holmes, offered remarks. *Third*, at West Newbury, Thursday, July 18, 1874. At the session, in the Second Church, George D. Phippen of Salem, spoke on the flowers

that had been collected, and also on the unwelcome class found in our gardens, known as weeds; Mr. John Robinson spoke of the ferns; Messrs. D. B. Hagar of the State Normal School in Salem, Abner G. Phipps, agent of the State Board of Education, J. Spofford of Groveland, Haydn Brown of West Newbury, Stephen M. Allen of Boston, and W. H. H. Marsh of Salem, were among the speakers. *Fourth*, at Rockport, Thursday August 6, 1874. Afternoon session in the Town Hall, Alfred Osgood of Newburyport, F. W. Putnam of Salem, A. W. Dodge of Hamilton, Albert H. Tuttle of the Ohio Agricultural and Mechanical College, Columbus, Rev. A. B. Hervey of Troy, N. Y., James Kimball of Salem, and others, addressed the meeting. *Fifth*, at Manchester, Friday October 2, 1874, by invitation of Mr. Lewis Tappan and other citizens of that town; the afternoon session at the Town Hall; among the speakers were F. W. Putnam, E. S. Morse, John Robinson and Rev. E. C. Bolles, all of Salem.

Evening Meetings have been held at the rooms, usually on the first and third Monday evenings of each month. At these meetings an increasing interest was manifested, and several valuable communications were presented, abstracts of which have been printed in the BULLETIN, or reserved for the HISTORICAL COLLECTIONS. The following may be specified: "A talk upon Art," by Charles C. Perkins, of Boston; "Observations among the various Scientific Collections of London," by E. C. Bolles; "A List of Birds observed at various localities contiguous to the Central Pacific Railroad, from Sacramento City, Cal., to Salt Lake City, Utah," by Robert Ridgway; "Fishes and Crayfishes from Mammoth Cave," by F. W. Putnam; "An account of the process in the manufacture of glass,"

by John Robinson; "On the Theory of Evolution," by E. S. Morse; "An account of the Archaeological Discoveries of the Hayden Expedition," by F. W. Putnam; "Archaeological Researches in Kentucky," by F. W. Putnam; "Comb Manufacturing," by Haydn Brown; "On the System of Visible Speech," by A. Graham Bell; "Ferns of Essex County," by John Robinson; "On the Fortifications and other enclosures made by the Indians and the older races in North America," by F. W. Putnam; "Synonymy, description, history, distribution, and habits of the Prairie Hare" (*Lepus campestris*), by Elliott Coues; "The applications of Galvanic Electricity to a few of the arts of every day life," by J. H. Stevens; "On East Indian and Japanese Paper," by E. C. Bolles. At the meeting on the 16th of November, 1874, a full account was given of the examination of an Indian burial place in Marblehead, and the finding of several skeletons *in situ* by A. C. Goodell, Jr., W. P. Upham, E. S. Atwood, C. Cooke, E. S. Morse, A. H. Johnson and E. C. Bolles, who were present at the examination and excavation. The centennial anniversary of the meeting of the Provincial Congress at Salem, was duly observed at the Rooms of the Institute, October 5, 1874, by an address from Vice-president A. C. Goodell, Jr., and a social gathering.

LECTURES AND CONCERTS. — An interesting series of eight lectures, concerts and entertainments were given in Mechanic Hall. 1st, Monday, Nov. 9, James Steele Mackaye, upon the "Philosophy of Dramatic Expression"; 2d, Monday, Nov. 23, concert by the Boston Swedish singers; 3d, Saturday, Dec. 5, concert by Theodore Thomas, with his full orchestra of sixty performers; 4th, Monday, Dec. 14, Charles C. Perkins of Boston, on

"Art," illustrated by the calcium light; 5th, Monday, Jan. 11, Rev. E. C. Bolles of Salem, "Rambles in Europe," illustrated; 6th, Monday, Jan. 25, Daniel Dougherty, Esq., of Philadelphia, on "Oratory"; 7th, Monday, Feb. 8, Rev. E. C. Bolles of Salem, "Rambles in Europe," illustrated by means of the lantern; 8th, Monday, March 15, Prof. A. M. Mayer, of Stevens' Institute, "Sound and how we hear," illustrated by fine lantern pictures.

Also a *supplementary course*, which comprised a concert by the Schumann Club of Boston, under the direction of Mr. Carlyle Petersilea, on Monday, May 3d; Select Readings by Prof. J. M. Churchill, of Andover; and a Lecture by Rev. E. C. Bolles, of Salem, subject "Rambles Abroad," are announced to be given soon.

In addition to the above, James Steele Mackaye, delivered a lecture, at the Rooms in Plummer Hall, Tuesday, Nov. 24, on "The Life, Labors, and Peculiar Discoveries of Francois Delsarte," and on Thursday, March 25, Mr. E. Ingersoll, a lecture on "The Ancient Inhabitants, or Cliff Dwellers of the Canons of the Colorado Valley."

HORTICULTURAL. — The operations of this department have been successfully conducted during the past season. Five exhibitions have been held, two devoted to the show of special flowers, the others more general in their character. 1st, on Saturday evening, June 27; a beautiful display; *Cereus nyciticollis* (variety of Night Blooming Cereus) a native of Mexico; *Phyllocactus crenatus*, and several other species of cacti; *Cypripedium spectabile*, etc. 2d, Tuesday and Wednesday, June 30 and July 1, the rose show. 3d, Tuesday, July 21, special; *Clerodendron Balfourii*; *Alamanda Scottii*, etc. 4th, Wednesday, July 29: 5th, the Annual, from Tuesday, Sept.

15, to Friday, Sept. 18, maintained the usual character for a display of many choice and beautiful flowers and fine fruit, vegetables, etc., though the decorations were not so elaborate as in some previous seasons. The following prizes and gratuities were awarded:—*Flowers*. Cut flowers; 1st, Charles A. Putnam, 2d, John Robinson, 3d, C. A. Beckford. Pot Plants; 1st, David M. Balch, 2d, John Robinson. Stand of growing plants; 1st, John Robinson. Arranged Basket of Cut Flowers; 1st, C. H. Buxton. Collection of Gladioli; 1st, Charles A. Putnam. Parlor Bouquet; 1st, Mrs. Arthur Kemble. Wardian Case; 1st, John Robinson. Ferneries, circular; 1st, John Robinson. *Fruit*.—Collection of Pears; 1st, Wm. Maloon, 2d, Joseph A. Goldthwaite. Best single dish of Bartletts; T. Putnam Symonds. Best single dish of Seckel; T. Putnam Symonds. Best single dish of Duchess de Angouleme; Charles A. Ropes. Best single dish of Louise Bonne; R. G. Goss. Collection of Apples; 1st, C. A. Ropes, 2d, H. F. Skerry. Best single dish of Apples; Henry Very. Collection of Peaches; 1st, George Bowker, 2d, Charles M. Richardson. Best single dish of Peaches; F. Lamson. Best single dish of Rogers No. 4 and 15; H. F. Skerry. Best Hartford Prolific; T. Putnam Symonds. Best Creveling; George Russell. *Vegetables*.—Best peck of Early Rose Potatoes; E. C. Larrabee. Best four Marrow Squashes; Plummer Farm School. Best four heads of Cauliflowers; E. C. Larrabee. Best five heads of Cabbages; Plummer Farm School. Best dish of Trophy Tomato; W. F. Gardner. Best dish of other varieties of Tomato; E. C. Larrabee. Best five Beets; Plummer Farm School. Best peck of Onions; Plummer Farm School. Largest and best-shaped Squash; Plummer Farm School. Very large and fine Sweet Corn; S. D. Tilton.

ART EXHIBITION. — At the quarterly meeting in February, it was mentioned that the Misses Mary E. and Abby O. Williams of Salem, would be willing to deposit in the Rooms of the Institute, temporarily, their valuable collection of Paintings, many of which were copied by them from the "old masters," during a residence of several years in Rome. After some conversation, the subject was referred to the Curators of the department of Art, to make the necessary arrangements, and to tender to the ladies the sincere thanks of the Institute for this liberal proposal. The collection was received on Thursday, March 4, and it was deemed expedient, with so fine a basis, to have an Art Exhibition, and to solicit contributions to this end, though not without some slight misgivings of its success, and thus fulfilling a long cherished desire of those connected with the Institute.

The Exhibition was opened Thursday, March 11, and continued to Friday evening, March 19. The result was a surprise to all parties interested. From the first day that notice was given, pictures of all kinds were sent in with the greatest liberality, until some three or four hundred had been collected and hung upon the walls of the exhibition room. They comprised oil paintings, water colors, charcoal sketches, pen and ink drawings, and engravings; among them were works of decided merit. The sides of the hall were almost entirely covered with cloth of a maroon color, against which the pictures were suspended. The alcoves, which seemed at first to present some difficulties, were fitted up with frames, arranged so as to produce indentations or recesses in the sides of the hall, and gave an extremely pleasing effect. All four sides of the room were completely covered with pictures; a long array of gas burners fitted with reflectors, threw down upon them a brilliant light, so that the

entire effect of the scene was very cheerful, pleasant and enlivening.

The whole number of pictures registered was three hundred and forty; a Catalogue of which was printed in the April number of the BULLETIN for the present year.

LIBRARY. — The additions by donations and exchange during the year are as follows: —

<i>Donations.</i>			
Folios,	31	Pamphlets and Serials, . . .	5,603
Quartos,	37	Almanacs,	77
Octavos,	457		—
Duodecimos,	168	Total,	5,680
Sexdecimos,	36	Total of bound volumes, . . .	729
	—		—
Total,	729	Total of Donations,	6,409

<i>Exchanges.</i>			
Quartos,	1	Pamphlets and Serials, . . .	835
Octavos,	141	Total of bound volumes, . . .	145
Duodecimos,	3		—
	—	Total of Exchanges,	980
Total,	145	Total of Donations,	6,409
			—
		Total,	7,389

Of the total number of pamphlets and serials, 3,143 were pamphlets, and 3,295 serials.

The donations to the Library for the year have been received from one hundred and three individuals and fifteen societies and departments of the General and State Governments. The exchanges from seventy-five societies and incorporate institutions, of which forty-six are foreign; also from editors and publishers.

From the editors of the "American Naturalist" forty-five serial publications.

MUSEUM. — Many valuable specimens in natural history have been given during the year, and are on deposit with the Trustees of the Peabody Academy of Science, in accordance with previous arrangements. These have been reported at our meetings, and have been duly acknowledged to the several donors. In addition to the above, several interesting specimens of an historical character have been deposited in the Rooms of the Institute, and contribute very much of interest and value to the antiquarian and historical portion of the Museum. A Committee appointed for the purpose have rearranged the collection of relics, and local antiquities in the eastern ante-room, and by the efforts of Rev. E. C. Bolles and others, several series of specimens in Technology have been added.

PUBLICATIONS. — The BULLETIN has been continued in monthly numbers, giving full reports of the doings of the Institute, and abstracts of papers read at the meetings. The HISTORICAL COLLECTIONS, Vol. xii, Nos. 3 and 4, and Vol. xiii, No. 1, have been printed.

FINANCIAL. — The Treasurer's Report shows the following receipts and expenditures during the year. Additional means are requisite to perform, in a suitable manner, the various duties which the members may reasonably expect.

DEBITS.

General Account.

Athenæum, Rent, etc., \$350 00; Salaries, \$745.00; Coal, \$160.50,	\$1,255.50
Lectures, \$16.55; Express, \$43.32; Postage, \$10.50,	170.37
Insurance, \$50.00; Rosetta Stone, \$16.00; Gas, \$68.35,	134.35
Photographs, \$35.81; Publications, \$1,129.37,	1,165.21
Collecting, \$5.00; Sundries, \$23.38,	28.38

Historical.

Binding, \$95.00; Books, \$10.00,	105.00
---	--------

Natural History and Horticulture.

Horticultural Exhibitions, \$90.43; Sundries, \$5.89,	96.32
	<hr/> \$2,955.13

CREDITS.

General Account.

Dividends Webster Bank,	30.00
Assessments, \$1,278.00; Publications, \$183.05,	1,761.05
Life Membership, \$30.00; Sundries, \$134.63,	164.63
Athenæum, proportion of coal and janitor,	155.25
Cash at beginning of year,	182.68
Balance due Treasurer,	89.58

Historical.

Dividends Naumkeag Bank,	22.00
------------------------------------	-------

Natural History and Horticulture.

Dividends P. S. & P. R. R., \$20.00; Lowell Bleachery, \$64.00,	84.00
Horticultural Exhibitions,	85.94

Davis Fund.

Coupons Burlington and Missouri R. R.,	240.00
Coupons Dixon, Peoria and Hannibal R. R.,	140.00
	<hr/> \$2,955.13

The receipts and expenditures on account of the recent courses of lectures and entertainments, and the Art Exhibition in March, which were severally placed in charge of the curators of the department of the Arts, are not included in the above statement; the supplementary course not having been concluded. The same will be carried to the next year's account.

Mr. W. P. UPHAM read a new draft of the Constitution and By-laws, as prepared by the special Committee appointed at the meeting held on the 16th of November last. After discussion the further consideration was deferred to the next quarterly meeting on the second Wednesday of August.

The following Officers were then elected, until others shall be chosen in their stead:—

President.

HENRY WHEATLAND.

Vice Presidents.

Of History—A. C. GOODELL, JR. *Of Natural History*—F. W. PUTNAM.
Of Horticulture—WILLIAM SUTTON. *Of the Arts*—D. B. HAGAR.

Recording and Home Secretary.

GEO. M. WHIPPLE.

Foreign Secretary.

A. S. PACKARD, JR.

Treasurer.

HENRY WHEATLAND.

Librarian.

WILLIAM P. UPHAM.

Superintendent of the Museum.

T. F. HUNT.

Curators of Historical Department.

W. P. Upham, M. A. Stickney, James Kimball.

Curators of Natural History Department.

H. F. King, G. A. Perkins, William Neilson.

Curators of Horticultural Department.

T. F. HUNT, D. M. Balch, W. P. Andrews.

Curators of Department of the Arts.

C. H. Higbee, James A. Gillis, George M. Whipple.

Finance Committee.

John C. Lee, Jas. Upton, Geo. D. Phippen, Jas. O. Safford.

Lecture Committee.

D. B. Hagar, George Perkins, William Northey, C. H. Higbee,
E. C. Bolles, A. H. Johnson.

Field Meeting Committee.

A. W. Dodge, E. N. Walton, N. A. Horton, Alfred Osgood.

Library Committee.

J. G. Waters, E. B. Willson, Geo. F. Flint.

Publication Committee.

A. C. Goodell, Jr., F. W. Putnam, R. S. Rantoul,
Henry M. Brooks, E. S. Atwood.

On motion of Mr. C. H. HIGBEE it was

Voted, That the thanks of the Essex Institute be tendered to the officers and members of the Schumann Club, of Boston, for their valuable services gratuitously rendered, at the concert given on the evening of May 3d, in the Supplementary Series of Lectures and Entertainments.

James Silver Williams and Henry F. Perkins, both of Salem, were elected resident members.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7.

SALEM, MASS., JULY, 1875.

No. 7.

One Dollar a Year in Advance. Ten Cents a Single Copy.

FIELD MEETING AT HAMILTON, THURSDAY, JUNE 3, 1875.

THE first field meeting of the season was held at the Chebacco House, in Hamilton, this day. There is much that is enjoyable about the woods and ponds in the vicinity of the hotel, and the place is thereby very popular as an objective point for parties during the summer months. It is also a favorite resort for the zoologists and the botanists, as the finding of many of our animals and plants, some of exceeding interest, are frequent rewards of a half day's tramp. The members of the Institute are, therefore, always pleased in the selection of this place for one of their field days.

The Proprietors of the House, the Messrs. Whipple, are always courteous and very assiduous in their efforts to promote the objects of these meetings, and to contribute to the comfort of the members and friends in attendance.

The forenoon was devoted to the usual rambles in search of objects of interest, as the inclination of each dictated, and many fine specimens were found. At one o'clock lunch was partaken in the woods near the house.

At 2.30 p. m. the afternoon session was held in the Hall of the Chebacco House. The PRESIDENT in the chair.

The records of preceding meeting were read.

Vice President F. W. PUTNAM gave an interesting account of his late visit to Newburyport for the purpose of examining some curious groups of stones recently found by W. C. Johnson, Esq., of that city, while prospecting on his land, about four miles from the city, near Parker River. These stones were in a few instances of such singular arrangement as to lead to the supposition that they possibly indicated something of archaeological importance.

Mr. Putnam mentioned that besides a row of piles of stones, each about eight feet in diameter, there was found a few hundred feet distant a singular arrangement of small stones, in the form of the letter E, the length of the letter being six feet, and the width about two feet. Near this was a small circle of stones about four feet in diameter, with a number of stones inside the circle. Near this was a slight earth mound. In the immediate vicinity were a number of small heaps of shells. These were the surface indications; and while there was undoubted evidence of the stones having been placed in these positions a long while ago, so that the soil and sod had nearly covered them, still there was nothing that indicated a great antiquity.

Excavations were begun in the expectation of finding that the stones had been placed as marks of sepulture, but nothing except a small piece of Indian pottery was

brought to light. Finally the small earth mound was opened, and the clay, burnt to some depth, showed that a fire had been kept there for a long time. Pieces of the old-fashioned square brick, fragments of green window glass and lead sash, such as were imported by the first settlers, were also found, showing that part, at least, of the mound had been caused by some of the early settlers, though there is no tradition of the land in question ever having been settled upon or cleared for cultivation.

Thus, after a most careful consideration, the singular arrangement of the stones remains a mystery. That any white person should take the trouble to arrange the stones, as found, seems improbable, while the absence of signs of burial under them, would indicate that if made by the Indians, they were for the purpose of simply marking the spot for some particular reason. Stone piles of various shapes have been found in different parts of the country, evidently the work of the Indians, and it may be that these at Newburyport, which was a well known resort of the Indians, were also their work, though nothing definite could be obtained as to their origin. Photographs of these heaps were exhibited.

Mr. ALFRED OSGOOD of Newburyport, said that the early white settlers sometimes used stones to mark their fishing grounds, and suggested that these heaps might be for that purpose.

Mr. PUTNAM wished publicly to thank Mr. Johnson for his thoughtfulness in calling attention to these curious piles of stones, as often very valuable relics are found by a little care and research, from indications far less promising in appearance than those in question, though often, as in the present case, an examination may prove them to be unimportant.

