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ESSEX INSTITUTE.

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REGULAR MEETING, MONDAY, JANUARY 2, 1871.

THE President in the chair. Records of preceding meeting read.

Dr. A. S. PACKARD, Jr., referring to the fine specimen of Triassic fossil fish *Catopterus gracilis* Redfield, presented this evening by Mr. Russell, stated that he had during the past autumn visited the locality at Sunderland, Mass., which is exposed at low water. The fine blackish slates were in nearly horizontal beds and the fish remains were quite abundant. At Turner's Falls, about ten miles north of Sunderland, he had visited a large and very complete collection of bird tracks belonging to Mr. T. M. Staughton. The collection included some fine fossil tracks, and plant and insect remains, the latter occurring in nodules at a locality three miles north of Turner's Falls. The insect remains were of one species of an aquatic larva, which had been referred to the Ephemeræ by Dr. J. L. Leconte, and called *Palephemera mediæva*, by Hitchcock. On an examination of specimens showing well the head and extremity of the body, Dr. Packard thought they were rather aquatic coleopterous larvæ, belonging perhaps

near the family Heteroceridæ. Among the fossil plants were sprigs of a supposed coniferous tree, *Voltzia*, a characteristic Triassic plant in Europe.

Dr. Packard also gave an account of the discovery of organs of special sense in the abdominal appendages of *Chrysopila*, a fly allied to *Leptis*. He thought they were possibly olfactory organs, like those he had discovered in the jointed abdominal appendages of the cockroach. He referred to similar little sacs situated in the palpi of Perla next the mouth, and thought they were perhaps organs of smell.

Prof. A. E. Verrill, of Yale College, gave a brief sketch of the marine fauna of Eastport, Me., and spoke of the unusually favorable opportunities for collecting.

MARINE FAUNA OF EASTPORT, ME.

Eastport Harbor is somewhat quadrangular in form, about one and a half miles wide and three long, partially bounded on the east and south by the Island of Campo Bello, which is about nine miles in length, and on the west by Moose Island, on which Eastport is situated, while on the north-east it is protected by Deer Island, Indian Island, and numerous smaller islands. It has four outlets. The largest and deepest is the broad channel between Campo Bello and Indian Island, which is 40 to 70 fathoms deep and communicates directly with the Bay of Fundy. In this channel the tides flow with great velocity and power, and the bottom is stony and ledgy throughout, in some cases consisting of smooth, nearly clean, round stones, like paving-stones, on which only a few Foraminifera, Bryozoa, Ascidians, and Actiniæ can maintain a permanent home. Between Deer Island and Indian Island on the east and Moose Island on the west, there is another broad and deep channel, in some places 50 to 60 fathoms deep, with a rough, rocky bottom. This channel is several miles in length and communicates with the Bay of St. Andrews at the mouth of the St. Croix River. This bay is about 15 miles across, and consequently an immense volume of water must pass through the channel during every ebb and flow of the tide, which produces so powerful a current that it is useless to attempt to row a boat of any kind against or across the current, except when it slacks near high or low water. Dredging in

this channel is somewhat difficult, on account of the swift current and rough bottom, and can hardly be attempted with safety when the tide is flowing with its full force. The fauna is, however, very remarkable as showing the influence of physical conditions on animal life, for here, at the depth of 40 to 60 fathoms, we dredged nearly the same assemblage of animals that are found on the opposite rocky shores, between high and low water mark, together with many of the same forms of sea-weeds. Among the more abundant species were *Mytilus edulis*, *Modiola modiolus*, *Mya arenaria*, *Saxicava arctica*, *Buccinum undulatum*, *Ascidia complanata* Fab. (*A. callosa* St.), *Cynthia pyriformis*. *Boltenia reniformis*, various species of Bryozoa and Hydroids. *Ophiopholis aculeata*, *Asterias vulgaris*, *Cribrella sanguinolenta*, *Eurycchinus Dröbachiensis*, *Pentacta frondosa*, *Cancer irroratus*, *Thelphusa circinnata* (*Lumara flava* St.), etc. There was, in fact, scarcely anything in the dredgings brought up from the deepest parts of this channel that would have indicated a depth of more than one or two fathoms below low water mark, along the shores, and most of the species can readily be obtained at low water of ordinary tides. This is doubtless due to the powerful current which rushes through the channel like a rapid river, and flowing over the rough and irregular bottom, completely mixes up the water from top to bottom, so that there is really no appreciable difference in the temperature or other conditions of the water of the bottom and surface. A third channel, which is narrower and quite shallow, connects the southern end of the harbor with the Bay of Fundy, passing between Campo Bello on the east and Treat's Island and Lubec on the west. This channel is sufficiently deep for the Boston steamers and large vessels at high water, but after half-tide is not safe except for small craft, and sometimes, at extremely low tides, it becomes nearly bare. The bottom is mostly muddy and soft. A fourth, narrow, but deep, rocky channel, passing between Treat's Island and the southern end of Moose Island, communicates with the extensive bodies of water known collectively as Cobscook Bay, but consisting, practically, of several distinct bays, or fiords, which have received local names. The southern branch, known as South Bay, was pretty fully explored with the dredge. These bays receive and discharge great volumes of water at every tide, nearly all of which passes into and through Eastport Harbor, and together with that which supplies St. Andrews Bay, it mostly comes in and goes out through the channel first described, between Campo Bello and Deer Island. As a result of this arrangement, Eastport Harbor is characterized by a powerful and somewhat complicated system of tides, which can be best understood by examining a chart of the harbor, with the soundings indicated, and comparing the respective channels to river valleys, when it will be found that, as a