Mr. OSGOOD gave an informal talk on the present aspect of the mining lands and the presence of minerals in the vicinity of Newburyport, and expressed himself rather skeptical as to the richness and value of any of the deposits yet found. Without doubt valuable ore is there, though whether it would pay to work the mines, expecting a large yield, is questionable. He thought that no new discoveries had been made favorable to such an opinion.

Mr. J. H. STEVENS of Salem, being called upon, said that the Institute was doing much to develop among the people, and particularly the young people, a knowledge of natural history. He then gave an interesting account of the growth of the cane brakes (*Arundinaria macrosperma*) in the Southern States. Hundreds of miles of country along the Mississippi bottoms are covered by these brakes, some growing to the height of twenty-five or thirty feet. When young and tender the leaves furnish food for deer and other animals. He had often wandered, rifle in hand, through that country, and felt the want of the kind of knowledge that the Essex Institute and these field meetings were disseminating in order to appreciate the opportunities for the study of nature there presented.

He also spoke of the American Tulip Tree (*Liriodendron tulipifera*), which grows luxuriantly in the same vicinity, and when in bloom presents the appearance, as seen from the high bluffs, of an immense flower garden extending sometimes for miles.

Mr. PUTNAM said that in the Mammoth and several other caves in Kentucky there were often found pieces of canes, with one end burned, and it was supposed that they had been filled with grease and used as torches by some of the Indian race, who, to a certain extent, used the caves for various purposes.

Miss L. H. UPTON of Salem presented the following list of plants found in bloom during the excursion :

LIST OF PLANTS FOUND IN FLOWER AT ESSEX,
JUNE 3. 1875.

- Anemone nemorosa* L. Wind-flower.
Ranunculus abortivus L. Small-flowered crowfoot.
Ranunculus acris L. Buttercup.
Coptis trifolia Salisb. Gold-thread.
Aquilegia Canadensis L. Columbine.
Sarracenia purpurea L. Pitcher-plant.
Viola lanceolata L. Lance-leaved white violet.
Viola blanda Willd. Sweet white violet.
Viola cucullata Ait. Blue violet.
Prunus Pennsylvanica L. Wild red cherry.
Potentilla Canadensis L. Cinque-foil.
Fragaria Virginiana Ehr. Wild strawberry.
Amelanchier Canadensis Torr. & Gray. June-berry.
Aralia nudicaulis L. Wild sarsaparilla.
Cornus Canadensis L. Dwarf cornel. Bunch-berry.
Oldenlandia cœrulea. Houstonia.
Antennaria plantaginifolia Hook. Mouse-ear.
Taraxacum dens-leonis Desf. Dandelion.
Vaccinium Pennsylvanicum Lam. Dwarf blueberry.
Vaccinium corymbosum L. High blueberry.
Trientalis Americana Pursh. Star-flower.
Veronica serpyllifolia L. Thyme-leaved speedwell.
Rumex acetosella L. Sheep sorrel.
Arisæma triphyllum Torr. Indian turnip. Jack in the pulpit.
Corallorhiza innata R. Brown. Coral-root.
Cypripedium acaule Ait. Lady's slipper.
Sisyrinchium Bermudianum L. Blue-eyed grass.
Polygonatum biflorum Ell. Smaller Solomon's seal.
Smilacina racemosa Desf. False spikenard.
Smilacina bifolia Ker. Wild lily of the valley.
Medeola Virginica L. Indian cucumber root.

After remarks from Dr. J. P. Fessenden, Rev. S. C. Beane and Messrs. E. N. Walton and N. A. Horton of Salem, and the adoption of a vote of thanks to the Messrs. Whipple of the Chebacco House, for their kindness in placing at the disposal of the Institute their house and grounds for the day, the meeting adjourned.

REGULAR MEETING, MONDAY, JUNE 21, 1875.

Regular meeting this evening at the rooms. The PRESIDENT in the chair. Records read.

The PRESIDENT read extracts from the will of the late Abby W. Ditmore of Salem bequeathing to the Institute certain sums, subject to conditions which were stated. As the full amount of the bequests was not to be paid at present, the matter was laid over for action at a future meeting.

The PRESIDENT stated that a collection of documents, papers, prints, etc., relating to the various centennial celebrations of this period had been commenced, and requested contributions from members and friends to this object.

Mr. CHARLES H. HIGBEE stated that he had received some very fine and valuable specimens of algæ from Mrs. A. L. Davis, Mrs. H. A. Cochran and Mrs. Bray of Gloucester, also from N. S. B. Herbert of Lynn, and that these specimens would be placed in the Institute collection. He desired thus publicly to thank these persons for their kindness and attention.

J. H. Stevens, Philip H. Kimball and Miss Mary E. Kinsman of Salem, and H. M. Cross of Newburyport, were duly elected resident members.

The PRESIDENT alluded to the decease of one of our associates, CHARLES WENTWORTH UPHAM, which took place on Tuesday morning, June 15, 1875, and gave a brief account of his connection with the Society and of his strong interest in its objects. He spoke also of his

early life and of his various literary labors, and of his interest in the establishment of the State Normal School in Salem.

Gen. HENRY K. OLIVER of Salem made some very appropriate remarks on the death of Mr. Upham, and in conclusion offered the following resolutions for the consideration of the meeting.

Whereas, it has pleased the Supreme Ruler of events to remove by death our honored and venerated associate and fellow citizen, CHARLES WENTWORTH UPHAM, long connected with the Essex Institute, and for half a century identified with this community in many relations :

Resolved, That the members of the Institute, deeply feeling the irreparable loss it has sustained, enroll his name with unfeigned grief among the most eminent of its past associates.

Resolved, That while we mourn the loss of so valued a member of our society, and so justly esteemed a citizen, our sorrow is tempered as we look back upon a life, so true to all the purposes of life, and read the record of the varied virtues and singular excellencies, which characterized the whole career of our departed associate.

Resolved, That in his career as a faithful and earnest minister of the Gospel, in his zealous labors as a citizen for the best interests of our community, as a patriotic officer in state and nation, as a successful laborer in the fields of literature, biography and history, he has for himself fully won the highest reputation, and conferred increased distinction upon our ancient municipality.

Resolved, That as we review the long and inspiring catalogue of the great and good men, who from its earliest days have adorned and illustrated our historic city, our just pride receives a new impulse, in adding to the honored roll the name of one so fully entitled to receive reverent admiration and honor, among the most highly honored and revered.

Rev. E. C. BOLLES moved the adoption of these resolutions, and paid an eloquent tribute to the character and memory of Mr. Upham.

Rev. E. S. ATWOOD heartily endorsed the resolutions offered by Gen. Oliver. He spoke of his long and valued intimacy with Mr. Upham, who had often expressed to him his great interest in the various clergymen of the city, without regard to sect or denomination; also of his valuable advice as to the best method of professional life; of his interest in the Institute and its objects; of his extensive knowledge of books in the various departments of literature; of his quick intellect and cheerfulness of mind to the end of life.

After further remarks from Messrs. C. H. Higbee and A. C. Goodell, Jr., the resolutions were unanimously adopted.

Rev. E. S. ATWOOD said that some more formal notice should be taken of the death of so distinguished a member of the Institute, and suggested that it might be well to hold, at some future time in the rooms of the Society, a memorial meeting, at which time a memoir of the deceased should be read, and moved that a committee be appointed to consider the subject. The motion was adopted, and Messrs. E. S. Atwood, E. C. Bolles, H. K. Oliver, A. C. Goodell, Jr., and F. W. Putnam were appointed as the Committee.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7.

SALEM, MASS., AUGUST, 1875.

No. 8.

One Dollar a Year in Advance. Ten Cents a Single Copy.

FIELD MEETING AT BYFIELD, THURSDAY, JULY 1, 1875.

THE second field meeting of the Essex Institute for the present season was held this day, at Byfield, a locality highly suitable for a gathering of this character; its historical associations cannot fail to interest the student in our local history, and its diversified scenery and natural conditions offer a wide field for the exploration of the naturalist.

This territory, through which the Parker River flows, having upon its adjacent interval lands some of the most fertile farms of the county, was granted in 1635, a large portion on the south side to Richard Dummer and on the north to Henry Sewall, whose descendants have ever since held prominent positions in the history of this country. These lands, more especially that portion near "The Falls," so called, were first used for the keeping of cattle and sheep that came over in the Dutch ships in 1635, and were owned by Richard Dummer, Henry

Sewall and Richard Saltonstall. It appears that for several years afterwards attention was given to the raising of sheep in this place.

The people living in this territory, part of which is in the township of old Newbury and part in that of old Rowley, being at a distance from the churches of the two towns, in 1702 built a church and established a parish under the name of "Rowlberry." In November, 1706, it was organized as the "Falls Parish," and Rev. Moses Hale was settled as the first minister. In 1710 it was incorporated as that of Byfield in honor to Nathaniel Byfield,¹ a liberal benefactor to the parish.

To visit this place the members of the Institute and their friends took the cars of the Eastern Railroad, the principal portion at Salem, the others at the several stations on the route, for Newburyport and thence proceeded to Byfield, six miles distant, in barges furnished by Mr. Enoch T. Northend, proprietor of the Newburyport and Amesbury Horse Railroad. The route taken was somewhat circuitous in order to favor the party with an inspection of the mining region and other notable places in the vicinity. A halt was made near the Highfield mines, where an hour was pleasantly passed in examining the grounds and witnessing the mining operations, by the courtesy of Messrs. Patterson, Chipman and Boynton.

At the Boynton Mine, in charge of Mr. Robertson, the shaft is the deepest in the whole district. The ore last taken out is the best. The Chipman works, under the care of Mr. Patterson, have assumed an orderly and pros-

¹ Col. Nathaniel Byfield, son of Rev. Richard Byfield of Long Dutton in Sussex, came to New England in 1674. He was speaker of the House of Representatives in 1693; a colonel, Judge of Probate and Common Pleas for the new county of Bristol, afterwards of Suffolk, also of his Majesty's Council, etc. He died June 6, 1733.

perous appearance. A new building has been erected, 65 × 30 feet with attachments, that give an engine house, a blacksmith and machine shop, pumping gear, tool room, office and shaft-house combined. All the machinery is said to be of the most approved kind. The mine has been timbered. From the depth now obtained, seventy-five feet, laterals are being run out north, east and south.

The next stopping place was at the fork of the road near the "Longfellow house," the "Indian burial grounds" and the "cave." All three of these places were visited. The house in which the great-grandfather of the present Henry W. Longfellow was born is on a sightly spot, surrounded by rich, smooth fields. It is now in a dilapidated condition. It was probably built in the early part of the last century by Stephen Longfellow, a son of William,² the emigrant ancestor, who came in his youth to Newbury, and married, Nov. 10, 1678, Ann, daughter of Henry

²William Longfellow,¹ born about 1651, in Hampshire, Eng., came in his youth to Newbury; m. Nov. 10, 1678, Ann, daughter of Henry Sewall. He was ensign of the company that embarked in the expedition of Sir Wm. Phips against Quebec, and with nine others was shipwrecked on the return at Anticosti (one account says Cape Breton) in October, 1690.

Stephen Longfellow,² son of the above, b. at Newbury 22 Sept., 1685; m. 25 Mar., 1713, Abigail, daughter of Rev. Edward Tompson of Marshfield. He was a lieutenant and a selectman; d. 17 Nov., 1764, at Byfield.

Stephen Longfellow,³ son of the above, b. at Byfield 7 Feb., 1723, gr. Harv. Coll. 1742; went to Portland Apr. 11, 1745, and opened a school. He was for many years one of the most active, useful and intelligent men in the town; town clerk, register of Probate and clerk of Judicial Courts; he married in 1749 Tabitha Bragdon, of York, Me. He died at Gorham, Me., in 1790.

Stephen Longfellow,⁴ son of the above, born at Portland in 1750, went to Gorham in 1775. He was largely employed as a surveyor, selectman, etc. Judge of C. C. P., Rep. & Senat. in State Legis. In 1773 m. Patience Young of York, Me. He died in Gorham in 1824, aged 74 years.

Stephen Longfellow,⁵ son of the above, born in Gorham Mar. 23, 1776, gr. Harv. Coll. 1798, studied law, and on being admitted to the bar in Portland he entered at once upon a large practice and stood in the front rank of able counsellors; member of the Hartford convention in 1814, also a member of U. S. Congress. He died Aug. 2, 1849.

Henry W. Longfellow,⁶ son of the above, born at Portland, Feb. 27, 1807, gr. Bowd. Coll. 1825. Prof. at Bowdoin and at Harvard. Poet. Resides at Cambridge.

Sewall,³ and this land was part of the estate which she received from her father, and is now occupied by Mr. Joseph Longfellow, a lineal descendant.

Byfield factory, probably the site of the first cotton mill in the country, was then visited. At this place, about 1790, Jacob Perkins, the well known inventor (born at Newburyport, July 9, 1766, died at London, July 30, 1849), put up a small mill and first demonstrated the practical working of his machine for cutting and heading nails at one operation. This invention, though, it is said, not a pecuniary success to the inventor, has since its introduction completely revolutionized the mode of manufacturing nails. Here Paul Moody in his youth found valuable instruction and satisfactory employment, and laid the foundation of a brilliant career as a mechanic, and whose name will be always identified with the introduction of manufacturing industries in Waltham and Lowell. A mile further on was noticed, shaded by elms, the residence of the second minister of the

³Children of Henry Sewall:—

1. *Hannah*, born at Tamworth, May 10, 1649; m. Jacob Tappan of Newbury, Aug. 24, 1670; d. Nov. 12, 1699.
2. *Samuel*, b. Bishopstoke, Hants, March 28, 1652; gr. Harv. Coll. 1671; m. Feb., 1675-6, Hannah, daughter of John Hull of Boston, Judge Sup. Court, Mass., and Ch. Justice; d. Jan. 1, 1729-30.
3. *John*, b. at Baddersly, Hampshire, Eng., Oct. 10, 1654; came to New England in 1661; m. Hannah Fessenden of Cambridge, Oct. 27, 1674; lived with his father at Newbury, and there died before him, Aug. 8, 1699.
4. *Stephen*, b. at Baddersly, Aug. 19, 1657; m. Margaret, dau. of Rev. Jona. Mitchell of Cambridge, June 13, 1682; resided at Salem, where he was Register of Deeds for Essex, etc.; d. Oct. 17, 1725.
5. *Jane*, b. at Baddersly, Oct. 25, 1659; m. Moses Gerrish of Newbury, Sept. 24, 1677; d. Jan. 29, 1716-17.
6. *Ann*, b. at Newbury, N. E., Sept. 3, 1662; m. 1678, William Longfellow, who was drowned Oct., 1680; she had for a second husband Henry Short of Newbury, and died Dec. 18, 1706.
7. *Mehitable*, b. at Newbury, May 8, 1665; m. William Moody of Newbury; d. Aug. 8, 1702.
8. *Dorothy*, b. at Newbury, Oct. 29, 1668; m. 1st, Ezekiel Northend of Rowley, Sept. 10, 1691; 2nd, Dec. 23, 1732, Moses Bradstreet of Rowley, whose widow she died June 17, 1752.

parish, Rev. Moses Parsons, from June 21, 1744, when he was ordained, until his death, Dec. 11, 1783. In this house was born, Feb. 24, 1750, his son Theophilus Parsons, the eminent jurist, Chief Justice of the Supreme Court of Massachusetts from 1806 until his decease, Oct. 30, 1813. The house was built, probably, in 1706.

About noon the party arrived at Dummer Academy, which is situated in a retired and shady spot at the intersection of several roads. This school was organized, in accordance with the will of its patron and founder, in 1763, during the provincial period of our history, under the direction of Samuel Moody,⁴ the first Principal. Mr. Moody had previously been so successful as a teacher in his native town, York, Me., that twenty-eight pupils were present at the opening. For many years the number of scholars averaged over seventy, and it is inscribed upon his tombstone:—"He left no child to mourn his sudden death (for he died a bachelor), yet his numerous

⁴William Moody,¹ probably the ancestor of all the Moodys in this section of the country, came in 1634 (it was said a saddler) from Ipswich, Co. of Suffolk. He was first of Ipswich, afterwards in 1635 of Newbury, where he continued to reside. He died Oct. 25, 1673. He had three sons.

1. Rev. Joshua Moody,² Harv. Coll., 1653, of Portsmouth and Boston; died July 4, 1697.

2. Caleb Moody,² married 1st, Sarah Peirce; 2nd, Judith Bradbury. He died Aug. 25, 1698.

Rev. Samuel Moody,³ son of the above Caleb, b. Jan. 4, 1676; Harv. Coll. 1697; of York Me.; died Nov. 13, 1747.

Rev. Joseph Moody,⁴ son of Rev. Samuel, born in 1700; Harv. Coll. 1718; died Mar. 20, 1753, of York, Me.

Rev. Samuel Moody,⁵ the preceptor of Dummer, son of the above Rev. Joseph.

3. Samuel Moody,² married Mary Cutting Nov. 9, 1657; died April 4, 1675.

William Moody,³ son of Samuel above, born June 20, 1663; married Mehitabel Sewall Nov. 15, 1684 (see note on page 116); resided in Byfield; died Feb. 6, 1729-30.

Deacon Samuel Moody⁴ of Newbury, son of the above William and Mehitabel, born March 21, 1689; died May 25, 1767.

Paul Moody⁵ of Newbury, son of the above Samuel, d. Dec. 30, 1822, aged 80; his widow Mary, d. March 10, 1825, aged 82.

Paul Moody⁶ the distinguished mechanic, son of the above Paul and Mary, b. at Newbury, May 23, 1779; died at Lowell, July 7, 1831.

pupils in the United States will ever retain a lively sense of the sociability, industry, integrity and piety, he possessed in an uncommon degree; as well as the disinterested, zealous, faithful and useful manner in which he discharged the duties of the Academy for thirty years. He died at Exeter, Dec. 14, 1795, aged seventy."

The school was not in session. Tables were spread on the green in front, beneath the trees, and a refreshing lunch was soon prepared.

At 2.30 P. M. the afternoon session was held in the study room of the Academy. The PRESIDENT in the chair.

The records of preceding meeting read.

The SECRETARY announced the following correspondence:—

From W. P. Andrews, May 15; D. M. Balch, May 15; Bureau of Education, Washington, June 23; E. P. Boon, New York, June 13, 28; Cornell University, June 28; Henry B. Dawson, Morrisania, N. Y., June 23; David B. Gould, May 31; Loughton & Brothers, Isle of Shoals, June 10; Charles Lawrence, Danvers, June 25; Joel Munsell, Albany, N. Y., June 22; W. D. Northend, June 24; C. L. Peirson, Boston, June; John Robinson, May 11; M. C. D. Silsbee, Boston, June; J. H. Stevens, June 25; James Upton, June 3, James S. Williams, May 27; Naturforschende Gesellschaft, Danzig, May 10; Historical Society of Pennsylvania, Philadelphia, May 19; K. K. Zoologische-botanische Gesellschaft.

The following additions to the library were reported:—

By Donation.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Proceedings, at Hartford, Conn., Aug., 1874. 1 vol. 8vo.

BOLLES, E. C. Theological Discussion. 1 vol. 12mo. The School. 1 vol. 12mo. Celestial Scenery. 1 vol. 12mo. The Ladies' Repository from 1839 to 1896.

BOLTON, H. CARRINGTON, of Columbia Coll., N. Y. Centennial of Chemistry, Aug. 1, 1874, at Northumberland, Pa. 4to pamph.

BUREAU OF EDUCATION, Washington. Circulars of Information, Nos. 1, 2, 1875.

CABOT, MRS. J. S. Transactions of the American Pomological Society for 1860. 1 vol. 8vo. Agriculture of Mass. 1857. 1 vol. 8vo. Miscellaneous pamphlets, 72.

CLEVELAND, MRS. W. S. Six Plans drawn by Jona. P. Saunders in 1837, of Acapulco Harbour, Coast of Africa. Low and Society Islands. Cathburts Bay, Is. of Tootoillo, Navigators Group. Sandwich Islands. Marquesas, or Washington Islands. Galapagos Islands.

DALLETT, GILLIES. Philadelphia Directories, 1844, 1847, 1849, 1851, 1852, 1853, 1855, 1857, 1861, 1862, 1863, 1864, 1870, 1871.

GOULD, DAVID B., of St. Louis, Mo. Directory of St. Louis, for years 1871, 1872, 1873, 1874, 1875. 5 vols. 8vo.

GREEN, S. A., of Boston. Boston Municipal Register, 1873. 1 vol. 8vo. Miscellaneous pamphlets, 25.

LAWRENCE, CHAS., of Danvers, Mass. Moore's View in France. 2 vols. Fitzosborne's Letters. 1 vol. Gisborne on Christian Religion, 1 vol. Life and Labors of Dr. Worcester, 2 vols. Heydone's Tour. 2 vols. Life of Washington. 5 vols. Franklin's Sermons, 3 vols. Chalmer's Sermons, 1 vol. View in Italy, 1 vol. Life of P. Henry, 1 vol. Siege of Valencia, 1 vol. Notes on Travel, 1 vol. Sacred Biography. 3 vols. History of the Sandwich Islands, 1 vol. Garden Directory, 1 vol. Chapter on Flowers, 1 vol. Diseases of Animals, 1 vol. Barton's Poems, 1 vol. Mavor's Voyages, 17 vols. Book of Fruits, 1 vol. Treatise on Bees, 1 vol. Complete Farmer, 1 vol. Manual for Farmers, 1 vol. Memoir of Mrs. Hemans, 1 vol. Memoir of S. Green, 1 vol. Duffet's Dictionary, 3 vols.

LEE, JOHN C. Commercial Bulletin. May 8, 15, 22, 29, June 5, 12, 19, 1875.

LORING, GEO. B. Agriculture of Mass.; by C. L. Flint. 1874-5. 1 vol. 8vo. Thirty-second Registration Report of Mass. 1 vol. 8vo. Sixth Annual Report of Mass. State Board of Health. 1 vol. 8vo. Eleventh Annual Report of Mass. State Board of Charities. 1 vol. 8vo. Sixth Annual Report of Mass. Board of Railroad Commissioners. 1 vol. 8vo.

MASS. HORTICULTURAL SOCIETY. Transactions of, for 1875. Part I.

MERRIAM, G. & C., of Springfield, Mass. Webster's Unabridged Dictionary. 1 vol. Royal 4to. 1875.

OFFICE OF THE CHIEF OF ENGINEERS. Report upon the Reconnaissance of Northwestern Wyoming, 1873, by W. A. Jones.

OSGOOD, CHAS. S. Legislative Documents for 1875. 4 vols. 8vo.

PHILA. ZOOLOGICAL SOCIETY. Third Annual Report. 1875. 8vo pamph.

PUNAM, F. W. Archaeological Researches in Kentucky and Indiana. 1874. 8vo.

RABARDY, J. F. Manchester, Mass. The Beetle and Wedge. Feb. to June, 1875.

STONE, E. M., of Providence, R. I. Thirty-third Annual Report of the Ministry at Large. 1875. 8vo pamphlet.

STONE, MRS. J. H. Masonic Monthly, 15 Nos. American Homes, 11 Nos. Hunt's Merchant Magazine, 55 Nos. Yankee Farmer, 1838, 1839, 1840, 1841. Miscellaneous pamphlets, 10.

U. S. PATENT OFFICE. Official Gazette for Apr. 20, 27. May 4, 11, 18, 25, 1875.

WILLIAMS, B. W. Lecture Bureau for 1875-6. 8vo pamph.

YOUNG MEN'S ASSOCIATION OF BUFFALO. Thirty-ninth Annual Report. 8vo.

By Exchange.

ACADEMIE ROYALE DES SCIENCES, DES LETTRES ET DES BEAUX-ARTS DE BELGIQUE. Bulletins. Tome xxxv, xxxvi, xxxvii, 1873-4. 3 vols. Annuaire, 1874.

AMERICAN ACADEMY OF ARTS AND SCIENCES. Proceedings. Vol. II. May, 1874, May, 1875.

AMERICAN PHILOSOPHICAL SOCIETY. Proceedings. Vol. XIV. Jan., June, 1875.

AMHERST COLLEGE. Catalogue of Officers and Students for 1874-5. 8vo pamph.

BOSTON SOCIETY OF NATURAL HISTORY. Proceedings, xiv to xvii. Memoirs, Vol. 2. pts. 1, 2, 3, and No. 1 of pt. IV.

BUFFALO SOCIETY OF NATURAL SCIENCES. Bulletin of. Vol. II, No. 4.

CROSSE ET FISCHER. Journal de Conchyliologie. Tome xv. 3e Série, No. I, 1875.

ENTOMOLOGISCHE ZEITUNG, STETTIN. Vol. for 1874. 1 vol. 12mo.

GEOLOGICAL SURVEY OF INDIA. Memoirs of. Vol. x, pt. 2, 1873. Vol. xi, pt. I, 1874. Records of. Vol. vii, pt. 1-4, 1874. Palæontologia India. Vol. I, pt. I, 1874.

- INSTITUT HISTORIQUE. L'Investigateur. Dec., 1874. Jan., Feb., 1875, 8vo.
- INSTITUT NATIONAL GENEVOIS. Bulletin. Tome xx. 1875.
- K. K. ZOOLOGISCH-BOTANISCHEN GESELLSCHAFT IN WIEN. Verhandlungen, Band xxiv, 1874. 1 vol.
- KÖNIGLICHE GESELLSCHAFT DER WISSENSCHAFTEN GOTTINGEN. Nachrichten. 1874. 1 vol. 12mo.
- MASS. HISTORICAL SOCIETY. Proceedings. 1873-1875. 1 vol., 8vo.
- NATURFORSCHENDE GESELLSCHAFT, GOILITZ. Abhandlungen, Band xv, 1875.
- NEW YORK LYCEUM OF NATURAL HISTORY. Annals. Vol. XI. Nos. 3, 4.
- SOCIÉTÉ D'ACCLIMATATION, PARIS. Bulletin Mensuel. Tome I, 3me Serie. Nov., Dec., 1874. Tome II, 3me Serie. Jan., 1875. 3 pamphlets, 8vo.
- SOCIÉTÉ D'ANTHROPOLOGIE, PARIS. Bulletins, Apr., June. 1874.
- SOCIÉTÉ DES SCIENCES NATURELLES DU GRAND-DUCHÉ DE LUXEMBOURG. Publications, Tome XIV. 1874. Observations Meteorologiques faites a Luxembourg. Deuxieme vol. 1874.
- SOCIÉTÉ VAUDOISE DES SCIENCES NATURELLES, LAUSANNE. Bulletin. Vol. xiii, No. 73. Dec., 1874.
- VEREIN ZUR BEFÖRDERUNG DES GARTENBAUES BERLIN. Monatschrift, Jahrg. xvii, 1874.
- ZEITSCHRIFT FÜR DIE NATURWISSENSCHAFTEN IN BERLIN. July to Dec., 1874.
- ZOOLOGISCHE GESELLSCHAFT, FRANKFURT. Zool. Garten. Vol. XV. No. 7-12.
- PUBLISHERS. American Journal of Education. American Journal of Science and Arts. American Naturalist. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Sailor's Magazine. Salem Gazette. Salem Observer. Salem Register. Salem Post. The European Mail. The Owl. Turner's Public Spirit.

The PRESIDENT then made a few preliminary remarks, describing the excursion from Newburyport to this place, and the historical localities visited. He also gave a brief biographical sketch of the Sewall family, on whose ancient domain at the factory they made a halt. He called upon Hon. William D. Northend of Salem, who was born in Byfield, and there had spent his early years, to give some account of Byfield, of Dummer Academy, the founder, the teachers and the alumni.

Hon. WILLIAM D. NORTHEND, in response, gave a very interesting sketch of Byfield and Dummer Academy. He remarked that the parish is a religious one, and at no time during the last century has it numbered over one hundred families; probably no place of its size, in the United States, can present such a record of notable men. Regarding them and the Academy he said :

Richard Dummer of Bishopstoke, Hants, England, son of John, born there in 1599, came to New England in 1632, and was among the first settlers in Newbury. He afterwards went to England, but returned in 1638 with his brothers Stephen and Thomas. He prospered and became a man of great wealth, and owned much land in this parish, including the grounds which this Academy now occupies; his sons Jeremiah, Richard, and Rev. Shubael held prominent positions in society; he died Dec. 14, 1679. His grandson, Jeremy Dummer, son of Jeremiah, was the agent of the colonies in England from 1710 to 1721, and advocated their claims with great ability. He is well known as the author of "a defence of New England Charters;" and a "letter concerning the expedition to Canada." He died May 19, 1739, aged 60.

Another grandson, a brother of Jeremy, William Dummer, was Lieut. Governor of the colony, and for a time was acting Governor; his administration was a wise one, and he was much respected by the people. His wife was Catherine, daughter of Gov. Joseph Dudley. He died *s. p.* 10 Oct., 1761, aged 84 years. This farm was his country seat, and the mansion to the right of the Academy was built by him after the old English style.

Henry Sewall, only son of Henry who followed him to New England, and died in Rowley, March, 1656-7, in the 81st year of his age, and grandson of Henry who was several times mayor of Coventry, was born in 1614, came to New England in 1634 plentifully supplied with money and English servants, neat cattle and provisions, and with other things suitable for the commencement of a plantation, removed to Newbury in 1635, where he became proprietor of a large tract of land known as the Highfields, at the Falls within this parish.

He married, March 25, 1646, Jane, eldest daughter of

Stephen Dummer. In 1646 he went to England, but returned in 1659, his family following in 1661, and resided in Newbury until his decease, which occurred May 16, 1700, at the age of 86 years. From this marriage came all the Sewalls in this part of the country. His son, Samuel Sewall, was Judge of the Supreme Court of the Massachusetts colony from 1692 to 1728, ten years of which he was Chief Justice; Stephen, son of his son Stephen, was Justice of the same court from 1739 to 1760, eight years of which he was Chief Justice; David, grandson of son John, was Justice of the same court from 1777 to 1790; Samuel, great-grandson of son Samuel, was Justice from 1800 to 1814, and the last year Chief Justice. Therefore from the descendants of Henry and Jane Sewall the Supreme Court of this state was furnished with Judges for eighty-two years, and Chief Justice nineteen years. It may be added that Judge David Sewall, named above, after his resignation was many years Judge of the U. S. District Court in Maine. Jonathan Sewall, likewise a nephew of Chief Justice Stephen, was Attorney General of Mass., 1767-75, and Jonathan and Stephen, sons of the above Jonathan, were respectively Chief Justice and Attorney General of the Province of Lower Canada. From the same family have been a large number of distinguished men of the clergy, especially in this state and Maine, and some in other professions of life. It is doubtful if any one family in the country has furnished a larger number of more distinguished men.

Henry Sewall, either by deed or bequest, gave these lands to three of his daughters; that portion adjoining the "Falls" to his daughter Mehitable, wife of William Moody. Many of the descendants of his grandfather, William Moody, the emigrant ancestor, were distin-

guished, among whom may be mentioned Paul Moody, the mechanic, who was one of the most influential persons in the building of the manufactories at Lowell, and Samuel Moody, the celebrated teacher of Dummer Academy. This estate has continued in the family until the present generation.

The portion known as "Highfields" was given to his daughter Anne, wife of William Longfellow. After his death she married Henry Short. She had children by both marriages. The Longfellows in the second generation purchased the share of the Shorts, and the farm was then divided between Stephen Longfellow and his sister Ann, who married Abraham Adams.⁵ A large part of the Longfellows' portion has been and is now owned by descendants of the name. Joseph Longfellow is the present owner of a portion of it. Abraham Adams' share is now owned by his descendants, divided, however, into several farms. From William Longfellow has descended a man whose name need only to be spoken, Henry W. Longfellow, the poet. His great-grandfather was born in the house which was visited by you this morning. He emigrated to Maine in 1745. Stephen, the grandfather of Henry W. Longfellow, was a Judge of the Court of Common Pleas, and his father, Stephen, was a distinguished lawyer and member of Congress.

The third portion of the estate was given to his daugh-

⁵Capt. Abraham Adams, b. May 2, 1676; pub. to Anne Longfellow Nov. 13, 1703; d. April 8, 1763. Ann, his wife, d. Feb. 4, 1758, aged 74 yrs., 11 mo. He was the son of Serg. Abraham Adams, b. in the year 1639; m. Nov. 10, 1670. Mary Pettingill. He died June 14, 1714, aged 75. His wife Mary died Sept. 19, 1705. A grandson of Robert Adams, who with his wife Eleanor came to Ipswich in 1635, thence to Salem, 1638, finally settled in Newbury in 1649. He died Oct. 12, 1682, aged 81. His wife Eleanor d. June 12, 1677. His second wife, Sara, widow of Henry Short, whose maiden name was Glover, to whom he was married Feb. 6, 1678, d. Oct. 24, 1697.

ter Jane, wife of Moses Gerrish,⁶ from whom was descended many persons of note. This portion of the original estate for the last two or three generations has been sold out of the family.

Other lands in Newbury were given to his daughter Dorothy Northend,⁷ and lands within the present limits of Newburyport to his daughter Hannah Tappan, probably where is now Tappan's lane. In this connection allusion has been made principally to the disposition of that portion of his estate lying in the parish of Byfield.

Mr. Northend then mentioned the names of several distinguished persons who were born, or had their residence, in this parish. The following may be specified.

Theophilus Parsons, the most distinguished jurist in Massachusetts; John S. Tenney, the late distinguished Chief Justice of the Supreme Court of Maine, was born in the Rowley part of this parish, as was also Samuel Tenney, a Judge of the Court of Common Pleas of New Hampshire; Samuel Webber, President of Harvard University; Prof. Eliphalet Pearson of Harvard and Andover, Prof. John Smith of Bangor Seminary, and Parker Cleaveland, the distinguished Professor at Bowdoin College, were all born within the limits of this parish. Here was also settled the distinguished political preacher, Rev. Dr. Elijah Parish, who in the war of 1812 fulminated against the acts of the General Government, and whose

⁶ Moses Gerrish, born May 9, 1656; m. Sept. 24, 1677, Jane Sewall; died Dec. 4, 1694, aged 38; resided in Newbury. His widow Jane d. Feb., 1716. He was a son of Capt. William Gerrish, who came from Bristol, England, about the year 1640, and settled at Newbury; m. April 17, 1645, Joanna, widow of John Oliver, and became the founder of a family which properly assumed a leading position in the colony. His brother Benjamin was a prominent citizen of Salem. See *Hist. Coll. Essex Inst.*, vol. II, page 213, and vol. V, page 25. His brother Joseph was the third pastor of a church in Wenham; b. at Newbury, March 23, 1650; ord. Jan. 13, 1675; d. Jan. 6, 1720.

⁷ For an account of the Northend Family see *Hist. Coll. Essex Inst.*, vol. XII, p. 71.

speeches were quoted in the famous discussions of Webster and Haynes.

[In addition to those of Byfield descent mentioned by Mr. Northend we would add the names of Rev. John P. Cleaveland, D. D., Hon. Albert Pike, the poet, lawyer, etc., of Little Rock, Ark., and Rev. Sewall Tenney, D. D., of Ellsworth, Me.

Mr. Charles Northend of New Britain, Conn., and Hon. William D. Northend of Salem, are lineal descendants of Ezekiel and Dorothy (Sewall) Northend, and many of the name of Tappan in New England are descendants of Jacob and Hannah (Sewall) Tappan.⁸—EDS.]

Dummer Academy was established by Gov. Dummer, who left for its endowment this farm of 400 acres, with the buildings upon the same. It first went into operation in 1763, and was the first institution of the kind in the state. The first teacher was the celebrated Samuel Moody, the Dr. Busby of America. Of those who attended his school, two were afterwards Presidents of colleges, nine were Professors, eleven were Judges of the Courts, nineteen were members of the House of Representatives at Washington, five were members of the U. S. Senate, one a member of the Cabinet, and one was minister to England.

Mr. Moody retired in 1790, and his successor was Rev. Isaac Smith, followed successively by Benjamin Allen, Rev. Abiel Abbott, Samuel Adams, Nehemiah Cleaveland and others. Among those who were under their tuition are enrolled many who have become eminent in the several professions and worthy members of society.

⁸Jacob Tappan, born in 1644; m. Hannah Sewall Aug. 24, 1670, who died Nov. 12, 1699. He d. Dec. 13, 1717. He was son of Abraham Tappan, who came to Newbury in 1637, m. Susanna Goodale of Yarmouth, Eng., who d. March 20, 1689. He died Nov. 5, 1672, aged 61.