matter of course, the most powerful currents will follow the deeper and broader channels, while the smaller and shallower channels will be tributary to them. Counter currents exist along the shores, and areas also exist where opposing currents meet or counteract each other, causing the water to be thrown into violent commotion, or else to be comparatively quiet, according to circumstances. At one point, in the central part of the harbor, we found a large bank, formed where the two principal tide-currents meet, consisting of a nearly uniform mass of comminuted shells and sand, which was almost destitute of life; but where the currents slack, or produce eddies, banks are formed which are very favorable for the development of a great variety of marine animals. Such a bank, covered by 10 to 15 fathoms of water, exists between Treat's Island and Friar's Head. This is composed of broken shells and gravel in most parts, and is a very rich dredging ground. Some of the most common and interesting species found here are *Alcyonium carneum*, *Urticina crassicornis*, in many beautiful varieties, *Astrophyton Agassizii*, *Ophioglypha Sarsii*, *O. robusta*, *Amphiura squamata*. *Asterias Stimpsonii*, and several other species, *Cribrella sanguinolenta*, of many colors, *Solaster endeca*, *Crossaster papposus*, *Pentacta frondosa*, a great variety of Hydroids and Bryozoa, *Terebratulina septentrionalis* (very abundant), *Cynthia pyriformis*, *C. carnea*, etc., *Astarte undata*, *A. lens* (Stimp. Mss.), *Entalis striolata*, *Sipho Islandicus*, *S. pygmæus*, *Scalaria Grönlandica*, *Acirsa Eschrichtii**, *Margarita undulata*, and many other interesting shells, with numerous worms and Crustacea. Nearer Campo Bello, towards Welch Pool, the bottom becomes muddy and abounds in mud-loving shells and worms. In the broad, shallow channel or bay west of Treat's Island, in 10 to 15 fathoms, a similar assemblage of animals is found, together with some additional ones of great interest. Among the species found here are *Acaulis primarius* St. (attached by a pedicle), *Pteraster militaris*, *Alcyonium rubiforme*, *Lucernaria quadricornis*, *Aphrodite aculeata* (very large), numerous Ascidians, *Pandalus annulicornis*, several species of *Hippolyte*, etc. Another very prolific bank of a similar kind, but composed of coarser gravel, broken shells, sponges, &c., is found at the entrance of South Bay, between Razor Island and the Lubec shore, in 8 to 10 fathoms of water; most of the species already mentioned (including *Pteraster*) are found here, together with numerous other species, many of which are ordinarily found only in much deeper water, showing that depth, of itself, has very little to do with the distribution of marine animals, and that temperature and other local conditions are the main causes which

* This species has not been recorded before from New England. It is not uncommon at Eastport.

affect them. Dredgings were also made in the Bay of Fundy, off the northern end of Campo Bello, where at the distance of four or five miles from Head Harbor, we reached the greatest depth which we could find anywhere within many miles of the shore. There appears to be at this place a depression of the bottom, or a valley somewhat parallel with Campo Bello, in which the depth is 100 to 125 fathoms, with a bottom of fine, soft, sticky mud and broken shells, in most parts. At this place we found *Alcyonium carneum*, *Astrophyton Agassizii*, *Ophiopholis aculeata*, *Ophioglypha Sarsii*, *O. robusta*, *Ophiacantha spinulosa*, *Terebratulina septentrionalis*, *Astarte lens*, *Pecten tenuicostatus*, *Aporrhais occidentalis*, etc. There were, however, very few species not to be found in 10 to 15 fathoms on the banks in Eastport Harbor. On a patch of hard bottom, near this place, in about 100 fathoms, we obtained a few rare and interesting species, among them a new species of a creeping Halcyonoid polyp allied to *Telesto* and *Cornularia*, with comparatively large, white tentacles. Farther out the water becomes shallower all the way to the "Wolves." Since the shores are diversified and the tides very extensive at Eastport (the extreme rise and fall of spring tides being about 28 feet), the opportunities for shore collecting are also excellent. The best localities for this are on the rocky shores at the southern end of Moose Island; north of the village at and near Dog Island; and also on Treat's Island and most of the other small islands in the vicinity; while many mud-loving creatures can be dug up from their burrows in the mud and sand on the extensive flats of Broad Cove, Prince's Cove and other localities. The number and variety of marine animals that can be collected at low water within a few minutes' walk of Eastport is really surprising to persons accustomed to collect on other parts of the coast. Even under and among the lofty wharves a very respectable collection may be made, including at least 200 species, and representing nearly all the classes.

Among the shore species are, of Radiata: *Urticina crassicornis* (mostly of the variety mottled with green and red), *Bunodes stella* (in crevices and under rocks), *Metridium marginatum*, *Edwardsia*, three species, *Peachia parasitica*, *Alcyonium carneum*, many Hydroids. *Ophiopholis aculeata*, *Ophioglypha robusta*, *Amphiura squamata*, *Astrophyton Agassizii* (young), *Asterias vulgaris*, *A. littoralis*, *A. Stimpsonii*, *Stephanasterias albula* V. (Stimpson sp.), *Cribrella sanguinolenta*, *Solaster endeca*, *Crossaster papposus* (rare), *Echinarachnius parma* (in sand), *Euryechinus Dröbachiensis* (very abundant on rocky shores at extreme low water), *Pentacta frondosa*, *Thyonidium productum*, rare. *Chirodota leve* (under stones, like the last), *Psolus phantapus*, young, adult rare, *Lophothuria Fabricii* (young common, adult rare, on ledges). Of the Mollusca: *Cynthia pyriformis*, *C. carnea*, *C. echinata*, *Molgula retortiformis* and several other species. *Ascidia complanata*, very abundant, *Cione*

tenella, *Boltenia reniformis*, and several other Ascidians, numerous Bryozoa, *Terebratulina septentrionalis*, a large number of bivalve and univalve shells, among which *Buccinum undulatum*, *Sipho Islandicus*, *Chrysodomus decemcostatus*, *Lunatia heros*, *Purpura lapillus*, *Chiton marmoreus*, *C. ruber*, and *C. albus*, *Mya truncata* and *M. arenaria*, *Saxicava arctica*, *Modiolaria nigra*, and *Pecten Islandicus* are conspicuous. Of Annelids and Nemerteans there are a large number of species, many of which have not yet been identified; among the most interesting of the former are *Nereis grandis* St., abundant and large, found in the mud of Broad Cove at low water, with many other species of *Nephthys*, *Spio*, etc., *Arenicola piscatorum*, living in the same way at Prince's Cove; *Thelphusa circinnata* forming coarse tubes under stones; *Myxicola Steenstrupii*, forming a loose, soft, jelly-like tube; a blood-red species of *Torquea* (?), remarkable for the brilliant blue phosphorescence of its numerous long tentacles; several fine species of *Sabella*, *Terebellidæ*, *Glycera*, *Eunice*, *Phyllodice*, *Lumbriconereis*, etc. Among the larger Crustacea are *Cancer irroratus*, *Crangon boreas*, *C. vulgaris*.