It is a matter of regret that this institution, so well situated for the education of youth, should have suffered so much from neglect, and it is to be hoped that efforts will be made to place it again in the position it held in the past.

DR. JEREMIAH SPOFFORD spoke of the character of Dummer Academy, which he had known for seventy-five years. He had the honor of Dr. Parish's acquaintance, and had met Dr. Cleaveland in council. The former was a most forcible speaker, and a bitter enemy to the Democratic party. The latter had greater education than many about him who had greater practice, but he was too dignified for his position.

MR. FREDERICK W. PUTNAM gave an account of the few zoological specimens he had collected about the grounds of the Academy, and in a small neighboring brook. He specially described the structure of the galls on the wild rose, and described the insects by which they were made. He also exhibited a colony of Polyzoa, of a species quite abundant on the stones in the brook, and described their different stages of growth, which were so fully illustrated by Prof. Hyatt several years since, in the Proceedings of the Institute.

MR. JOHN ROBINSON of Salem talked about the plants which he had collected, remarking that every one should know enough of botany to be able to distinguish the poisonous plants. Ivy and dogwood were the only ones in Essex County. With the latter he thought that few persons were acquainted. He then spoke of the fertilization of plants by insects, and made a few remarks on the growth of the fungi.

MR. HAYDN BROWN of West Newbury said the influence of Dummer Academy is felt for miles around in the manners of the people. The past of the Academy was secure, but he doubted of the future. The days of private institutions were past, now that the state provides high schools of the same grade. He thought there were but few academies self-sustaining.

He then changed his subject and spoke of the insects that devour his crops. He thought that at least a quarter part of our crops of almost every kind was eaten up by these pests, and he suggested that the members of the Institute, and especially its naturalists, should turn their attention towards the discovery of some mode for the extermination of the insect pests.

The PRESIDENT said that it would facilitate Mr. Brown's crusade on noxious insects if local museums were established, and children become interested in collecting specimens, and studying the habits of the various plants and animals that are continually met with.

AMOS NOYES, Esq., of Newburyport, considered the fact referred to by Mr. Brown, that academies were declining, was a sign of progress. We had outgrown them and they could not and should not compete with state schools.

Rev. Dr. SAMUEL J. SPALDING of Newburyport, spoke of the Byfield Academy, which grew out of Dummer, and which sent out many eminent teachers, whose influence still pervade the schools of the country. He thought that private institutions were not in their decadence. Athens had no schools, but the responsibility of education was thrown on individuals, and what sages she pro-

duced. The state cannot do everything, as some would have it, regulate our meat and drink and hours of labor. Dummer Academy had lately adopted an improving element in the admission of girls, and there were no public institutions to-day for young ladies so good as private ones.

Dr. JEREMIAH SPOFFORD agreed with the last speaker that all the business of education should not be done by the state.

Messrs. PUTNAM and BROWN here reopened the question of injurious insects. Mr. Putnam said that science was equal to the destruction of many kinds of insects that prey on the crops of the farmer, and if farmers would only work together they could exterminate their insect enemies. For instance, printer's ink is a sure exterminator of the canker worm. Printer's ink has exterminated many evils, and here was one more it could cope with, if all the farmers in a given section would apply it to their trees. Here was one case at least where the state should interfere and make a law requiring every man to assist in abating the canker worm nuisance who had a tree liable to be attacked by these insects.

Mr. BROWN replied that he could take care of the canker worm and caterpillar, but he would give a gold medal to the man who would eradicate other insects which infest his farm.

On motion of Mr. PUTNAM:

Voted, That the thanks of the Institute be tendered to Mr. and Mrs. Ebenezer G. Parsons, the Principals of the Academy, for their courtesy and kindness so generously extended to the party during the day.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., SEPT. AND OCT., 1875. Nos. 9 & 10.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, WEDNESDAY, JULY 7, 1875.

THIS was an adjournment of the meeting held on Monday, July 5. PRESIDENT in the chair.

Mention was made that several members of the Institute and their friends chartered the new, safe, and commodious steamer "Governor Andrew," for an excursion which took place on Monday, June 14, from Salem harbor along the eastern coast to the Isles of Shoals, with a view to deep sea dredging and the collection of specimens of the marine fauna and flora of that group of Isles.

The steamer "Governor Andrew" is a new boat, built last year for the Boston and Hingham line, and is finely modelled and furnished, making one of the best excursion steamers in the waters of Massachusetts Bay. The weather was pleasant; the sail along the shore was very enjoyable, and the familiar scenery of the rock-bound and wooded coast, dotted here and there with the residences of the summer visitors, never looked more attrac-

tive. The boat stopped at Gloucester and took on board some twenty-five or thirty more of the party, and from there sailed direct to the islands, arriving about noon. The party landed at "Star Island," and was hospitably received by the proprietor, John A. Poor, Esq. Some two hours were pleasantly and profitably spent in examining the peculiar geological features, the fauna and the flora. The student in history also found much of interest. The monument erected to the memory of Capt. John Smith, recalled the scenes incident in the first part of the 17th century, when these islands were visited by Champlain, John Smith, and others of those early voyagers who navigated these seas before the landing of the Pilgrims at Plymouth. The old stone church, with the adjoining burial ground in the stony soil, and its many graves marked by rude stones, two of which were prominent, one in commemoration of Rev. John Tucke, A. M., died Aug. 12, 1773, aged 72, the other in memory of Rev. Josiah Stevens, died July 2, 1804, aged 64 (two of the old divines who Sunday after Sunday were wont to minister at the sacred desk to these people), marked another period in the history of these isles when in the occupancy of the hardy fishermen. Times have changed greatly within the last quarter of a century, and now they have become fashionable watering places, and on two of them, "Appledore" and "Star," have been erected large and commodious hotels, that are thronged with visitors during the heated term.

In recognition of the civilities and courtesies extended to the party during this excursion to the Isles of Shoals, it was, on motion of Mr. JOHN ROBINSON :

Voted, That the cordial thanks of the members and friends of the Essex Institute who participated in the

recent excursion to the Isles of Shoals are hereby presented to John A. Poor, Esq., of the "Oceanic" on Star Island, for his kindness in inviting the party to land at the island, and also for his various acts of courtesy shown to the excursionists during their stay.

Messrs. John M. Hagar of Salem and C. W. Kempton of Newburyport, were elected resident members.

Adjourned.



FIELD MEETING AT CONCORD, TUESDAY, JULY 27, 1875.

THE third field meeting of the present season was held at Concord, this day, having been postponed from Friday on account of the rain. More than two hundred and fifty persons attended from Salem and vicinity, the unusually large number, eager to proceed to such an unwonted distance, evinced a lively continuation of the patriotic interest in this historic old town inspired by the events of the 19th of April, 1775, and freshly awakened by the commemoration of the present year.

An unfortunate delay in the arrival of the Bangor train at Salem diminished even the limited time of the stay at Concord, but the misfortune was partially remedied by the promptness of the Fitchburg Railroad officials in furnishing a special train to the excursionists immediately upon their arrival in Boston.

On reaching Concord the company rendezvoused at the elegant and unique Public Library building, the noble gift to the town from one of its citizens, Mr. William Munroe. It stands on a triangular plat at the junction of two streets and is a successful adaptation of the picturesque features of mediæval architecture to the requirements and mode of construction of the present day.

This place, with its collections, is worthy of a more thorough examination than the party was enabled to bestow. Here may be seen the busts of Plato, Agassiz, Emerson, Mann, Hawthorne, Brown, and Munroe, as well as several valuable historical relics. One alcove is devoted to the printed works of Concord authors from the settlement of the town to the present time.

From this point the company proceeded in groups to visit the various memorable places of this delightful old town. The citizens generally seemed to have put at the disposal of the visitors all their private vehicles, and themselves acted as guides and expositors. There was an outpouring of genial hospitality from first to last, that was thoroughly characteristic of the Concord people. Gentlemen of the highest reputation in State affairs and in literature devoted themselves to the entertainment of the strangers with an impartiality, earnestness, cordiality and assiduity which it was refreshing to witness, and the town officers united with the citizens generally to make the visit agreeable.

The first objective point was the old North Bridge, with its impressive surroundings, but we will not repeat the story so often rehearsed within the last few months. The newly erected statue of the minute man, designed by Daniel French, a young Concord artist, now in Italy, in Powers' studio, excited universal admiration, and is really one of the finest works in the country. An enhancement of the pleasure of those who were examining this sacred spot, and who could not help recalling the oft-repeated stanza:—

“By the rude bridge that arched the flood,
 Their flag to April's breeze unfurled,
 Here once the embattled farmers stood,
 And fired the shot heard round the world:”

was the fact of the presence of the author of the immortal poem of which this verse forms a part. Here also at the bridge, marked by a rude headstone, lie the remains of British officers killed in action, and near by stands the monument erected some time since in honor of the American soldiers engaged in the Concord fight.

Several of the visitors found delightful recreation on Concord River in the neat and convenient pleasure boats which were freely placed at the disposal of the party. Messrs. Morse, Putnam and Bolles visited a shellheap some two miles up the river, obtaining interesting specimens of Indian relics.

Among the places interesting to Salem people, because of their connection with their townsman, Hawthorne, was the old Manse, which is in the near vicinity of the North Bridge. Here Hawthorne resided for several years. Now, as he described it long ago, between two tall gateposts of rough-hewn stone, we behold the gray front of the old parsonage, terminating the vista of an avenue of black ash trees. It was built by the grandfather of Ralph Waldo Emerson, and its last inhabitant before Hawthorne occupied it was the venerable Parson Ripley, who had died about a twelvemonth before. It was from the study window facing the river that the clergyman, who then dwelt in the manse, stood watching the outbreak of a long and deadly struggle between two nations; he saw the irregular array of his parishioners on the farther side of the river, and the glittering line of the British on the hither bank; he awaited, in an agony of suspense, the rattling of the musketry. It came; and there needed but a gentle wind to sweep the battle smoke around this quiet house. Hawthorne says that the old manse had never been profaned by a lay occupant, until that memorable summer afternoon when he entered it as his home, in 1842. A

priest had built it; a priest had succeeded to it; other priestly men had, from time to time, dwelt in it; and children born in its chambers, had grown up to assume the priestly character. The latest inhabitant alone had penned in it nearly three thousand discourses, besides the better, if not the greater number, that had flowed living from his lips. Here Emerson wrote "Nature," and here Hawthorne sojourned, sending forth his "Mosses from the Old Manse" with the declaration :

"For myself the book will always retain one charm, as reminding me of the river, with its delightful solitudes, and of the avenue, the garden and the orchard, and especially the dear Old Manse, with the little study on its western side, and the sunshine glimmering through the willow branches, while I wrote."

The Old Manse is now the residence of Judge Ripley, who gave the visitors a kindly welcome.

We must pass over the visits to other places connected with the memory of Hawthorne, his later residence, his walk on the Ridge Path, and his grave; the home and haunts of Thoreau, the poet-naturalist, whose favorite Walden Pond, around whose borders he studied nature so closely and of which he wrote so delightfully, was passed on the way, and was the scene of a gay picnic party, who probably little thought of the man who had so often wandered on its former quiet banks; and of the many other objects of interest, which crowded a day which will be remembered with delight.

The dinner was spread in the vestry of the First Church, and here the ladies of Concord took the entire charge of the preparations, with a lavishness altogether opposed to the simple requirements of the Institute. The Concord ladies added largely to the ordinary refreshments, laid and decked the tables in a refreshing and

tempting style, while many of the younger portion constituted themselves fair waiting maids, and dispensed the viands with a grace and dexterity that added charm to the feast.

The afternoon session was held in the Town Hall, and was attended by a large audience, including Judge E. R. Hoar, Ralph Waldo Emerson, the venerable A. Bronson Alcott, Wm. W. Wheildon, and many others, including Concord's wisest and best and fairest citizens.

The PRESIDENT of the Institute called to order, and in his introductory remarks stated that this was the fourth field meeting held beyond the limits of Essex county; of these, one was at Wakefield, and another at Reading; as those towns were settled by Lynn people and were known as Lynn village, they probably at one period may have been considered as a part of Essex county, until the lines between Essex and Middlesex were adjusted. The third was at Kittery, Me., the residence of Sir William Pepperell, who was connected by marriage with some of our old Salem families. It was appropriate that the Institute should visit Concord, for several reasons. In the first place, to see the grave of a distinguished son of Salem, which is marked by two small, white marble stones, with the simple inscription "Hawthorne," of whose ancestry and birthplace a brief sketch was then given.¹

Secondly, it was fitting for the association to visit the town to which the Legislature adjourned from Salem in October, 1774, after having resolved itself into a Provincial Congress and assumed the powers of sovereignty, which event was duly commemorated by the Essex Insti-

¹See Bulletin of Essex Institute, vol. 3, page 25, for a communication on "The Ancestry and Birthplace of Hawthorne."

tute, with an address from A. C. Goodell, Jr., Esq., on the 5th of October last, at the Institute rooms.²

The President next alluded to Concord as the home of Thoreau,³ the poet-naturalist, who had done so much to make us acquainted with the fauna and flora of Concord by his writings. It is, likewise, the place where was originated some two hundred years ago the famous Hunt's russet apple ;⁴ and also, more recently, the widely known Concord grape so extensively and generally cultivated.

The President closed his remarks by briefly sketching the history and objects of the Institute, which is the usual custom at meetings held in a new locality.

Judge E. R. HOAR then came forward, and in behalf of his townsmen gave the members of the Institute a cordial welcome to Concord. He felt he but expressed the feelings of the people of the town when he said he was very glad to see them. The Judge continued in a humorous strain which elicited much laughter and applause. He alluded to their researches on and around the sluggish river, and to Hawthorne's declaration that it was the only river he ever knew that was too lazy to keep itself clean. His father, the Judge said, had a different idea. He thought the river hated to leave Concord! In illustration of the ignorance of many people on the sub-

² For an account and the address see Bulletin of Essex Institute, Vol. 6, page 160, The address is printed in full in the Historical Collections of the Essex Institute, vol. xiii, page 1.

³ Henry David Thoreau, b. July 12, 1817, gr. Harv. Univ. 1837, d. May 6, 1862, dedicated his genius with such entire love to the fields, hills and waters of this town that he made them known and interesting to the reading public. The river on whose banks he lived, he knew from its springs to its confluence with the Merrimack.

⁴ The Hunt russet apple, a good and desirable variety, is said to have originated on the Hunt farm, in Concord, located about one mile north of the village, on the south side of "Puntakasset" Hill, overlooking the old North Bridge of Revolutionary fame.

ject of natural history, he repeated a story told to him by Thomas Hughes, author of "School-days at Rugby," "Tom Brown at Oxford," and other popular books, when he was visiting at Concord. It was at the expense of one of the railroad guards of an English train. A lady in the same carriage with him had a pet rabbit, and the guard protested that the passenger car was not a proper place for it; whereupon a gentleman drew from his pocket a turtle, saying that he, the guard, would not think of ejecting that, and that the rabbit had as much right there as the turtle. The guard went to headquarters to determine the question, and returning said, "cats is dogs, and rabbits is dogs, and they must go in the baggage van; but turtles is insects, and they go free; and rabbits must pay." The Judge remarked that that was the only lesson that he ever received in natural history. He also alluded to the rivalry between the North Bridge at Salem and that at Concord, and claimed that the latter had at least the substantial fact of the graves of two British soldiers killed there. He further referred to Hawthorne, spoke of the important objects of the Institute, and concluded, as he began, by saying that he was glad to welcome the members to Concord.

PROF. E. S. MORSE was called upon for an account of his trip on the river. He said he had found plenty of heat, but very little else, as his time on the river had been very limited. He had been thinking what he should take for a subject, if called upon to make any remarks, and Judge Hoar's story of the tortoise had suggested the subject of turtles. It was astonishing to an Englishman to see the great number of turtles in this country; in England they are very rare. He proceeded to speak of the similarity between the embryos of turtles and those

of birds. No two families of vertebrates seemed to be more widely dissimilar in their development, yet there was a similarity almost amounting to identity in their embryonic forms. He illustrated this fact, and the gradual changes which result in the differences between them when they emerge from the eggs, by drawings on the blackboard, and briefly alluded to the points of similarity which are evident to a naturalist. To further illustrate this similarity he described a fossil skeleton found in Germany, which combined the wings and feathers of the bird with the vertebral development and teeth of the reptile. In closing, he alluded with great respect and admiration to the labors of Thoreau in Concord, to which the naturalists of the vicinity owe so much, and during further remarks announced himself a believer in the theory of Darwin.

Vice President F. W. PUTNAM gave an interesting account of his visit to the Indian shellheap on the river, from which Thoreau made the valuable collection of relics, now under his own charge at the archaeological Museum at Cambridge. He was glad to have seen the place where Thoreau and Wyman had collected the relics alluded to. He also exhibited and commented upon about a dozen stone implements, of the shape of arrowheads, which had been picked up there, some of which were evidently intended for knives rather than arrow or spearheads, and gave a general account of the composition and formation of the shellheaps found on both coasts of America, on many of our river banks, and in nearly all other parts of the world.

Prof. MORSE, in answer to a question from Mr. Wheelton, explained how the ballooning spiders were suspended in the air.

Rev. E. C. BOLLES, of Salem, in some eloquent remarks, spoke of the microscopic forms of life to be found in Concord River, illustrating upon the blackboard, and explaining some of the wonders of the simplest forms and modes of growth of animal life.

Judge HOAR called attention to the importance of accurate observation, and to the difference between the observer of facts and mere theorists, illustrating his point by a pertinent law case which once came before him. It was the trial of a man for robbery. A farm house had been entered in the night, the door of the sleeping room secured so that the occupants could not get out, a lamp lit, and a desk rifled of quite a large sum of money. Suspicion rested on a man who had formerly worked on the farm, and it was brought out in evidence that at about that time he was seen to have a good deal of money, and the tracks about the farm house, the morning after the robbery, were made by a shoe the size of his, but all the evidence was circumstantial, and Judge Hoar on the bench and the jury in their box all thought that the government would fail to convict the prisoner. At last the government attorney called a neighbor who had visited the house on the morning after the larceny, and asked him if he found anything upon the floor of the room where the lamp had been lit. Yes, he had found a match about half burnt, evidently thrown down by the person who lit the lamp. Turning to the officer who arrested the prisoner, he enquired what he had found on his person when arrested, and among other things the officer produced half a card of matches. Taking the burnt match found upon the floor, and the half card found upon the prisoner, the government attorney showed the court and jury that the burnt match had manifestly been split from the card

in the prisoner's possession, as they fitted so exactly, and the grain of the wood ran in such a manner that there could be no doubt whatever in regard to the matter, and the man was found guilty of the robbery.

The Rev. GRINDALL REYNOLDS of Concord, alluded to some of the historic facts of the Revolution and of the similarity of events at the North Bridge in Concord, and the North Bridge in Salem. He also spoke of the value of such gatherings as the present, in the diffusion of knowledge combined with the pleasures of a summer's day picnic.

Prof. D. B. HAGAR, of Salem, after some highly complimentary remarks on the reception given by citizens of Concord to the Institute party, which were endorsed by the President and the entire company of visitors, offered the following resolutions, which were unanimously adopted:—

Resolved, That the hearty thanks of the Essex Institute are hereby presented to the selectmen of Concord, for the courteous invitation extended to the Institute to meet in this place, and for the free use of their Town Hall; to the authorities of the First Church for the accommodations kindly afforded by them; and to the ladies and gentlemen of Concord who have contributed so hospitably and abundantly to the entertainment of the Institute.

Resolved, That the Institute will hold in grateful remembrance the field meeting at Concord as one of the most delightful and profitable in all its history.

Resolved, That the thanks of the Institute are due to the officers of the Eastern and the Boston & Lowell Railroads for kind attentions, and to C. L. Heywood and John Adams of the Fitchburg Railroad, for their readiness in furnishing a special train for the party to Concord and for other courtesies.

At half-past five the meeting was closed and the company returned to Boston over the Lexington branch and Lowell roads, reaching Salem about eight o'clock, after one of the most interesting and delightful excursions ever participated in by the Institute.

Adjourned.



REGULAR MEETING, MONDAY, AUGUST 2, 1875.

Regular meeting this evening. The PRESIDENT in the chair. Records read.

The SECRETARY announced the following correspondence:—

From S. P. Boynton, Lynn, July 21; Boston Soc. Nat. Hist., July 17; Buffalo Hist. Soc., July 12; John J. Babson, Gloucester, July 9; Edward Cogan, Brooklyn, N. Y.; Concord, Selectmen of, July 12, 19, 23; Globe Publishing Co., Boston, July 19; Henry M. Greenough, Newburyport, July 7; D. B. Hagar, July 15; Charles W. Kempton, Newburyport, July 8; Kjobenhavn, K. Danske Videnskab. Selskab, June 29; Lowell Bleachery, July 9; New Jersey Hist. Soc., July 13; New York Hist. Soc., July 12; Ohio Hist. and Phil. Soc., July 13; Abner J. Phipps, Boston, July 3; John R. Poor, Boston, July 29; G. Reynolds, Concord, July 17; Royal Polytechnic Soc., Cornwall, July 12; Rhode Island Hist. Soc., July 12; Royal Soc. of Tasmania, July 23, 1874.

The LIBRARIAN reported the following additions:—

By Donation.

DUDLEY, DEAN. Directories:—Plymouth and Barnstable Counties, 1873-4; Hyde Park, Dedham and Canton, 1874; Quincy, Weymouth and Braintree, 1873-4; Cambridge, 1872; Brookline, Jamaica Plain and West Roxbury, 1873-4, 1 vol.; Concord, 1874-5; Dover, Great Falls and Rochester, 1874; Beverly, Peabody and Marblehead, 1875.

FEARING, A. G., of Boston. Programmes, etc., of the Bunker Hill Monument Association, June 17, 1875.

FOLGER, W. C., of Nantucket. Miscellaneous Town Reports, 10.

GATES, GEO. S., Groton. Catalogue of the Groton Public Library.

GREEN, S. A., Boston. Miscellaneous pamphlets, 21.

HARTRANFT, J. F., of Philadelphia, Penn. Pennsylvania Archives, Second Series, Vol. I, 1874.

KIMBALL, JAMES. Cape Ann Advertiser, May to July. Proceedings of the Mass. Council of Deliberation held in Boston, June 30, 1874. 8vo pamph.

MUNSELL, JOEL, Albany, N. Y. Miscellaneous pamphlets, 31.

PUTNAM, F. W. Geological Survey of Missouri, by G. Broadhead. Vol. I. 1873-4.
VALENTINE, Mrs. Friend's Review. 1859 to 1874. Miscellaneous pamphlets, 25.

By Exchange.

BOSTON SOCIETY OF NATURAL HISTORY. Proceedings. Vol. XVII. Dec., 1874, Feb. 1875.

NEW YORK CHAMBER OF COMMERCE. Annual Report, 1874-75.

N. E. HISTORIC-GENEALOGICAL SOCIETY. Register. July, 1875.

N. Y. GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Record. July, 1875.

PHILA. ACADEMY OF NATURAL SCIENCES. Proceedings. Jan. to Apr., 1875.

YALE COLLEGE. Obituary Record of Graduates. 1875. Yale College in 1875.

PUBLISHERS. American Journal of Science. Beetle and Wedge. Boston Daily Globe. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Post. Salem Gazette. Salem Observer. Salem Register. Turner's Public Spirit.

George W. Cressy and Dorcas C. Nourse of Salem were elected resident members.



REGULAR MEETING, MONDAY, SEPT. 6, 1875.

Meeting this evening. The PRESIDENT in the chair.
Records read.

The SECRETARY announced the following correspondence:—

From American Numis. and Archæol. Soc., Aug. 10; Bureau of Education, Washington, Aug. 26; Bristol Naturalists' Soc., Aug. 12; C. H. Dall, Boston, Aug. 7; London Soc. of Antiquaries, Aug. 4; Lisbon Royal Acad. Sci., July 30; Salem Young Men's Union, Aug. 16; W. Hudson Stephens, Lowville, Aug. 26; W. Wheeler, West Roxbury, Aug. 16.

The following additions to the library were reported:—

By Donation.

BAKER, C. H., Annapolis, Md. Papers and Proceedings of the U. S. Naval Institute. Vol. I. 1874.

BUTLER, B. F. Message and Documents, 1874-75. Abridgement. 1 vol.

CONANT, W. P., West Newbury. Missionary Magazine, 1807. Locomotion by A. Gordan. Georgia Claims.

COX, E. T., Indianapolis, Ind. Geological Survey of Indiana, 1874.

CROWELL, E. P., of Amherst. Triennial Catalogue of Amherst College, 1875.

GARFIELD, E. I., Detroit, Mich. Report of the Controller of Detroit, year ending Jan. 31, 1875.

LEE, JOHN C. Commercial Bulletin, July and August, 1875.

MARSH, O. C., New Haven, Conn. Statement of affairs at Red Cloud Agency, made to the President of the U. S.

MERRITT, L. F. Essex County Mercury, April to August, 1875.

OLIVER, H. K. Report of the Connecticut Board of Education, 1873. School Report of Michigan, 1872. Penn. Report of the Institute of Mines, 1870. Report of the Department of Agriculture, 1863. Report on American Fisheries. Smithsonian Report, 1832. Transactions Mass. Agricultural Society, 3 vols. Agriculture of Mass., ten years. U. S. Coast Survey, 1832. Worcester's Gazetteer, 2 vols. Memoir of Ebenezer Bailey. Memoir of Solomon Willard. Mass. State Board of Charities, 1867, 1870-1, 1873-4. Registration Report, 1873. Auditor's Report, 1864. Report of the State Board of Health, 1871. Agriculture of Maine, 1865, 1866, 1867. The Art of Singing, 2 vols. National Lyric, 1 vol. Miscellaneous pamphlets, 64.

PATCH, GEO. W., Marblehead. Registration Reports, 1858 to 1872, 15 vols. Board of State Charities, 1865 to 1873, 7 vols. Report of the State Board of Health, 1870 to 1874, 4 vols. Journal of the Mass. House of Reps., 1865, 1866, 2 vols. Census of Boston, 1815. Industry of Mass., 1865. Census of Mass., 1860, 1865, 2 vols. 8vo. Report of Mass. Board of Education, 1859 to 1872, 14 vols. Animal Magnetism, 1 vol. The Psalmist, 1 vol. Railroad Returns, 1863 to 1872, 10 vols. Journal of the Mass. Convention, 1853, 1 vol. Patent Office Reports, 1853, 1855, 1856, 1860, 1861, 5 vols. Report on Ship Canal, 1864, 1 vol. Logic and Utility of Mathematics, 1 vol. Reeves' Bible History, 1 vol. Vocal Culture, 1 vol. Polyglott Bible, 1 vol. New Testament, 1 vol. Vindication of the Government of N. E. Churches, 1 vol. Sacred Lyre, 1 vol. Bible News, 1 vol. Manual of the General Court, 1856 to 1873. Miscellaneous pamphlets, 80.

QUINT, A. H., New Bedford. Minutes of the General Association of Mass., 1875.

U. S. PATENT OFFICE. Official Gazette. June 15, 22, July 6, 13, 20, 27, Aug. 3, 10.

By Exchange.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Memoirs, No. I.

ARCHIV DER ANTHROPOLOGIE. Paris. Band VIII. Apr., 1875.

BRISTOL NATURALISTS' SOCIETY. Proceedings. New Series, Vol. I, pt. II, 1874-5.

CROSSE ET FISCHER. Journal de Conchyliologie. 3e Série, Tome xv. No. 2, 1875.

INSTITUT HISTORIQUE. Paris. L'Investigateur. Mars-Avril, 1875.

NATURWISSENSCHAFTLICHEN GESELLSCHAFT "ISIS" DRESDEN. Sitzungs-Berichte, Jahrg. 1874, Oct., Dec.

NATURWISSENSCHAFTLICHEN VEREINE ZU BREMEN. Abhandlungen, Bd. IV, Heft 2, 3. 1874-5. 8vo. Beilage, No. IV, 1874. 4to.

N. Y. LYCEUM OF NATURAL HISTORY. Annals. Vol. xi. Nos. 5-6. 1875.

ROYAL SOCIETY OF TASMANIA. Monthly Notices for 1873.

SOCIÉTÉ D'ACCLIMATATION, Paris. Bulletin Mensuel, 3me Série. Tome II, No. II, 1875.

SOCIÉTÉ D'AGRICULTURE, SCIENCES ET ARTS DE LA SARTHE, LE MANS, France. Bulletins. Tome xxiii, 1875.

SOCIÉTÉ D'ANTHROPOLOGIE. Paris. Bulletins, Tome ix, 2e Serie. Juin-Juillet, 1874. Tome x, 2e Series. Jan-Mars, 1875.

WESTERN RESERVE AND NORTHERN OHIO HISTORICAL SOCIETY. Cleveland Directories, 1815 to 1871. Miscellaneous pamphlets, 6.

PUBLISHERS. American Journal of Science. American Naturalist. Beetle and Wedge. Boston Daily Globe. Bradford New Era. Forest and Stream. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill

Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Gazette. Salem Observer-Salem Post. Salem Register. The Western. Turner's Public Spirit.



REGULAR MEETING, MONDAY, SEPTEMBER 20, 1875.

MEETING this evening. Vice President F. W. PUTNAM in the chair. Records read.

Ellen B. Kelman was elected a resident member. William De Roux of Panama, and Charles P. Perkins, U. S. N., Annapolis, Md., were elected corresponding members.



ADJOURNMENT OF QUARTERLY MEETING, MONDAY,
OCTOBER 4, 1875.

THE adjournment of the August Quarterly Meeting was held this evening. Vice President F. W. PUTNAM in the chair.

On the motion of Rev. E. C. BOLLES the Constitution and By-laws proposed at the Quarterly Meeting in February, and at the Annual Meeting in May, were adopted after a discussion by Messrs. A. H. Johnson, D. B. Hagar, E. C. Bolles, John Robinson, W. D. Northend and C. H. Higbee.

Adjourned to meet on Monday, Oct. 11, at 7.30 P. M.

The REGULAR MEETING was held immediately after the adjournment of the Quarterly. Records read; and the correspondence was announced by the Secretary :

From Belfast Naturalists' Field Club, Sept. 6; Charles Cadman, Detroit, Mich., Sept. 2; S. A. Drake, Boston, Sept. 22; J. W. Hawes, New York, Sept. 6; J. C.

Holmes, Detroit, Mich., Sept. 24; O. A. Jenison, Lansing, Mich., Sept. 6; Rufus King, New York, Sept. 23; G. W. Patch, Marblehead, Sept. 8; W. Hudson Stephens, Grand Rapids, Mich., Sept. 23; Charles A. Walker, Chelsea, Sept. 16; Western Reserve Historical Society, Sept. 14, 17; W. Wheeler, West Roxbury, Sept. 7; W. C. Wood, Wenham, Sept. 22.

The LIBRARIAN reported the following additions to the Library:—

By Donation.

AIKIN, EDWARD, East Saginaw, Mich. East Saginaw and Saginaw City Directories, 1868-9, 1870-1.

CITY OF SALEM. Centennial Exercises, Feb. 26, 1875.

KIMBALL, JAMES. Cape Ann Advertiser, July, Aug., Sept.

PUTNAM, F. W. N. Y. Tribune, July to Sept.

RANTOUL, HANNAH, of Beverly, Mass. Memoires de Sully, 3 vols., 12mo. L'Observation, 2 vols. Forlyce's Addresses, 1 vol. Hebrew Grammar, 1 vol. Apocryphal Testament, 1 vol. Modern Materialism, 1 vol. Religious Creed and Statements, 1 vol. Conn. Evangelical Mag., 1 vol. Historie des Revolutions Romaines, 4 vols. Bielky's Evidences, 1 vol. Moscow, 1 vol. Miscellaneous pamphlets, 167.

SPENCE, F. A. Annual Report of the President of Brown University, July 17, 1875. 8vo.

U. S. PATENT OFFICE. Official Gazette, Aug. 17, 31, 1875.

By Exchange.

BOSTON SOCIETY OF NATURAL HISTORY. Proceedings. Vol. xvii, pt. iv, Feb., April, 1875. 8vo.

PUBLISHERS. American Naturalist. Beetle and Wedge. Boston Daily Globe. Gloucester Telegraph. Hardwicke's Science-Gossip. Haverhill Gazette. Ipswich Chronicle. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Salem Gazette. Salem Post. Salem Observer. Salem Register.

BY ADDITION. Documents, U. S. Cong., 1st Sess., 30 Cong., 4 vols.; 1st Sess., 32 Cong., 13 vols.; 2nd Sess., 32 Cong., 8 vols.; 1st Sess., 33 Cong., 5 vols. Directories, Concord, 1870; Cambridge, 1868; Lowell, 1870; Bangor, 1871-2; Nashua, 1868-9; Dover and Great Falls, 1869; Somerville, Arlington and Belmont, 1869-70; Haverhill and Bradford, 1869-70, 1872, 2 vols.; Rockland, Belfast, Camden and Thomaston, 1868; Metropolitan Business Directory, 1869, 1870, 2 vols; Waltham and Watertown, 1869-70.

Mr. AUGUSTUS S. BROWN presented a bud of the banana plant from St. Augustine, Florida.

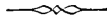
Mr. JOHN ROBINSON gave a description of the plant, illustrating his remarks with the bud presented and with a stalk and leaf from his greenhouse, and by diagrams on the blackboard.

Prof. E. S. MORSE spoke of his recent researches at

Grand Menan, and described some points in the embryology of several species of birds.

Mr. JAMES KIMBALL presented from Capt. J. J. Coker a specimen of Hippocampus sp., which formed the subject of remarks by the chairman.

Eva M. Davis of Salem was elected a resident member.



ADJOURNED QUARTERLY MEETING, MONDAY,
OCTOBER 11, 1875.

MEETING this evening at 7.30 o'clock. Vice President PUTNAM in the chair.

On motion of Mr. JOHN ROBINSON :

Voted, To proceed to the election of officers and that a committee be appointed by the chair to nominate a list.

Messrs. W. P. Upham, E. S. Atwood and John Robinson were appointed as the committee.

The following list was reported and the persons named were elected :

President: Henry Wheatland.

Vice Presidents: Abner C. Goodell, Jr., Frederick W. Putnam, William Sutton, Daniel B. Hagar.

Secretary: George M. Whipple.

Treasurer: Henry M. Brooks.

Auditor: Richard C. Manning.

Librarian: William P. Upham.

Curators: History, James Kimball; Manuscripts, William P. Upham; Archæology, Frederick W. Putnam; Numismatics, Matthew A. Stickney; Geology, Alpheus

S. Packard, Jr. ; Botany, John Robinson ; Zoology, E. S. Morse ; Horticulture, Caleb Cooke ; Music, Charles H. Higbee ; Painting and Sculpture, Thomas F. Hunt ; Technology, Edwin C. Bolles.

Committees: Finance, John C. Lee, James Upton, James B. Curwen, James O. Safford ; Library, Joseph G. Waters, Henry F. King, George F. Flint, Amos H. Johnson ; Publication, Abner C. Goodell, Jr. ; Edward S. Atwood, William P. Upham ; Lectures, Charles H. Higbee, Edwin C. Bolles, William D. Northend ; Field Meeting, George M. Whipple, Allen W. Dodge, James R. Nichols, George D. Phippen, Francis H. Appleton, Amos Noyes, Francis H. Johnson, Amos H. Johnson, George Perkins.

Rev. Charles Arey of Salem, was elected a resident member.

Mr. JOHN ROBINSON presented the following

ADDENDA TO THE FERNS OF ESSEX COUNTY.

(Bulletin E. I., Vol. VII, No. 3, March, 1875.)

10 A. WOODWARDIA ANGUSTIFOLIA Smith.

Dr. Charles Pickering informs me that Mr. Wm. Oakes, in a letter written some forty years ago, speaks of finding this species while botanizing. The locality, Dr. Pickering was quite certain, was in Essex Co., probably at Danvers.

25 A. PHEGopteris HEXAGONOPTERA Fée.

Fine specimens of this species were found by Mrs. Horner at Georgetown, Sept., 1875 (see herb. Essex Co. at P. A. S.).

Thus two species are added to the County ferns from the list in the first paper indicating possible inhabitants.

Among the possible inhabitants see No. 5, *B. simplex*, from Long Island, N. Y. This will probably prove to be a mistake, and should be No. 6, *B. matricariæfolium*.