The harbor also abounds in Jelly-fishes and many other forms of pelagic animals. Of the former *Cyanea arctica*, *Aurelia flavidula*, *Oceania languida*, *Melicertum campanula*, *Staurophora laciniata*, *Bolina alata*, and *Idya roseola* are very abundant, while other species, such as *Callinema ornata* V., and *Mertensia ovum*, are occasionally seen. Night collecting would doubtless reveal many other species. Among the other pelagic forms are species of *Thysanopoda* and *Mysis*, known to the fishermen as "shrimp," which go in vast "schools" and are the favorite food of herring, young pollock, and other species of fishes, as well as of large flocks of gulls. We also saw, on one occasion, immense numbers of a species of *Sagitta*, besides many minute species of Entomostraca, etc. The fish-fauna is also rich and diversified. The principal fisheries in the vicinity of Eastport are, however, for the common herring (*Clupea elongata*), the hake, haddock, and pollock, while in deeper waters, outside, halibut and cod are also taken. During the time that I was at Eastport last summer, three large specimens of the basking shark (*Cetorhinus maximus*) were taken in the vicinity of Eastport and Lubec, having been left in shallow water by the ebbing tide. These were from 25 to 30 feet in length, and very thick in proportion, and were all males, as was a still larger one, about 35 feet long, caught near Eastport in 1868. This shark, although very powerful, is quite harmless and rather sluggish. The teeth are small and slender, shaped something like shoe-pegs, and the mouth and throat are comparatively small. The liver is very bulky and often yields two or three barrels of oil. Four or five other species of sharks are also not uncommon. The wolf-fish, *Anarrhicas vomerinus*, is frequent on the rocky shores, feeding largely on the sea-urchin (*Euryechinus Dröbachiensis*) and *Buccinum undulatum*.

The Treasurer reported an addition to the funds of sixteen hundred and fifty-four dollars and seventy-eight cents ($1,654.78), one half of the net proceeds of a fair recently held for the benefit of the Salem Oratorio Society and Essex Institute, by the ladies of Salem, Beverly, Peabody, and other towns in the vicinity. The fair was held in Mechanic Hall, and was opened for the sale of useful and ornamental articles, on Monday evening, October 31, 1870,—and continued through Tuesday and Wednesday, and till 1 P. M. of Thursday. The managers were fortunate in being the first occupants of the hall since the enlargement and reconstruction. The convenience in its several appointments and the beautiful and appropriate decorations added much to the comfort of the managers and assistants, and to the general interest of the occasion. Five numbers of a paper entitled "To-Day," were issued, ably edited and finely printed, containing a full account, in detail, of the organization and proceedings, and also many interesting and valuable communications from the pens of some of our literary and scientific writers.

Several members offered appropriate remarks, and expressed their deep sense of gratitude to those ladies who so generously gave their services on this occasion which was so eminently successful.

The following resolutions were proposed and unanimously adopted.

Resolved, That the sincere and grateful thanks of the Essex Institute be presented to the Board of Management and all others who assisted in the Salem Oratorio and Essex Institute Fair, for the liberal contribution to its funds, reported by the Treasurer this evening.

Resolved, That the Treasurer be requested to communicate a copy of these resolutions to Mrs. E. D. Kimball, the President of the Board.

The following correspondence announced: —

U. S. Dept. of Interior, Dec.; New York Secretary of State, Dec. 21, 24; New York State Library, Dec. 21; Alnwick, Berwickshire Naturalists' Field Club, Oct. 10; Berne, Naturforschende Gesellschaft, Nov., 1869 and Aug., 1870; Cambridge, Corporation of Harvard College, Nov. 28; London, British Archæological Association, Dec. 6, Geological Society, Dec; St. Petersburg, Société Entomologique de Russie, Oct. 6; Zurich, Naturforschende Gesellschaft, May 10; Hamlin, Robert D., Bennington, Vt., Dec. 20; Higginson, Thos. Wentworth, Newport, R. I., Dec. 27; Hotchkiss, Frank E., New Haven, Conn., Dec. 21; Perry, William Stevens, Geneva, N. Y., Dec. 14, 20.

The following additions to the Library reported: —

Historical Papers of the Church in Virginia edited by William Stevens Perry, 1 vol. 4to, privately printed, 1870. Connecticut Church Documents, edited by Francis L. Hawks and William S. Perry, 2 vols., 8vo, New York, 1863-4; Documentary History of the Protestant Episcopal Church in Vermont, 1 vol., 8vo, New York, 1870; Debates of the House of Deputies in the General Convention of Protestant Episcopal Church, 1868, 1 vol., 4to, Hartford, 1868; Reports of General and Diocesan Conventions and various other publications; 11 volumes and 146 pamphlets.

By Donation.

U. S. Dept. of the Interior. Documents 3d Sess. 40th Cong., 28 volumes.

U. S. Treasury Department, Finance Report for 1870, 1 vol. 8vo.

Harvard College. Treasurer's Statement, 1870, 8vo pamph.

Butler, B. F., M. C. Drake's Speech in U. S. Sen., Dec. 16, 1870.

Cole, Mrs. Nancy D. File of the Salem Gazette for 1870.

Green, S. A., of Boston. Miscellaneous pamphlets, 75.

Hart, Charles H., of Philadelphia. A Necrological Notice of the Hon. R. S. Field, LL. D., of Princeton, N. J., Oct. 6, 1870.

Hotchkiss, Frank E., of New Haven. Year Book of the City of New Haven for 1870.

Lee, John C. Commercial Bulletin for Dec. 24, 1870.

Palfray, Charles W. Miscellaneous pamphlets, 40.