Mr. Frank Lufkin of Rockport has sent me LYCORO-

DIUM CLAVATUM, L. ANNOTINUM and L. LUCIDULUM from that town, species not common in the County, and not *reported* previously from that quarter.⁵

I have found EUISETUM HYEMALE at Methuen and Boxford during the past season.

While dredging for animals and plants in Wenham, Pleasant and Chebacco ponds, during July and August, 1875, I collected among the Cryptogamous plants the following :

ISOETES ECHINOSPORA Durieu var. BRAUNII. In shallow water at Pleasant pond. (The first species of Isoetes yet *reported* in the County; doubtless others are to be found.

Characeæ (2 gen., 6 species) (named by Mr. C. C. Frost, of Brattleboro, Vt.).

CHARA CORONATA var. SCHWEINITZII. Wenham pond, abundant.

CHARA GYMNOPUS var. ELEGANS A. Br. Pleasant pond, Wenham, "new to New England."

CHARA VULGARIS L. (C. fœtida of authors). Pleasant pond, Wenham, common.

NITELLA GRACILIS Agh. Chebacco pond, abundant.

NITELLA FLEXILIS Agh. Wenham pond.

—————? "Unknown to me, perhaps new to this region."

C. C. Frost.

Any local county lists or notes on the plants of the county will be gladly received.

Capt. SAUNDERS, of Orlando, Me., presented to the Institute a vampire, several snakes, and a very curious bone belonging to the dorsal fin of a fish, which were remarked upon by the chairman.

⁵ Since the above was communicated, and just as this goes to press (May, 1876), I also found these species in Beverly.

BULLETIN
OF THE
ESSEX INSTITUTE.

VOL. 7. SALEM, MASS., NOV. AND DEC., 1875. Nos. 11 & 12.

One Dollar a Year in Advance. Ten Cents a Single Copy.

REGULAR MEETING, MONDAY, OCTOBER 18, 1875.

MEETING this evening. Vice President F. W. PUTNAM in the chair. Records read.

Dr. GEORGE A. PERKINS exhibited some curious specimens of coal and charcoal; also beautiful impressions of ferns in coal and stone, and made some remarks on the subject. The chairman continued the subject, and spoke on coal deposits in this country, and of the fossil remains of fish found in several carboniferous deposits.

Mr. WILLIAM P. UPHAM read an interesting paper relating to the settlement of Rev. Samuel Skelton, minister of the First Church in Salem. He also called attention to the value of old letters and papers, and the importance of their preservation. The paper was referred to the publication committee for insertion in the "Historical Collections."

Mr. KIMBALL exhibited plaster casts of two very curious utensils supposed to have been made by the Indians and described the way in which they were probably made and the conditions under which the original specimens had been found. One was supposed to be a part of a large mortar and the other a cooking vessel. The chairman made some statements of his researches among Indian relics, explanatory of the casts on exhibition.

Mr. C. H. HIGBEE laid on the table for examination some specimens of minerals which he had collected, and gave a brief description of them. This led to a discussion of the minerals of this county, particularly of those found in the region of Newbury, and which have recently excited great interest, Messrs. Higbee, Kimball, Putnam and others taking part.



REGULAR MEETING, MONDAY, NOVEMBER 1, 1875.

MEETING this evening. Vice President F. W. PUTNAM in the chair. Records of last meeting read.

The SECRETARY announced the following correspondence:—

From Francis H. Appleton, Boston, Oct. 19; Charles Arey, Salem, Oct. 19; Helen F. Ayres, Boston, Oct. 19; S. L. Boardman, Augusta, Me., Oct. 5; E. P. Boon, New York, Oct. 26; John J. Bagley, Detroit, Mich., Oct. 17; Fidelia Bridges, Brooklyn, N. Y., Oct. 18; James B. Curwen, Salem, Oct. 13; J. Edmonds Clarke, Washington, D. C., Oct. 28; Samuel A. Drake, Boston, Oct. 5, 7; John Ward Dean, Boston, Oct. 5; J. P. Felton, Salem, Oct. 27; S. A. Green, Boston, Oct. 13; F. B. Hough, Washington, Oct. 2; Rufus King, New York, Oct. 16; H. M. Knowlton, Boston, Oct. ; Lynn Public Library, Oct. 29; I. P. Langworthy, Boston, Oct. 9; Michigan State Library, Oct. 9; Michigan State Geological Survey, Oct. 27; Amos Noyes, Newburyport, Oct. 16; George Peabody, Salem, Oct. 30; Richard A. Proctor, Boston, Oct. 21; E. P. Robinson, Saugus, Oct. 6, 11; W. Hudson Stephens, Lowville, N. Y., Oct. 13; Smithsonian Institution, Oct. 12; Joseph G. Waters, Salem, Oct. 13; Justin Winsor, Boston, Oct. 15.

Prof. A. GRAHAM BELL gave a very interesting lecture on the system of "visible speech" invented by his father, illustrated by charts of the symbols representing the various sounds, and by practical examples of the value of the system in teaching deaf mutes to speak, as tested by the ability of a young pupil from the Boston Institution to interpret the symbols at sight. The exposition of the value of the system, both in its linguistic and educational aspects, was listened to with intense interest, and the tests were eminently satisfactory.

After the close of the lecture a conversation followed between Rev. E. B. Willson, the lecturer, and others, in which several questions were proposed and answered. A vote of thanks was then passed to Mr. Bell for the evening's instruction.

Edward J. Johnson of Nahant was elected a resident member.



THE SECOND ART EXHIBITION

OPENED on Tuesday, Nov. 9, at the rooms of the Institute, Plummer Hall, and closed Wednesday the 17th. About twelve hundred persons visited the exhibition, not including members of the Institute and contributors. The main hall was devoted to the display of oil paintings, water colors, pen and ink and pencil sketches. The collection of portraits of persons prominent in Salem history attracted much attention, and among them were represented the productions of Copley, Stuart, Frothingham, Osgood, Alexander and others of our early artists. Our local artists presented many choice specimens, enumerated in the accompanying catalogue of two hundred

and eighty-three pictures by one hundred and eighty-six contributors.

The eastern ante-room was occupied by the exhibition of bronzes, porcelain and pottery; one hundred and five specimens from forty-seven contributors. This was the first ceramic exhibition in Salem, and it was an entire success, and many rich and curious articles were there displayed.

CATALOGUE OF THE SECOND ART EXHIBITION, NOVEMBER, 1875.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
1	James Miller.	C. Osgood.	Mrs. J. F. Miller.
2	Timothy Pickering.	S. L. Waldo.	J. Pickering.
3	John Pickering.	Chester Harding.	J. Pickering.
4	Richard Derby.	Sargent.	Misses Derby.
5	Thomas Cole.	C. Osgood.	Mrs. T. Cole.
6	Leverett Saltonstall.	C. Harding.	Mrs. J. F. Tuckerman.
7	Wm. Orne.		Essex Institute.
8	Jona. Webb.	Frothingham.	Gardner Barton.
9	Mrs. Edward Lander.	"	Misses Lander.
10	Edward Lander.	"	Misses Lander.
11	C. W. Upham.		Essex Institute.
12	William Bentley.		Essex Institute.
13	Zachariah Hicks.	Stuart.	Mrs. S. B. Howe.
14	B. Lynde Oliver.	Copy by Miss Gilbert.	J. G. Waters.
15	C. W. Upham.	Alexander.	Mrs. C. W. Upham.
16	A. Huntington.	B. C. Porter.	Mrs. A. Huntington.
17	Mrs. Lois Paine.		Mrs. J. S. Cabot.
18	Sir Richard Saltonstall.	Copy from Rembrandt, by C. Osgood.	Misses Saltonstall.
19	Pickering Dodge.	Frothingham.	W. A. Lander.
20	Penn Townsend.		J. G. Waters.
21	Mrs. Samuel Cook.		H. K. Oliver, Jr.
22	Nathaniel Lord.		G. R. Lord.
23	Alphens Crosby.	E. Billings.	D. B. Hagar.
24	Nathaniel Hawthorne.		Mrs. G. B. Loring.
25	Wm. H. Prescott.	J. H. Young.	D. B. Hagar.
26	Nathaniel J. Lord.		George R. Lord.
27	Samuel Cook.		H. K. Oliver, Jr.
28	Family of Benjamin West.		Mrs. J. S. Cabot.
29	Rebecca Cabot, daughter of Timothy Orne.		Mrs. J. S. Cabot.
30	Benj. Waters, about 1800.		J. G. Waters.
31	View on the Presumpscot.	H. B. Brown.	E. C. Bolles.
32	Crayon Head.	Pupil of Miss Merrill.	S. H. Worcester.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
33	View in Stowe, Vt.	G. M. White.	N. G. Simonds.
34	Water Color.	J. W. Thyng.	J. W. Thyng.
35	Drawing "The Page."	G. B. Haskell.	G. B. Haskell.
36	Flowers, French crayon.	Miss H. Putnam.	Miss H. Putnam.
37	Pencil drawing.	G. B. Haskell.	C. F. Archer.
38	Charcoal head.	Miss Ida Caller.	J. M. Caller.
39	Pen sketch.	O. W. H. Upham.	O. W. H. Upham.
40	Water color.	David Roberts, England.	Misses Saltonstall.
41	Out door sketch.	O. W. H. Upham.	O. W. H. Upham.
42	Lespieglerie.	G. M. White.	G. M. White.
43	Sketch at Seabrook.	Miss M. C. Allen.	Miss Allen.
44	La Mignonne.	G. M. White.	G. M. White.
45	Charcoal. Fancy head.	Miss Ida Caller.	J. M. Caller.
46	Copy of an old picture.	Miss H. F. Carl- ton.	Oliver Carlton.
47	Charcoal. Fancy head.	Miss Ida Caller.	J. M. Caller.
48	Monarch of the Glen.	G. Southward.	Observatory Club.
49	Drawing.	J. B. Hudson, Jr.	J. B. Hudson, Jr.
50	Beatrice Cenci.	After Guido.	Wm. A. Lander.
51	St. Francis, founder of the Fran- ciscan Order.	Ribera.	Mrs. A. L. Peirson.
52	Water-Lilies.	Seavey.	G. W. Benson.
53	Pansies.	Seavey.	G. W. Benson.
54	Road-side View.	J. B. Hudson, Jr.	J. B. Hudson, Jr.
55	Flowering Vines.	Miss E. Gardner.	Miss E. Gardner.
56	Old Canal.	J. B. Hudson, Jr.	J. B. Hudson, Jr.,
57	Woodcock.	Mrs. G. P. Osgood.	Mr. G. P. Osgood.
58	Water color.	Sattler.	John C. Lee.
59	Woodcock.	Mrs. G. P. Osgood.	Geo. P. Osgood.
60	Palette Knife Sketch.	H. M. Knowlton.	H. M. Knowlton.
61	Grief.	H. M. Knowlton.	Miss Knowlton.
62	Head of a Boy.	H. M. Knowlton.	Miss Knowlton.
63	Apple Peddler.	Pupil of Miss Knowlton.	Miss Knowlton.
64	The Exile.	H. M. Knowlton.	Miss Knowlton.
65	Portrait of Lady.	H. M. Knowlton.	Miss Knowlton.
66	Wisteria.	Miss S. E. Smith.	Miss Smith.
67	Portrait, Miss Manning.	Miss S. E. Smith.	Miss S. E. Smith.
68	Interior of a Studio.	Pupil of Miss Knowlton.	Miss Knowlton.
69	Apple Blossoms.	H. M. Knowlton.	Miss Knowlton.
70	Apple Tree at Manchester.	H. M. Knowlton.	Miss Knowlton.
71	Priscilla. (after Hunt).	Miss Smith.	Miss Smith.
72	Wayside Flowers.	Miss Smith.	Miss Smith.
73	Study.	Pupil of Miss S. E. Smith.	Miss Smith.
74	The Willows.	Miss S. E. Smith.	Miss Smith.
75	Sketch.	Wm. M. Hunt.	Mr. Hunt.
76	Medford Spires.	"	Mr. Hunt.
77	Cactus.	H. M. Knowlton.	Miss Knowlton.
78	June Day.	After Rousseau.	Miss S. E. Smith.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
79	Study, charcoal.	Pupil of Miss Smith.	Miss S. E. Smith.
80	Study, charcoal.	Pupil of Miss Smith.	Miss S. E. Smith.
81	Study, charcoal.	"	Miss Smith.
82	Study, charcoal.	Miss H. M. Knowlton.	Miss Knowlton.
83	Sketch, charcoal.	Wm. M. Hunt.	Mr. Hunt.
84	Study, moonlight.	Miss H. M. Knowlton.	Miss Knowlton.
85	Study, from life.	Miss S. E. Smith.	Miss Smith.
86	Study, Azalia.	Pupil of "	Miss Smith.
87	Apple Blossoms.	Miss S. E. Smith.	Miss Smith.
88	Ginger Jar.	Pupil "	Miss Smith.
89	Planting.	Miss S. E. Smith.	Miss Smith.
90	Wild Flowers.	Pupil "	Miss Smith.
91	Portrait, Josh Billings.	Miss H. M. Knowlton.	Miss Knowlton.
92	Study.	Pupil of Miss Smith.	Miss Smith.
93	Wisteria.	"	Miss Smith.
94	Tea Roses.	Miss S. E. Smith.	Miss Smith.
95	Descent from the Cross.	(After Overbeck).	C. A. Ropes.
96	Madonna.	Copy from Raphael.	B. H. Silsbee.
97	Pond Lilies.	Mary H. Weston.	Miss Weston.
98	Saco River, N. Conway.	Geo. Newcomb.	Mr. Newcomb.
99	Cardinal Flower.	Nina Moore.	Mrs. K. Woods.
100	Water Color.		Miss Saltonstall.
101	Water Color.	Sattler.	J. C. Lee.
102	Water Color.		Miss Saltonstall.
103	Presumpscot Falls.	J. B. Hudson, Jr.	Mr. Hudson.
104	Moonlight.	R. D. Wilkie.	C. H. Higbee.
105	Dogs Heads.	Miss Nellie Haddock.	Miss Haddock.
106	Portrait, Mrs. Fitch.	Copley.	Misses Derby.
107	Pen Drawing.	Geo. M. White.	H. M. Brooks.
108	After the Storm.	Oliver.	C. A. Ropes.
109	Wild Flowers.	Mary H. Weston.	Miss Weston.
110	Baboosic Lake.	Mrs. F. Cox.	Mrs. Cox.
111	Wild Flowers.	Mary H. Weston.	Miss Weston.
112	The Showery Day.	Mrs. F. Cox.	Mrs. Cox.
113	Woodcock.	W. B. Parker.	Mr. Parker.
114	White Cactus.	Miss Kate Johnson	Miss Johnson.
115	Night Blooming Cerens.	"	Miss Johnson.
116	View on Lake George.	Fisher.	H. M. Brooks.
117	The Horse Fair.	Unknown.	Mrs. T. Hunt.
118	The Horse Fair.	"	Mrs. T. Hunt.
119	Marine View.	Ernest Fenollosa.	Mr. Fenollosa.
120	Pen Drawing.	Geo. M. White.	H. M. Brooks.
121	Pen Drawing.	"	H. M. Brooks.
122	Water Color.	Chinery.	T. F. Hunt.
123	Flower Piece.	Miss K. Johnson.	Miss Johnson.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
124	The Shepherdess.	Henri.	C. A. Ropes.
125	Landscape.	M. Lajoie.	H. M. Brooks.
126	Water Color.	G. M. White.	Mr. White.
127	Water Color.	"	Mr. White.
128	Sea Mosses.	Miss M. Gold- thwaite.	Miss Goldthwaite.
129	Water Color.	G. M. White.	Mr. White.
130	Water Color.		
131	Portrait.	Unknown.	Mrs. C. F. Williams.
132	Portrait, Lady.	Jean Raoux.	Miss Jackson.
133	Shop in Paris.	Lafaye.	George Peabody.
134	Diana's Baths.	Geo. Newcomb.	Mr. Newcomb.
135	Woman Selling Provisions.	After Gerhard.	George Peabody.
136	Interior.	Unknown.	Wm. A. Lander.
137	Landscape.	"	George R. Lord.
138	The Sisters.	Copy from Sir T. Lawrence.	J. P. Cook.
139	Water Color.	G. M. White.	Mr. White.
140	Water Color.		
141	The Dentist.		
142	View near Naples.	Mary H. Weston.	Miss Weston.
143	Portrait.	School of Vernet.	Miss Jackson.
144	Sunset.	Mrs. M. J. David.	Mrs. E. Putnam.
145	Scriptural Subject.	J. J. Enneking.	T. F. Hunt.
146	Reading Magdalen.	Unknown.	J. M. Callier.
147	Autumn.	Mrs. H. M. Berry.	Mrs. Berry.
		Mrs. A. M. Kind- ler.	Mrs. Kindler.
148	Deer.	Pupil of Miss Merrill.	A. E. Whitman.
149	Cloister Life.	Mary E. Williams.	Miss M. E. Williams
150	Roman Forum.	Moretti.	Miss M. E. Williams
151	Angels, after Raphael.		Miss M. E. Williams
152	Monks.	Mary E. Williams.	Miss M. E. Williams
153	St. Peter's.	Moretti.	Miss M. E. Williams
154	Roman Beggar.	Mary E. Williams.	Miss M. E. Williams
155	Study of an Arab.	"	Miss M. E. Williams
156	Heidelberg.	A. O. Williams.	Miss A. O. Williams
157	Sans Souci.	Mary E. Williams.	Miss M. E. Williams
158	Mt. Aetna.	A. O. Williams.	Miss A. O. Williams
159	Alchemist.	Mary E. Williams.	Miss M. E. Williams
160	View of Tivoli and Falls.	A. O. Williams.	Miss A. O. Williams
161	Roman Peasant Girl.	Mary E. Williams.	Miss M. E. Williams
162	Market Woman.	Unknown.	W. B. Parker.
163	Game.	Vervoort.	Essex Institute.
164	Landscape.	Böhm.	James O. Safford.
165	Twilight in Venice.	E. Cecchini.	Mrs. J. S. Cabot.
166	Head.	Mary E. Williams.	Miss M. E. Williams
167	Capture of Luther.	Van Starcken- burgh.	Mrs. E. D. Kimball.
168	Fancy Head.	Miss Knight.	Miss Knight.
169	Salem Boy.	Geo. Newcomb.	C. S. Clark.
170	Iris; after Guido.	Mrs. H. M. Berry.	Mrs. Berry.
171	Mt. Shasta.	H. O. Young.	C. A. Ropes.

No.	TITLE.	ARTIST.	CONTRIBUTOR.
172	Landscape.	J. Both.	George Peabody.
173	Water Color.	Miss Needham.	Mrs. T. Hunt.
174	Cherries.	G. M. White.	T. F. Hunt.
175	Landscape.	Wynants.	George Peabody.
176	Norwegian Scenery. After Gude.	S. P. Hodgdon.	George Peabody.
177	Woodbine.	Mrs. H. H. Davis.	Mrs. Davis.
178	Off Baker's Island.	G. M. White.	T. F. Hunt.
179	Pen Sketch.	G. M. White.	T. F. Hunt.
180	Magdalen.	Guido.	Mrs. S. B. Howe.
181	Washington.	Jos. Ames.	E. W. Upton.
182	St. Ursula.		Mrs. S. B. Howe.
183	The Wayside Trough.	A. P. Close.	J. P. Cook.
184	Head; after Miss Knowlton.	Miss Caller.	Miss Caller.
185	Osgood Fire Place.	Miss K. Brooks.	H. M. Brooks.
186	Basket of Chestnuts.	"	H. M. Brooks.
187	White Lily.	Miss L. E. Merrill.	Miss Merrill.
188	Flower Panel.	Miss Williams.	Miss Williams.
189	Wild Flowers.	Miss L. E. Merrill.	Miss Merrill.
190	Holy Family.	Unknown.	Geo. P. Osgood.
191	Fruit Piece.	Miss L. E. Merrill.	Miss Merrill.
192	Lily of the Valley.	L. L. A. Very.	Miss Very.
193	Gil Blas.	Van Lerijs.	Miss Jackson.
194	Study.	Miss A. A. Agge.	Miss Agge.
195	Study from a cast.	W. H. White.	W. H. White.
196	Crab Apples.	Miss L. E. Merrill.	Miss Merrill.
197	Ginger Jar.	Geo. Newcomb.	Mr. Newcomb.
198	Flower Piece.	Miss Emily Williams.	Miss Williams.
199	Trees on Blue River, Nebraska.	T. M. Osborne.	Mr. Osborne.
200	View in Newbury, Vt.	Miss M. S. Bullard.	Miss Bullard.
201	Blackberry Vine.	Miss L. L. A. Very.	Miss Very.
202	Flower Panel.	Miss M. E. Williams.	Miss Williams.
203	Little Red Riding Hood.	Miss L. L. A. Very.	Miss Very.
204	Apple Blossom.	Miss C. L. Grant.	Miss Grant.
205	A fresh puff off shore.	S. G. W. Benjamin.	J. A. Gillis.
206	Morning on Columbia River.	H. O. Young.	J. P. Cook.
207	Wild Flowers.	Mrs. F. Cox.	Mrs. Cox.
208	The Mountain River.	J. Warren Thyng.	Mr. Thyng
209	Wild Flowers.	Mrs. F. Cox.	Mrs. Cox.
210	Marine View.	Geo. M. White.	N. G. Simonds.
211	Gloucester Beach.	S. S. Tuckerman.	J. F. Tuckerman.
212	Study of Rocks at Nahant.	Mrs. F. Cox.	Mrs. Cox.
213	Winter Scene.		W. A. Lander.
214	Landscape.		C. H. Higbee.
215	Dogs Heads; after Landseer.	Miss S. E. Smith.	Miss Smith.
216	Portrait.	Frothingham.	Misses Forrester.
217	Portrait.	Stuart.	Misses Forrester.
218	Portrait.	Alexander.	Essex Institute.
219	Placid Lake.	S. P. Hodgdon.	E. K. Benson.
220	Interior; with Figures.	Vautier.	Mrs. Mott.
221	Summer Sunset.	Miss H. F. Osborne.	Miss Osborne.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
222	The Play Mates.		Miss H. Silsbee.
223	Winter Sunset.	Miss H. F. Os- borne.	Miss Osborne.
224	Marine View.	Geo. M. White.	H. F. Waters.
225	Spanish Peasants.	After Murillo.	Mrs. Mott.
226	Wayside Inn.		Miss Jackson.
227	White Mountain Brook.	Mrs. A. M. Kin- dler.	Mrs. Kindler.
228	Marine View.	Geo. M. White.	H. F. Waters.
229	Marblehead Neck.	Miss H. F. Os- borne.	Miss Osborne.
230	Home they brought her Warrior dead.	" "	Miss Osborne.
231	Flowers.	Miss H. M. Knowl- ton.	H. F. Waters.
232	Marine View.	Miss Caller.	Miss Caller.
233	Angel.	After Fra Angel- ico.	Mrs. F. H. Lee.
234	Angel.	After Fra Angel- ico.	Mrs. F. H. Lee.
235	Water color.		W. A. Lander.
236	Washington.	After Stuart.	Miss H. E. Deland.
237	Alexander Hamilton.	Trumbull.	Essex Institute.
238	Sunset at Sea.	S. G. W. Benja- min.	T. F. Hunt.
239	May Flower.	Miss C. L. Grant.	Miss Grant.
240	Misty Morning on the Hudson.	G. D. Brewerton.	X. H. Shaw & Son.
241	Pen Drawing; Archb. Williams.	Willis B. Young- man.	E. N. Peabody.
242	From the Cliff, Newport.	G. D. Brewerton.	X. H. Shaw & Son.
243	Water Color.	Miss E. M. Bur- rows.	M. S. Shaw.
244	Storks Tower.	Mrs. A. Hyatt.	Mrs. Hyatt.
245	Study.	Geo. M. White.	H. F. Waters.
246	Flower Piece.	Miss E. M. Bur- rows.	Miss L. Tappan.
247	Peaches.	Mrs. H. M. Berry.	Mrs. Berry.
248	Dawn off White Island.	S. G. W. Benja- min.	Mr. Benjamin.
249	Misty Morning on Lake Thun.	Mrs. A. Hyatt.	Mrs. Hyatt.
250	Artists' Brook, N. Conway.	Miss L. Lander.	Miss Lander.
251	Water Color.	Miss F. Bridges.	Miss Bridges.
252	Water Color.	" "	Miss Bridges.
253	Our Sunny Knoll.	Miss E. Gardner.	Miss Gardner.
254	Water Color.	Miss L. Lander.	Miss Lander.
255	Roman Peasant.		Misses Salton-stall.
256	Ingtham Moat, Sussex.	Buckley, senior.	Misses Salton-stall.
257	Peasant Girl from the Campagna.		Misses Salton-stall.
258	Flower Piece.	Miss K. Johnson.	Miss Johnson.
259	A Quiet Nook.	Miss L. Lander.	Miss Lander.
260	Lilies.	Helen F. Ayres.	Miss Ayres.
261	Morning Glories.	Miss C. L. Grant.	Miss Grant.
262	Mill in Suabiän Alps.	Mrs. A. Hyatt.	Mrs. Hyatt.
263	Whitby Abbey.	" "	Mrs. Hyatt.

NO.	TITLE.	ARTIST.	CONTRIBUTOR.
264	Water Color.	Miss E. M. Burrows.	M. S. Shaw.
265	Nobska Beach.	Mrs. A. Hyatt.	Mrs. Hyatt.
266	Birds.	Miss L. Lander.	Miss Lander.
267	Wisteria.	Miss C. L. Grant.	Miss Grant.
268	Autumn.	Miss L. Lander.	Miss Lander.
269	After School.	J. F. Lyon.	Mr. Lyon.
270	Portrait.	Miss Myra Derby.	Miss Warner.
271	Scientific Drawing.	S. E. Cassino.	Mr. Cassino.
272	James Silver.		Wm. Silver.
273	Samuel Webb.		G. Barton.
274	Water Color.	Chinery.	T. F. Hunt.
275	Joseph Mosely.		Mrs. T. B. Russell.
276	Ancient Painting.		Nicholas Pitman.
277	Autumn Leaves.	Miss Alice Caller.	Miss Caller.
278	Autumn Leaves.	" "	Miss Caller.
279	Study.	W. H. White.	Mr. White.
280	New England Scenery.	H. F. Higgins.	J. P. Cook.
281	Everlastings.	W. H. White.	Mr. White.
282	Pond Lilies.	Mrs. G. P. Osgood.	Mrs. Osgood.
283	Fancy Head.	Geo. Southward.	J. M. Caller.

CERAMICS, BRONZES, ETC.

NO.	TITLE.	CONTRIBUTOR.
1	Collection of Pottery, etc.,	Tech. Dep. Essex Ins.
2	China Plate (Canton, modern),	Mrs. J. P. Cook.
3	Japanese Plate (modern),	Mrs. J. P. Cook.
4	Japanese cup and saucer (modern),	Mrs. J. P. Cook.
5	Japanese cup and saucer (modern),	Mrs. J. P. Cook.
6	Porcelain Pen Rest (Chinese),	Mrs. J. P. Cook.
7	Japanese Cup and Saucer (modern),	Mrs. J. P. Cook.
8	Jade Stone Ornament,	T. F. Hunt.
9	Japanese Plate (modern),	Mrs. J. P. Cook.
10	Cup and Saucer, hand-painted,	Mrs. Chas. S. Nichols.
11	Cup and Saucer, hand-painted,	Mrs. Chas. S. Nichols.
12	Cup and Saucer (Sevres China),	William Silver.
13	Christian Lamps and Vases from Catacombs at Rome,	Miss Mary E. Williams.
14	Models of Vases found in Pompeii,	Miss Mary E. Williams.
15	Ancient Etruscan Pottery,	Miss Mary E. Williams.
16	Ancient Lamp and Medallion,	Miss Louisa Lander.
17	Early North American Pottery,	F. W. Putnam.
18	Stone Pipe from Jagga Country, Africa,	Caleb Cook.
19	American Pottery,	Miss Louisa Lander.
20	Four examples of Beverly Pottery, decorated by Miss Kate Johnson,	J. Robinson.
21	Two examples of Beverly Pottery, decorated in India Ink by E. S. Morse,	E. S. Morse.
22	Lambeth Jug,	J. Robinson.
23	Four examples of Lancaster Pottery,	Mrs. C. S. Nichols.

No.	TITLE.	CONTRIBUTOR.
24	Six examples of Chinese Pottery,	T. F. Hunt.
25	Japanese Pottery,	C. Cook.
26	Horse of Marly, Bronze,	J. C. Lee.
27	Bronze Leopard,	J. C. Lee.
28	Silver Bronze Vase,	J. C. Lee.
29	Bronze Leopard,	J. C. Lee.
30	Horse of Marly,	J. C. Lee.
31	Bronze Bell of St. Peter's,	J. C. Lee.
31 α	Plate, Cup and Saucer, brought from China in the Grand Turk, 1785,	Misses Derby.
32	China Plate,	G. R. Curwen.
33	Cup and Saucer, Chinese (ancient),	G. R. Curwen.
34	Cup and Saucer, Chinese (ancient),	G. R. Curwen.
35	Old Nanking Custard Cup,	G. R. Curwen.
36	Tea Set, China, about 1800,	Mrs. Jos. Osgood.
37	Seven pieces of Canton Ware, about 1820,	Jona. Tucker.
37 α	Four pieces of Old China,	Miss M. Whipple.
38	Plate, Old China,	Mrs. Frost.
39	Bowl, Japan,	Mrs. J. P. Cook.
40	Plate, Old China,	Mrs. Frost.
41	Porcelain and Wicker Work, Bowl and Plate, Japan,	Mrs. T. Hunt.
42	Plate, China,	Mrs. M. A. Andrews.
43	Plate, Old China,	Mrs. Jona. Perley.
44	Cup and Saucer, Canton Ware,	Mrs. Jona. Perley.
44 α	Old Blue Tea Caddy, Cup and Saucer,	Misses Derby.
45	Saki Bottle, Japan,	Mrs. J. P. Cook.
46	Tea Pot, Japan,	Mrs. J. P. Cook.
47	Dragon Vase, China,	Mrs. J. P. Cook.
48	Porcelain Pagoda,	Mrs. T. Hunt.
49	Pair of Crackle Vases,	H. F. Waters.
50	Porcelain Ornaments,	Mrs. T. Hunt.
51	Dragon Vase,	Mrs. T. Hunt.
52	Porcelain Vase,	Mrs. J. P. Cook.
53	Cream Jug, Old China Ware,	Mrs. J. P. Cook.
54	Old Nanking Tea Pot,	Mrs. J. P. Cook.
55	Japanese Lacquer Porcelain Tea Pot,	Mrs. J. P. Cook.
56	Plate, formerly property of Royal Family, France,	Miss J. F. Bond.
57	Old French Ware, 1676,	Jona. Tucker.
58	Old Pencil Ware, four pieces,	Jona. Tucker.
59	Two Old Tiles,	Mrs. T. B. Russell.
60	Cream Jug, Old English Ware,	B. D. Hill.
61	Bowl,	B. D. Hill.
62	Old English Ware,	Mrs. T. B. Russell.
63	Bowl,	G. P. Daniels.
64	Coffee Pot, 1775,	G. P. Daniels.
65	Coffee Pot, China, 1803,	Mrs. E. Emmerton.
66	Pencil Ware, Cup and Saucer,	Miss E. H. Kimball.
67	Liverpool Ware, plate,	G. R. Curwen.
68	Pitcher, taken by a Privateer, 1812,	Mrs. M. A. Tufts.
69	Chelsea Ware,	Miss J. F. Bond.
70	Sugar Bowl. Gen. James Miller's Wedding Set,	Mrs. C. H. Higbee.
71	Dutch Porcelain Mug,	Miss L. Lander.
72	Old English Ware Gravy Dish,	Miss L. Lander.

No.	TITLE.	CONTRIBUTOR.
73	Sugar Bowl, Wedgwood Ware, Flaxman's designs,	Miss L. Lander.
74	Louis 14th Mug and Saucer,	Miss L. Lander.
75	Old Indian Mug and Saucer,	Miss L. Lander.
76	Independence Ware Plate,	E. L. Perley.
77	Vase, French,	Mrs. C. H. Higbee.
78	Masonic Wine Glass,	Jona. Perley.
79	Glass Ware,	Mrs. G. M. Whipple.
80	Japanese Crystal,	Mrs. T. Hunt.
81	Glass Bottle, 1767,	Jas. Kimball.
82	Glasses used by Gen. Miller in war of 1812,	Miss M. E. Miller.
83	Hour Glass Bottle,	Miss E. H. Kimball.
84	Old English Glass,	G. R. Curwen.
85	Old Beer Jug, English,	B. D. Hill.
86	Native Majolica, Boston, Nov. 9, 1872,	J. Robinson.
87	Puzzle Pitcher,	Jas. Kimball.
88	Beer Mug,	Jas. Kimball.
89	German Vase,	Jas. Kimball.
90	Bowl and Pitcher,	Miss A. Grant.
91	Collection of Coins of all Nations, from the earliest times to the present, showing the progress of the art of coinage, arranged and contributed by	J. Robinson.
92	Modern copy Barnt China,	H. F. Waters.
93	Old Barnt China,	H. F. Waters.
94	Old Barnt China,	H. F. Waters.
95	Delft,	H. F. Waters.
96	Old China,	H. F. Waters.
97	Old China,	H. F. Waters.
98	Delft,	H. F. Waters.
99	Japanese Teapot,	H. F. Waters.
100	Rouen Jar,	H. F. Waters.
101	Japanese Saucer,	H. F. Waters.
102	Barnt China Cup and Saucer,	H. F. Waters.
103	Silver Watch 150 years old,	Miss Mary E. Williams.
104	Silver Bell, figure of Sifenus,	H. F. Waters.
105	Two watches 150 years old,	H. F. Waters.
106	Old China Cup and Saucer,	H. F. Waters.
107	Rouen Jar,	H. F. Waters.
108	Chinese Teapot,	Mrs. T. Hunt.
109	Old Cake Dish,	H. F. Waters.
110	Very old China Bowl,	H. F. Waters.
111	Blue China Dish,	H. F. Waters.
112	Elder Brewster Teapot,	H. F. Waters.
113	Old China Coffee Cup and Saucer,	H. F. Waters.
114	Old China Soup Plate,	H. F. Waters.
115	Specimen of Rogers Ware, English,	H. F. Waters.
116	Old China Tea Caddy and Stand,	H. F. Waters.
117	Delft Plate,	H. F. Waters.
118	Old China Tea Pot,	H. F. Waters.
119	Blue China Dish,	H. F. Waters.
120	Old China Bowl,	H. F. Waters.
121	Decorated China,	H. F. Waters.
122	Twenty-eight pieces of Glass Ware, of English, German and Venetian make,	H. F. Waters.