Stickney, Miss Lucy W. Cincinnati Directories for 1855, '59, '67, 3 vols. 8vo.

Sumner, Charles, U. S. S. Report of the Commissioner of Agriculture for 1869, 1 vol. 8vo. Acts and Resolutions of U. S., 1 vol. 8vo. 1870. Message and Documents, 4 vols. 8vo. Paraguayan Investigation, 1870, 1 vol. 8vo.

Tate, Geo., of Alnwick, England. The History of Alnwick, Vol. ii., Parts 1 and 2, 1868-69, 2 vols. 8vo. Proceedings of the Berwickshire Naturalists' Club, 1837, '54, '62, '63, '64, '65, '66, '67, '68, '69, 8vo.

Waters, J. Linton, of Chicago, Ill. The Press, Jan. 1, 1871.

By Exchange.

Boston Society of Natural History. Proceedings of, Vol. xiii, Sigs. 20, 21.

Leeds Philosophical and Literary Society. Report of the Council, May 4th, 1870, 8vo. Leeds, 1870.

Berne, Naturforschende Gesellschaft. Mittheilungen aus dem Jahre, 1869, 8vo.

Zürich, Naturforschende Gesellschaft. Vierteljahrsschrift Redigirt von Dr. Rudolf Wolf. Vierzehnter Jahrgang, 1869, 1 vol. 8vo.

MOSCOU, SOCIETE IMPERIALE DES NATURALISTES. Bulletin Année, 1870, No. 1, 8vo pamph.

PUBLISHERS. Christian World. Eclectic. Essex Banner. Gloucester Telegraph. Haverhill Gazette. Lawrence American. Literary World. Little Giant. Lynn Semi-Weekly Reporter. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Salem Observer. Silliman's Journal. Sotheran's Catalogue.

Augustus P. Hamblet of Salem, was elected a resident member.

REGULAR MEETING, MONDAY, January 16, 1871.

The President in the chair. Records of preceding meeting read.

Mr. JAMES KIMBALL read an interesting communication on the early MILLS in this vicinity, which contained many citations from the records and affidavits on file in the county offices of Essex.

In the formation of a new settlement, attention is immediately directed to secure a regular and sufficient supply of bread stuffs, and every facility in that direction is regarded of the highest importance; hence the erection of Grist Mills is necessarily the first movement in the introduction of the manufacturing industries. It appears, therefrom, that within four years from the landing of Roger Conant and his companions, and two after the arrival of Endicott, Capt. William Trask, one of the original planters, was the first person who applied our water power to economic use, in the erection of a mill, on a small brook running into the North River, near the crossing of the highway in the vicinity of the Railroad Station in Peabody, called Gardner's Brook. Here upon the narrow outlet of this stream a rude dam was constructed of logs with a power only sufficient for the most

primitive kind of mill. The first machinery was for pounding or beating corn, a mortar mill, as it was afterwards called.

Various changes were made at different times in the construction and uses of the building or buildings on this foundation; in 1692 it was rebuilt for a Fulling Mill—several mills of this character were erected on the small streams in this county during the colonial and provincial periods in our history. It further appears, that, at an early date, several families located in this neighborhood, which was considered a desirable place for a settlement, hence the necessity of erecting and maintaining the bridge at the "Town's End," alluded to in the records of that period. In 1640, Capt. Traske* obtained permission, and some years after erected a mill about half of a mile lower down the river, and opposite his house (in the rear of 158 Boston street); not liking that place, in a short time, he moved it again half of a mile further down, making it one mile from the location of the first mill. This was used by himself and his descendants for many years, when it passed into other hands. During the latter part of the last and the first half of the present century it was under the direction of William Frye, father and son, and was familiarly known as "Frye's Mills."

July 12, 1633, a grant was made by the town of Lynn to Edward Tomlins for a mill; this was the second in this colony, and was erected on Strawberry brook, flowing from Flax Pond, a few rods west of the junction of Franklin with Boston Street. In 1663, 6 mo. 22, per-

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*Capt. William Trask was born in Somersetshire, England, probably in 1587, died in 1666. The house which he built and in which he resided, was situated a few rods in the rear of the present old mansion, No. 158 Boston Street. The present house was built by his son, about 1680. This is the only part of the original estate that is now and has been owned by members of the family in successive generations.

mission was granted to Walter Price, Henry Bartholemew, John and Samuel Gardner, for building a mill on the South River near Mr. Ruck's. This "New Mill" was completed in 1664, and in 1666 the town incorporated this dam into the public travelled way and continued it from the Mill Dam through the South Fields to the little gate in the fence, where it joined the old road to Marblehead. This was on the site of the "South Mills," so called, and now occupied by the Eastern Railroad company for the new Engine House. The town in remuneration for the injury done to the Pickerings (John and Jonathan) by the erection of the dam, and the laying out of the way over the same, which run through their shipyard, granted them a site at the Town's End, or in Hardie's Cove, if they should find it most convenient.

A general discussion followed the reading of the paper, participated in by Messrs. W. P. Upham, James Kimball, the chair, and others. Several suggestions were made having a reference to the subject of priority of the different mills; allusion being made to Saltonstall's Mill in Ipswich, granted in 1635; a description also was given of the early mode of grinding, probably on the principle of the trip hammer, the use of stones having been introduced at a later date. The building of various mill dams and bridges in this vicinity, that of the North Bridge in 1764, was specified. A vote of thanks was passed to Mr. Kimball for his interesting and valuable communication and he was requested to prepare the same for publication in the "Historical Collections."

The Secretary read the following correspondence: —

William S. Elwell, Springfield, Jan. 10; Frank E. Hotchkiss, New Haven, Dec. 30; William Stevens Perry, Geneva, N. Y., Dec. 28, Jan. 7; Geo. Henry Preble, Charlestown, Jan. 14.

The Librarian announced the following additions: —

NATURAL HISTORY OF NEW YORK. Palæontology, vol. 3, pts. 1 and 2; vol. 4; 3 vols. 4to; Albany, 1864, '67.

By Donation.

BUTLER, BENJ. F., M. C. Report of the Department of Agriculture for Nov. and Dec., 1870. Bingham's speech in U. S. H. R., Dec. 20, 1870.

FOOTE, CALEB. Files of several County Papers for 1870.

GREEN, S. A., of Boston. Three pamphlets.

KIMBALL, JAMES. Rules of the Supreme Court of Mass. for 1870, 1 vol. 12mo. Eulogies on Gulian C. Verplanck, 1 vol. 8vo.

LEE, FRANCIS H. Boston Directory for 1865. Bombay Directory for 1863.

LEE, JOHN C. Commercial Bulletin for Dec., 1870, Jan. 7, 1871.

ROPES, NATH'L. A description of Types, 12mo pamph.

SUMNER, CHARLES, U. S. S. Report of the Dep. of Agriculture for Nov. and Dec., 1870.

WATERS, J. LINTON, of Chicago, Ill. Four pamphlets.

By Exchange.

AMERICAN ANTIQUARIAN SOCIETY. Proceedings at Annual Meeting, Oct., 1870.

BOSTON NUMISMATIC SOCIETY. American Journal of Numismatics Jan., 1871.

NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. The New England Hist. Geneal. Register, Jan., 1871.

PUBLISHERS. American Literary Gazette. American Naturalist. Essex Banner. Gardeners' Monthly. Gloucester Telegraph. Haverhill Gazette. Historical Magazine. Land and Water. Lawrence American. Little Giant. Lynn Semi-Weekly Reporter. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Quaritch's Catalogue. Salem Observer. Sotheran's Catalogue.

DEFICIENCIES IN THE LIBRARY.

It is intended from time to time, to publish lists of deficiencies in the Library, hoping that the friends of the Institute, who may notice the same, will be induced to aid in completing the sets. Any number or volume, not designated (within brackets) under any title, will be acceptable.

DEFICIENCIES IN DIRECTORIES.

[*Continued from volume ii, page* 128.]

CARTHAGE, N. Y., by J. C. Kimball [1867-8].

CAYUGA COUNTY, N. Y., by H. Child [1867-8].

CHEMUNG and SCHUYLER COUNTIES, N. Y., by H. Child [1868-9].

CHENANGO COUNTY, N. Y., by H. Child [1869-70].

CORTLAND COUNTY, N. Y., by H. Child [1869].

ELMIRA, N. Y., by W. H. Boyd [1860].

FISHKILL LANDING, N. Y. [1864-5].

GENESSEE COUNTY, by H. Child [1869-70].

HUDSON, N. Y., by Parmenter & Van Antwerp [1851-2]; by H. Wilson [1856-7]; by W. V. Hackett [1862-3].

JEFFERSON COUNTY, N. Y., by H. Child [1860 and 1861].

KINGSTON & RONDOUT, N. Y., by Fitzgerald, Webb & Co. [1866].

LOWVILLE, N. Y., by J. C. Kimball [1867-8].

NEW YORK, N. Y., by David Franks [1786, reprint]; by David Longworth [1796-7, 1799-1800, 1809-10]; by Thomas Longworth [1825-6, 1826-7, 1827-8, 1831-2, 1832-3, 1833-4, 1834-5, 1835-6, 1838-9, 1839-40, 1840-1, 1842-3]; by John Doggett [1841-2, 1842-3, 1843-4, 1844-5, 1845-6, 1846-7, 1847-8, 1848-9, 1849-50, 1850-1]; by Charles R. Rode [1850-51]; by Doggett & Rode [1851-2]; by C. R. Rode [1852-3, 1853-4, 1854-5]; by H. Wilson [1852-3, 1853-4, 1854-5, 1855-6, 1856-7, 1857-8, 1858-9, 1859-60, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867]; Business Directory, by H. Wilson [1862-3, 1856-7, 1853-4].

NIAGARA COUNTY, N. Y., by H. Child [1869].

ONEIDA COUNTY, N. Y., by A. Boyd [1862-3]; by Waite Brothers & Co. [1866-7]; by H. Child [1869].

ONONDAGA COUNTY, N. Y., by H. Child [1868-9].

ORLEANS COUNTY, N. Y., by H. Child [1869].

OSWEGO, N. Y., by W. Hancock [1856-7]; by John Fitzgerald [1861, 1864-5].

POTSDAM, N. Y., by J. C. Kimball [1668].

POUGHKEEPSIE, N. Y., by J. Underhill [1856-7]; by David B. Lent, Jr. [1859-60]; P. & Fishkill Landing [1864-5].

RENSSELAER COUNTY, N. Y., by H. Child [1870-1].

ROCHESTER, N. Y., by Elwood & Dewey [1844]; by Jerome & Brother [1847-8]; by D. M. Dewey [1853-4, 1855-6]; by Curtis, Butts & Co. [1861].

ROME, N. Y., by W. H. Boyd [1857, 1859-60].

SARATOGA SPRINGS, N. Y., by A. Boyd [1868-9].

SCHENECTADY, N. Y., by H. Y. Bradt & Co [1864]; by W. H. Boyd [1857]; by H. Y. Bradt [1862-3].

TOMPKINS COUNTY, N. Y., by H. Child [1868].

TROY, N. Y., by John F. Prescott [1850-1]; by George Adams [1857]; by Adams, Sampson & Co [1858, 1859, 1860, 1861, 1862].

SYRACUSE, N. Y., by W. H. Boyd [1857]; Daily Journal [1862-3, 1864-5, 1866-7]; by Andrew Boyd [1868-9, 1869-70].

WATERTOWN, N. Y., by J. P. Fitch [1840].

WAYNE COUNTY, N. Y., by H. Child [1867-8].

WYOMING COUNTY, N. Y., by H. Child [1870-71].

PUBLICATIONS OF THE ESSEX INSTITUTE. 1871.