No.	TITLE.	CONTRIBUTOR.
123	Painting on Copper, silver frame,	Miss Mary E. Williams.
124	Door Plates,	Miss Kate Johnson.
125	Whist Counters,	
126	Wedgwood Portrait Sir W. J. Hooker,	J. Robinson.
127	Portrait in Wax,	Mrs. E. G. Perkins.
128	Highland Mary Snuff Box,	Miss E. H. Kimball.
129	Collection of Miniatures,	
130	Painted Table Top,	Mrs. E. T. Kemble.
131	Bronze Medallion of Gibson, the Sculptor,	Miss Louisa Lander.
132	Collection of Manuscripts,	Manuscript Department, Essex Institute.
133	Collection of Ceramics,	Dep't of Technology, Essex Institute.
134	Bronze Figure.	Mrs. T. Hunt.
135	Bronze Group of Dogs,	J. C. Lee.
136	Bronze figure.	Mrs. T. Hunt.
137	Pair of Bronze Vases,	Mrs. T. Hunt.
138	Pair of Bronze Vases,	J. Robinson.
139	Sesostris.	J. Robinson.
140	Metallization of Plaster from "The Cluny,"	Mrs. C. S. Nichols.
141	Esculapius.	J. C. Lee.
142	Japanese Platter,	H. F. Waters.
143	Jupiter,	J. C. Lee.
144	Figure Metallization of Plaster from "The Cluny,"	Mrs. C. S. Nichols.
145	St. George and the Dragon,	A. H. Johnson.
146	Bronze Vases, Japanese,	J. P. Cook.
147	Pair of Carved Wood Stands, Chinese,	Mrs. T. Hunt.
148	Very old Chinese Bronze Vase,	A. S. Packard, Jr.
149	Bronze Figure (Horse),	J. C. Lee.
150	Damascus Metal Bowls,	Misses Forrester.
151	The Dying Gladiator,	Miss Saltonstall.
152	Bronze Vases, Japanese,	J. P. Cook.
153	Porcelain Vases, Chinese,	Mrs. T. Hunt.
154	Old Bronze Incense Burner, Chinese,	J. P. Cook.
155	Japanese Bronze,	J. P. Cook.
156	Incense Burner, Chinese,	Mrs. J. Osgood.
157	Pair of Gilded Vases, Chinese,	Mrs. J. P. Cook.
158	Pair of Japanese Vases,	Mrs. T. Hunt.
159	Pair of Bronze Incense Burners, Chinese,	Mrs. J. P. Cook.
160	Pair of Chinese Vases,	Mrs. J. P. Cook.
161	Old China Vase (about 1,400),	Mrs. T. Hunt.
162	Pair of Japanese Vases,	Mrs. T. Hunt.
163	Pair of Bronze Candlesticks, Japanese,	Mrs. J. P. Cook.
164	Pair of Bronze Ornaments, Chinese,	Mrs. J. P. Cook.
165	Pair of Bronze Vases, Chinese,	Mrs. J. P. Cook.
166	Japanese Stork Candlesticks,	Mrs. J. P. Cook.
167	Bronze Image Worshipped by the Chinese,	J. P. Cook.
168	Chinese Gong Bronze,	J. P. Cook.
169	Pair of Japanese Vases,	J. Robinson.
170	Pair of Candlesticks used in South Church, 1804,	J. Robinson.
171	Chinese Porcelain Jar,	J. Robinson.
172	Pair of Japanese Vases,	J. Robinson.
173	Japanese Cabinet.	J. Robinson.

NO.	TITLE.	CONTRIBUTOR.
174	Tea Caddy, Chinese,	J. Robinson.
175	Pair of Japanese Bottles,	J. Robinson.
176	Roman Lamp,	Miss M. E. Williams.
177	Pair of Japanese Platters,	J. Robinson.
178	Japanese Lacquer Platters,	J. Robinson.
179	Florentine Lamp,	Miss M. E. Williams.
180	Japanese Cabinet,	J. Robinson.
181	Japanese Vase,	J. Robinson.
182	Collection of Glass, etc.	Dep't of Tech. Essex In.
183	Collection of Tiles, etc.	Dep't of Tech. Essex In.
184	Collection of Beverly Pottery,	Mr. Lawrence.
185	Paper Making and Jug Making,	Dep't of Tech. Essex In.
186	Collection of Chinese and French Ware,	Mrs. C. F. Williams.

—◇◇◇—

REGULAR MEETING, MONDAY, NOVEMBER 15, 1875.

VICE PRESIDENT GOODELL in the chair. Records read.

Mary E. Gould and George L. Upton of Salem were elected resident members.

—◇◇◇—

REGULAR MEETING, MONDAY, DECEMBER 6, 1875.

MEETING this evening. In the absence of President and Vice Presidents, Mr. C. H. HIGBEE was requested to take the chair. Records read.

The SECRETARY announced the following correspondence:—

From Boston Public Library, Dec. 1; British Archaeological Association, Nov. 27; Historical Society of Pennsylvania, Nov. 30; F. B. Hough, Washington, D. C., Nov. 15; M. Knoedler & Co., New York, Nov. 3; G. P. Lothrop, Boston, Nov. 13, 16; Maryland Historical Society, Nov. 21; R. C. Manning & Co., Salem, Dec. 1; New York Historical Society, Nov. 30; Charles C. Perkins, Boston, Nov. 14; C. O. Thompson, Worcester, Nov. 13, 16.

The LIBRARIAN reported the following additions:—

By Donation.

- BAGLEY, JOHN J., of Lansing, Mich. Proceedings at the laying of the corner stone of the Capitol of Mich., Oct. 2, 1873.
- BAKER, NATHANIEL B., of Des Moines, Iowa. Adjutant General's Report of Iowa, Jan. 1, 1874 to Jan. 1, 1875.
- COLE, MRS. N. D. Kindergarten Messenger, 14 numbers.
- HAMMOND, CHAS., of Monson, Mass. Catalogue of Monson Academy, 1875-76.
- HUMPHREYS, A. A., of Washington, D.C. Report of a Reconnaissance of the Black Hills of Dakota made in 1874, by Wm. Ludlow. 1 vol., 4to.
- KIMBALL, JAMES. Cape Ann Advertiser, Oct. and Nov., 1875.
- JOHN C. LEE. Commercial Bulletin, Aug. to Nov., 1875.
- LEVETTE, GEO. M., of Indianapolis, Ind. Indiana Agricultural Reports, 1874, 5 vols. Transactions of the Indiana Horticultural Society, 1874. Indianapolis Directory, 1872-73. House Journal, 1871. Senate Journal, 1871. Ohio Statistics, 1872. New School Law of Indiana, 1873. Laws of the State of Indiana, 1871.
- MATTHEWS, W. L., of Warsaw, Ind. Report of the Superintendent of Public Instructions of Indiana, 1874.
- MAYER, ALFRED M., of Hoboken, N. J. Miscellaneous pamphlets, 5.
- MERRITT, L. F. Essex County Mercury, May to Nov., 1875.
- NEFF, J. E., of Indianapolis, Ind. Documentary Journal of Indiana, 2 vols., 8vo. Report of the Secretary of State, Oct., 1873, 1 vol., 8vo.
- PUTNAM, F. W. On the Habits of the Blind Crawfish, 8vo pamphl., 1875. New York Tribune, Sept., Oct., Nov., 1875.
- STEPHENS, W. H., of Lowville, N. Y. Statutes of South Carolina, Vol. I, 1836.
- STONE, B. W. New York Directory, 1873. Essex Co. Directory, 1870. Salem Directory, 1869. N. Y. Business Directory, 1874.
- STONE, E. M., of Providence, R. I. Report of School Committee of Providence, June, 1875.
- THORNTON, J. WINGATE, of Boston. The Garden of Health, 1 vol., 4to.
- WADSWORTH, H. E., of La Porte, Ind. Rockport City Directory, 1872-73.
- U. S. DEPARTMENT OF INTERIOR. Documents, 42nd Cong., 2 vols. 1st Sess., 43rd Cong., 36 vols.
- U. S. BUREAU OF EDUCATION. Report of the Commissioner of Education, 1874. 1 vol., 8vo.
- U. S. PATENT OFFICE. Official Gazette, Aug., Sept., Oct., and Nov., 1875.
- UPTON, JAMES. Baptist Missionary Magazine, 1870-74. Good Health, 1871. Missionary Magazine, 1870.
- WARNER, OLIVER, of Boston, Mass. Mass. Public Documents, 1874, 5 vols. Acts & Resolves, 1875.
- WATERS, J. LINTON. History and Directory of Kent Co., 1870. Cincinnati Directory, 1810.
- UNKNOWN. Proceedings at the Centennial Celebration of the Battle of Lexington, Apr. 19, 1875. 1 vol.

By Exchange.

- AMERICAN ANTIQUARIAN SOCIETY. Proceedings of the, Apr. 23, 1875.
- AMHERST COLLEGE LIBRARY. Triennial Catalogue, 1875.
- ARCHIV FÜR ANTHROPOLOGIE, BRAUNSCHEWIG. Band viii. Aug., 1875.
- BELFAST NATURALISTS' FIELD CLUB. Annual Report of the, 1873-74. Guide to Belfast, 1 vol.

- BERWICKSHIRE NATURALISTS' CLUB. Proceedings of the, Vol. vii. No. II, 1874.
- BOSTON SOCIETY OF NATURAL HISTORY. Memoirs of the, Vol. ii. Part IV, No. 11, 1875. Proceedings of, Vol. xvi i, pt. I, II, 1875.
- BOTANISK TIDSSKRIFT IN KJÖBENHAVN. Tidsskrift, 1874. 2 pamphlets.
- BOSTON PUBLIC LIBRARY. Bulletin, Oct., 1875.
- BUFFALO SOCIETY OF NATURAL SCIENCES. Bulletin. Vol. iii, No. I, 1875.
- CANADIAN INSTITUTE. Journal, July, 1875.
- KONGELIGE DANSKE VIDENSKABERNES SELSKAB KJÖBENHAVN. Oversigt, Bd. 1874, No. II.
- L'ACADÉMIE IMPÉRIALE DES SCIENCES DE ST. PETERSBURG. Mémoires, Tome xxii. Nos. 6-12, 1874; Tome xxii, Nos. 1-3, 1874-5. Bulletins, Tome xix, Nos. 22-37, 1874; Tome xx, Nos. 1-21, 1874.
- LITERARY AND HISTORICAL SOCIETY OF QUEBEC. Transactions, 1873-74, 1874-75.
- NATURFORSCHENDE GESELLSCHAFT, DANZIG. Schriften, Bd. iii, Heft. iii, 1874.
- NATURHISTORISCHE GESELLSCHAFT ZU HANNOVER. Dreiundzwanzigster & Vierundzwanzigster Jahresbericht, 1872-73, 1873-74. 2 pamphlets.
- NATURWISSENSCHAFTLICHER VEREIN ZU HAMBURG. Naturwissenschaften, v, Bd., 4 Abth. 1873.
- N. H. HISTORICAL SOCIETY. Proceedings of, 1874-5. 1 vol.
- N. E. HISTORIC GENEALOGICAL SOCIETY. Register, Vol. xxix. Oct., 1875.
- N. Y. GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Record, Oct., 1875.
- N. Y. HISTORICAL SOCIETY. Catalogue of Museum and Gallery of Art, 1874.
- PHYSIKAL MEDICIN GESELLSCHAFT IN WÜRZBURG. Verhandlungen, Bd. viiii, Heft iii and iv. 1875.
- ROYAL CORNWALL POLYTECHNIC SOCIETY. Annual Reports, 1833-74 inc.
- SOCIÉTÉ D'ACCLIMATION, Paris. Bulletin, 3e Série, Tome II. Apr., 1875.
- SOCIÉTÉ D'ANTHROPOLOGIE, Paris. Bulletin, Tome x. Mar-Mai, 1875. 8vo.
- SOCIÉTÉ LINNEENE BORDEAUX. Actes, Tome xxvii, pt. II; Tome xxviii, pt. I, II, 1872.
- SOCIÉTÉ ROYALE DES ANTIQUAIRES DU NORD KJÖBENHAVN. Mémoires, 1873-74.
- SOCIÉTÉ DES SCIENCES NATURELLES DU GRAND-DUCHÉ DE LUXEMBOURG. Publications of, Tome xv, 1875.
- SOCIÉTÉ ENTOMOLOGIQUE DE RUSSIE HOPE SOCIETATIS ENTOMOLOGICÆ ROSICÆ. Tome ix, No. 3. 1873. Tome x, No. 1-4, 1873-74. Beitrage, 1874.
- SMITHSONIAN INSTITUTION. Report of the Board of Regents, 1873, 1874. 2 vols.
- SOCIÉTÉ ROYALE DES SCIENCES DE LIEGE. Mémoires. Tomes iv, v, 1873, 1874.
- SOCIÉTÉ VAUDOISE DES SCIENCES NATURELLES, LAUSANNE. Bulletin, No. 74, Mai, 1875.
- VEREINS FÜR ERDKUNDE ZU DARMSTADT. Notizblatt iii, Folge Heft xiii. 1874.
- VEREINS FÜR ERDKUNDE ZU DRESDEN. Jahresbericht, xi, xii, 1875.
- W. H. YEOMANS, of Columbia, Conn. Report of the Conn. Board of Agriculture, 1874. Indiana Agricultural Reports, 1870. Geological Survey of Indiana, by E. T. Cox, 1870. Miscellaneous pamphlets, 36.
- YALE COLLEGE. Catalogue of the Officers and Students, 1875-76.
- ZOOLOGISCHE-GESELLSCHAFT, FRANKFURT. Zoologische Garten, xvi Jahrg. Jan.-Juni, 1875.
- ZOOLOGISCH-MINERALOGISCHEN VEREINS IN REGENSBURG. Abhandlungen, Zehntes Heft, 1875. Corresponding-Blatt, 1871.
- PUBLISHERS. American Journal of Science. American Naturalist. Beetle and Wedge. Boston Daily Globe. Bradford New Era. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Ipswich Chronicle. Journal of Conchology. Lawrence American. Lynn Reporter. Lynn Transcript. Nation. Nature. Peabody Press. Quarick's Catalogue. Sailor's Magazine. Salem Gazette. Salem Observer. Salem Post. Salem Register. Tuft's Collegian. Turner's Public Spirit.

Rev. GEORGE F. WRIGHT, of Andover, read the paper of the evening, an abstract of which is here inserted.

INDIAN RIDGE AND ITS CONTINUATIONS.

The so-called "Indian Ridge" of Andover, Mass., has long been an object of curiosity to citizens, and of interest to geologists. In the "Transactions of the Association of American Geologists and Naturalists," for 1841 and 1842, Pres. Edward Hitchcock, of Amherst College, gave a detailed account of the formation so far as it had then been observed.¹ This distinguished observer characterized it as "decidedly the most interesting and instructive case [of moraine ridges] which he had met with." A map of it is given in the same paper, taken from a survey of Professor Alonzo Gray, then of Andover, now of Brooklyn, N. Y. This map, in reduced dimensions, reappears in Hitchcock's *Elementary Geology*,² as an illustration of "Submarine Ridges."

The formation is described as a series of narrow, partially parallel and interlacing ridges, composed of sand, gravel and boulders intermixed. These ridges are said to be from fifteen to thirty feet high and four or five rods through at the base, extending a mile and a half or more, in a line nearly north and south. Similar ridges two or three miles south are alluded to; and at South Reading, now Wakefield, twelve miles south of Andover, still other and higher ridges of a like nature were observed. At the close of his remarks upon the subject, Dr. Hitchcock writes, "I presume that still further careful examination of the region above described may show other similar ridges, or a continuation of those on the map. . . . I would gladly resurvey all the moraines with which I am acquainted, in the confident belief that now 'I have learnt

¹ See page 198.

² See page 260 (30th edition).

to see,' I should find many of them continuous ridges where I have supposed a confused group of moraines to exist." Acting upon this hint I have given my spare time for many months back, in attempting to add to our stock of knowledge upon the subject. I herewith furnish a brief survey of the results.

1. MEASUREMENTS. Taking them in order, going westward about half a mile from Andover depot, and measuring from their base, the East ridge is 41 feet high, the Middle or Indian ridge is 49 feet, and the West ridge 91 feet. The base is 40 feet above the Shawshin river, and 90 feet above the sea level. So that the summits of these ridges at this point are, respectively, 131, 139, and 181 feet above the ocean. The west ridge at the place of measurement is 250 feet broad at the base. I am indebted to various members of the scientific class of 1875, in Phillip's Academy, for assistance in securing these measurements.

2. COMPOSITION. These ridges were not primarily stratified, and so differ in an important respect (if their observations were sufficiently accurate) from the "Horsebacks" of Maine, described by Professor C. H. Hitchcock,³ and the "Kames" of Scotland, described by James Geikie.⁴ There is, however, usually a secondary stratification along the flanks of the ridge, and around the rim of the numberless basins that are enclosed by its interlacing branches, and in some places the entire ridge is stratified. But ordinarily, sand, gravel, pebbles and boulders are indiscriminately mingled. Boulders from a few inches to two or three feet in diameter are found in the higher portions of the Ridge as well as in the lower.

3. CHARACTER OF THE STONES. The stones of the ridge are uniformly rounded and polished, but I have

³ See Maine Agricultural Reports, 1861, 1862. ⁴ See The Great Ice Age, pp. 210-237.

failed to find any scratches upon their surface, such as are frequently found upon those of the "ground moraine" of this region. They are not of local origin, but consist, in indiscriminate mixture, of granite, gneiss, and slatestones from the North. Among these a rose quartz is abundant.

4. **EXTENT OF THE RIDGE.** With only such interruptions as are made by river valleys and water courses, or by other apparent causes, I have traced this series of ridges, in continuous line, from Wakefield, through Reading, North Reading, Wilmington, Ballardvale, Andover, Lawrence and Methuen to Salem in New Hampshire, a distance of nearly twenty-five miles as the bird flies. I have with tolerable certainty identified it on either side of these limits: south, in Melrose and Malden; north, as far as Derry Station, N. H.

5. **DIRECTION.** It will be observed that this line corresponds with the direction of the glacial striae of this vicinity, about 15° N. W. by S. E. The line projected to the north would coincide with the axis of the Merrimack valley above Manchester, N. H.

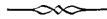
6. **HYPOTHESIS.** We have not time to work out the details of the hypothesis which accounts for the facts so far as at present observed. It is sufficient to say that we expect eventually to demonstrate that this net-work of ridges is the medial moraine of that portion of the continental glacier which took its local direction from the Merrimack valley. The floods of water which during the period of its retreat flowed forth from the foot of that glacier would account for the partial stratification that is observed.

7. **CONCLUSION.** But we wait for further investigation, especially in the line north and south. And we solicit facts from any observers, first, as to the composition of the hills in this vicinity, and for twenty miles east or

west of the line of this Ridge, whether they are of solid rock, or of loose material, whether stratified or not, and whether the material is of local origin. And furthermore what is the direction of the axis of these "drift" hills? And are there elsewhere such ridges as we have described; and what is their direction? The Essex Institute would do an important work if its members should systematically collect the facts concerning the whole drift deposit of the Merrimack valley. When these are gathered and arranged, we can popularize for this region the intensely interesting subject of the glacial age, which now does not have the practical hold of the popular imagination that its merits, and the proximity of its phenomena, demand.

At the close of the lecture the subject was continued by remarks from Dr. A. H. Johnson, Messrs. W. P. Upham, C. H. Higbee and others, and a vote of thanks was passed to Mr. Wright for his instructive paper.

George West, George Newcomb and C. A. Shaw were elected resident members.



REGULAR MEETING, MONDAY, DECEMBER 20, 1875.

MEETING this evening. The PRESIDENT in the chair. Records read.

Robert C. Mills, Charles R. Mills, George W. Benson, E. K. Benson, Lewis F. Miller, S. F. Chase, D. B. Kimball and Abby R. Knight were elected resident members.



Date Due

APR 1976