JOURNAL OF THE ESSEX COUNTY NATURAL HISTORY SOCIETY. 1 vol. 8vo. 1836-1852. pp. 135. In paper, ... $0 50
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[These volumes contain a large number of descriptions and figures of new species, especially of Corals, Insects and Polyzoa; and many valuable papers on Natural History. The first three volumes also contain many important Historical papers. In addition to the papers on special subjects, the volumes contain the proceedings of the meetings of the Institute, the records of additions to the library and museum, and many important verbal communications made at the meetings, etc. The *Naturalists' Directory* is also issued under the same cover with vols. IV. and V. Vol. VI. closes the series.]

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[The *Bulletin* takes the place of the *Proceedings of the Institute* which close at the date of the commencement of the *Bulletin*. This publication will contain all the short communications of general interest, both of an Historical and Scientific character, made at the meetings of the Institute, and the record of the meetings and business of the Institute. Occasional lists of the deficiencies in the library of the Institute, and of the duplicate books offered for sale or exchange will also be given.]

NATURALISTS' DIRECTORY. Issued with Proceedings Vol. V, 1867. . . .

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THE WEAL-REAF. Published for Institute fair in 1860. Small 4to. pp. 56. 30
TO-DAY. Published for the Institute and Oratorio fair. 1870. pp. 38. . . 50

Besides the above publications, the following works are offered for sale:

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UPHAM, C. W. Memoir of D. P. King. Pamphlet, 8vo, 1869,* . . . 30
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* Those marked with a star are extra copies from the Proceedings and Historical Collections.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 3. Salem, Mass., February, 1871. No. 2.

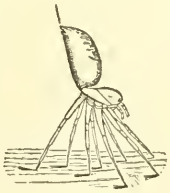
One Dollar a Year in Advance. 10 Cents a Single Copy.

Regular Meeting, Monday, February 6, 1871.

The President in the chair. Records of preceding meeting read.

Mr. James H. Emerton read a paper on the *Flying Spiders*, illustrating his remarks by drawings on the blackboard.

Some spiders, he said, have a habit of rising into the atmosphere by the help of currents of air acting upon threads of cobweb attached to their bodies. The threads before rising are often tangled together, covering the grass and bushes, and floating in the air in large pieces.



In Europe large flights of this web often take place, particularly in the fall of the year. The web rises usually in the morning, when the weather is clear and calm, and descends again in the afternoon, as the day becomes cooler.

Travellers on the coast of South America have several times seen the rigging of their vessels covered with cobwebs, blown off from the shore. Mr. Darwin, in his journal of the voyage of the Beagle, gives an account of

a case of this kind when the vessel was sixty miles from land. A letter from an officer on one of the U. S. vessels, says that last autumn, when near Montevideo, after a wind, the rigging was filled with cobwebs, and little spiders fell down all over the deck.

In our own country such showers have seldom been noticed, although the bushes and grass are often covered with web, which float out in the air to the length of several feet. One calm, warm morning in June, 1858, I was watching some little spiders, about one-tenth of an inch long, on the top of a fence in Bridge street, Salem. Occasionally one would stop and turn up its abdomen, at the same time straightening up its legs as if to get as high as possible. A thread then passed upward from the spinnerets at the end of the abdomen, increasing in a few seconds to a yard in length, when the spider and thread rose slowly upward, until the thread was entangled in the branches of the trees above. Mr. R. P. Whitfield tells me that once, near Utica, N. Y., while crossing a field of stubble, he saw a multitude of spiders running up and down the stalks, and when they found one to suit them, letting a thread pass upward from their bodies, and when enough had passed, rising with it into the air. Most experiments tend to show that currents of air are the cause of the spinning of these threads, but others have believed that they could be better accounted for on electrical principles. Some also have believed that the spiders can fly without the help of web or currents of air.

The President read a communication from Mr. M. A. Stickney, "on *Nathaniel Ames and his Almanacs*."

The almanac, one of the first productions of the New England press (1639), always held a prominent place among the essentials of a New England home in the

olden times, and was the usual appendage to the large fire-places, around which cluster so many pleasing associations. These annual sheets being sewed together and thus preserved with scrupulous care, in a continuous series, formed a diary of the domestic circle. On the margin of the pages, or on the inserted leaves, were frequently noted the principal events of the family, sometimes of the neighborhood, and occasionally those of a more general interest.

The small number of these old memorials that have escaped from the ravages of time, are considered very valuable by the antiquary and the student of local history. From these time-worn and dingy leaves many important facts may be gleaned, or at least a careful perusal will not be time misspent.

Mr. Stickney commenced some thirty years since to preserve almanacs, and has been very successful in his efforts in this direction. His collection is very extensive, and several of the series are perfect and in good condition. From the abundant resources at his command, he has been enabled to prepare a series of valuable and interesting articles on almanacs and their authors. Four numbers have been printed in Vol. VIII of the "Historical Collections of the Institute;" others are in preparation.

1. Nathaniel Low, 1762 to 1827, inclusive (none printed in 1766), sixty-four numbers. Mr. Low, the eldest child of Nathaniel and Sarah Low, was born in Ipswich, Dec. 23, 1740 (O. S.). He was a physician, and settled at Berwick, Me., continuing there the publication of the almanacs which he had commenced at Ipswich, in 1762. These almanacs may be considered one of the most important series ever published in New England, both on account of the period in which they were issued, that of the Revolution, and for the number of

years they were printed. After his decease in September, 1808, this publication was continued by his son, Nathaniel.

2. Amos Pope was born Feb. 22, 1771, in the first Parish of Danvers. He was the son of Nathaniel and Mary (Swinnerton) Pope, and his ancestors were among the first settlers of Salem. At the age of twenty he undertook to prepare an almanac for the year 1792, which under great disadvantages he accomplished. He also prepared almanacs for 1793, 1794, 1795, 1796, and 1797, these were all printed except the one for 1796. After 1797, with the exception of a few winters devoted to school keeping, he resided upon the ancestral farm, where he died January 26, 1837.

3. Samuel Hall, son of Jonathan and Anna (Fowle) Hall, was born in Medford, Mass., Nov. 2, 1740. In 1768 he was persuaded by Capt. Richard Derby to remove to Salem, and under the patronage of the Derbys, and other patriotic citizens, established the Essex Gazette; the first number was issued Aug. 2d of that year;—the first paper in Salem. He printed the Essex Almanac from 1769 to 1773, inclusive. He removed to Cambridge in 1775, and soon afterwards to Boston. He returned to Salem in 1781 and commenced printing the Salem Gazette, and in 1785 he again removed to Boston, where he died, Oct. 30, 1807.

4. Daniel George, of Haverhill, 1776 to 1787, inclusive, except for 1785; none printed that year. He removed from Haverhill to Falmouth (now Portland), Me., previous to 1783 and was the publisher there, for a time, of the Gazette of Maine. He died suddenly, Feb. 4, 1804, aged 45.

This communication, the fifth in the series, contains a brief notice of Nathaniel Ames and his series of alma-

nacs of thirty-eight successive years, with extracts from the different issues and the various jottings on the margins and interleaved pages, the whole forming a valuable contribution to our local history.

Nathaniel Ames was born at Bridgewater, July 22, 1708, he was the son of Nathaniel, grandson of John, and great grandson of William, the immigrant ancestor, born at Bruton, Somersetshire, England, Oct. 6, 1605, and settled in Braintree, Mass., as early as 1640. He was a distinguished physician and mathematician, and removed to Dedham in 1732. At the age of seventeen he calculated his first almanac, which was published in 1726. His almanacs were superior to those of his contemporaries, and obtained a great circulation; 60,000 were annually sold in the New England colonies. He died July 11, 1764. The almanacs were continued for several years by his son Nathaniel, a graduate of Harvard in 1761, a physician, and died at Dedham in 1822. The celebrated Fisher Ames "one of the most brilliant men this country ever produced," was his third son, born April 9, 1758, graduated at Harvard 1774, and died July 4, 1808. "In the old church yard at Dedham, is a plain white monument, on which is the simple inscription FISHER AMES."

This communication was referred to the Publication Committee, and will probably be printed in the "Historical Collections."

The Secretary announced the following correspondence: —

From New England Historic-Genealogical Society, Feb. 2; Pennsylvania Historical Society, Feb. 2; Throndhjem Kongelige Norske Videnskabernes-selskab, Sept. 28, 1870; Boardman, S. L., Augusta, Me., Jan. 25; Brigham, W. T., Boston, Jan. 25; Hotchkiss, Frank E., New Haven, Conn., Jan. 17, 23; Mann, Mary, Cambridge, Dec. 4, 1870; Paine, N., Worcester, Jan. 24, 25, 28; Preble, George Henry, Charlestown, Dec. 18, Jan. 31; Perry, Wm. Stevens, Geneva, N. Y., Jan. 20; Stephens, Wm. Hudson, Copenhagen, N. Y., Jan. 27; Trippe, T. Martin, Alexandria, Minn., Dec. 30; Williams, N. M., Methuen, Jan. 26.

THE LIBRARIAN announced the following additions.

By Donation.

BUTLER, BENJ. F., M. C. Kelly's Speech in U. S. H. R., Jan. 10, 1871. Maynard's Speech in U. S. H. R., Dec. 15, 1870. 8vo.

CLOUTMAN, W. R., of Charleston, S. C. Memorial Addresses on Wm. Pitt Fessenden, Dec. 11, 1869. 1 vol., small 4to.

DODGE, ALLEN W. Regulations of Foreign and Domestic Commerce. 1 vol. 8vo. Miscellaneous pamphlets, 20.

GREEN, S. A., of Boston. The Tariff Question, by E. B. Bigelow, 1 vol. large 4to. Miscellaneous pamphlets, 17.

HOLDEN, N. J. Massachusetts Legislative Doc. for 1865. Miscellaneous pamphlets, 75.

HUNTINGTON, A. Five pamphlets.

KIMBALL, JAMES. Three pamphlets.

LEE, JOHN C. Commercial Bulletin. Jan'y, 1871.

STONE, JOHN O., of New York. Report of the Metropolitan Board of Health for 1869. 1 vol. 8vo.

SUMNER, CHARLES. U. S. S., U. S. Coast Survey for 1867. 1 vol. 4to.

PALFRAY, C. W. The Manufacturer and Builder for March, April, 1870. Files of the Philadelphia Inquirer for 1866-7-8-9-70. Files of the Commonwealth, 1866 to 1870.

PEABODY, JOHN P. The Fireside Favorite for 1870.

PEABODY, S. E. Littell's Living Age from 1849 to 1869 inclusive.

ROPES, WM. L., of Andover. Catalogue of Andover Theological Seminary, 1870-71, 8vo.

WALKER, FRANCIS. Characters of undescribed Lepidotera Heterocera, 8vo, 1869.

WATERS, J. LINTON, of Chicago, Ill. Message of John M. Palmer, Gov. for Ill., Jan. 4, 1871.

By Exchange.

BIBLIOTHEQUE UNIVERSELLE ET REVUE SUISSE. Archives des Sciences Physiques et Naturelles. Nouvelle Période. Tome Trente-huitieme (38) Nos. 151-2-3-4-5, 8vo. Genève. Lausanna. Paris. 1870.

BOSTON PUBLIC LIBRARY, Bulletin for Jan., 1871.

BOSTON SOCIETY OF NATURAL HISTORY. Proceedings. Vol. xiii. sigs. 22, 23, 1870.

ENTOMOLOGICAL SOCIÉTY OF RUSSIA. Horæ Societatis Entomologicæ Russicæ. Tome VI, No. 4, Tome VII, Nos. 1, 2, 3, Tome VIII, No. 1, 8vo, Petropoli, 1870.

HARVARD COLLEGE. Annual Report of the President. 1869-70.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. Annual Catalogue of the Officers and students, 1870-71, 8vo.

BOSTON MERCANTILE LIBRARY ASSOCIATION. Index to the Catalogue of books, 1 vol., small 4to, 1869.

NEUCHATEL SOCIÉTÉ DES SCIENCES NATURELLES. Bulletin, Tome VIII. 1870. 8vo.

SOMERSETSHIRE ARCHÆOLOGICAL AND NATURAL HISTORY SOCIÉTY. Proceeding for 1868-9. Vol. XV. 8vo. Taunton, 1870.

PUBLISHERS. American Literary Gazette. Canadian Naturalist. Christian World. Eclectic. Essex Banner. Gloucester Telegraph. Haverhill Gazette. Historical Magazine. Lawrence American. Literary World. Little Giant. Lynn Reporter. Medical and Surgical Reporter. Nation. National Farmer. Nature. Peabody Press. Quaritch's Catalogue. Sailors' Magazine. Salem Observer. Silliman's Journal.

Among the donations to the Department of Manuscripts, the following may be specified as a donation from Mrs. N. D. Cole.

PERMIT Mr. Jonathan Cole to pass on or before Sunday next out of Quebec, and on or before Thursday next out of the District, with his wearing apparel, Bedding, and a case and small keg of Liquor, without hindrance or molestation, he behaving as besemeth.

Given under my hand & seal at
[Seal] Quebec this 24th Novem'r 1775
By His Excellency's
command
H. T. BRASMAHE.

Camp before Quebec May 2, 1776. Received of John Peirce Jun., Esq., assistant Paymaster for the Northern Department by the hands of Mr. Jonathan Cole the sum of twenty-five Thousand Dollars, for which sum I promise to account with the Paymaster General on settlement.

JOHN WINSLOW, Assistant Paymaster.

25,000 Dollars.

PERMIT the bearer Jonathan Cole to pass from home to Boston on his lawful Business.

Head Quarters
Montreal 10th May 1776
To all concerned. B. ARNOLD B. Gen.

Mrs. Edward D. Kimball was elected a resident member. Adjourned.

REGULAR MEETING, MONDAY, FEBRUARY 20, 1871.

The President in the chair. The Records of the preceding meeting were read.

The SECRETARY announced the following correspondence.

From Boston Public Library, Feb. 7; Hall, B. H., Troy, N. Y., Feb. 9; Hotchkiss, Frank E., New Haven, Feb. 7, 18; Norton, Charles, Janesville, Wisconsin, Feb. 4; Tracy, C. M., Lynn. Feb. 11; Verrill, A. E., New Haven, Feb. 15.

The LIBRARIAN reported the following additions.

By Donation.

BUTLER, BENJ. F., M. C. Report of Agriculture, Jan., 1871. Hoar's Speech in U. S. H. R., Feb. 7, 1871.

GAFFIELD, JOHN V. Report of the Librarian of Congress for 1870.

HOTCHKISS, FRANK E., of New Haven, Conn. New Haven Directories for 1840, 41-2, '2-3, '3-4, '4-5, '6-7, '7-8, '9-50, '65-68. Cleveland Directory, 1837-38. Commercial Directory, 1823. Connecticut Register 1847, '8, '52, '3, '4, '5, '8, '9, '61, '62. Beckwith's Almanac, 1852, '9, '61, '2, '3, '8, '70, '1. Prindles' Almanac, 1826, '40, '7, '8, '51, '5, '60. Middlebrook's Almanacs, 1810, '11, '13, '23, '6, '7, '34. Beers's Almanac 1805, '12, '19, '22, '23. Boston Municipal Register for 1867. Miscellaneous pamphlets, 65.

KIMBALL, JAMES. Illustrated Circular, "The National Bridge and Iron Works," 8vo. Boston, 1869.

LEE, FRANCIS H. Catalogue of the Free Public Library in Worcester. Miscellaneous pamphlets, 3.

LEE, JOHN C. Commercial Bulletin, Feb.

PRESTON, CHARLES P. Miscellaneous pamphlets, 8.

STONE, EDWIN M., of Providence, R. I. Report of the Ministry at large. Jan. 8, 1871.

CHARLES SUMNER, U. S. S. Schurz's Speech in United States Senate, Dec. 15th, 1870, on "Political Disabilities." Report of Agriculture for Jan., 1871.

UNKNOWN. History of Illinois and Life of Ninian Edwards. 1 vol. 8vo. Transactions of the Wisconsin State Agricultural Society for 1869. 1 vol. 8vo. Report of the Board of Education of Chicago for 1869, 1870. 2 vols. 8vo. Report of the Board of Trustees of the Illinois Industrial University for 1868, 1869. 2 vols. 8vo. Miscellaneous pamphlets, 13.

WATERS, J. LINTON, of Chicago, Ill. Report of the Board of Health of Chicago for 1867, '8, '9, and a Sanitary History of Chicago, from 1833 to 1870, 1 vol, 8vo.

By Exchange.

AMERICAN PHILOSOPHICAL SOCIETY, Phila. Proceedings, Vol. xi, No. 85, 1870.

NEW YORK MERCANTILE LIBRARY ASSOCIATION. Officers and Members for 1870-71. 8vo pamph.

NATIONAL ASSOCIATION OF WOOL MANUFACTURERS. Bulletin. Vol. II, No. 4. 8vo pamph.

PUBLISHERS. American Booksellers. American Naturalist. Essex Banner. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Land and Water. Lawrence American. Little Giant. Lynn Reporter. Medical and Surgical Reporter. Nation. National Farmer. Nature. Peabody Press. Salem Observer. Sotheran's Catalogue.

Charles E. Fabens and Benjamin H. Fabens were elected resident members. Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 3. Salem, Mass., March, 1871. No. 3.

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

Regular Meeting, Monday, March 6, 1871.

The President in the chair. Records of preceding meeting read.

The President read a communication on

THE ANCESTRY AND BIRTHPLACE OF HAWTHORNE,

whose writings have imparted a degree of interest to many places in this city, and whose successful career in the field of letters, has added a brilliant star to the glorious galaxy of Salem worthies. Here much interest centres; foreign tourists and others come to visit the scenes which he has so well described in his writings, and to repeople them with those characters which he has so vividly portrayed. This interest is on the increase, each year adding to the number of those who thus show their respect and admiration of the man and his writings.

It is proposed only to allude briefly to his ancestry in America; very little is known of the family in the motherland. Hawthorne, when in England, devoted much time, fruitlessly, to search out the residence of any of them, and wrote to a friend, "of all things, I should like to find a grave-stone in one of these old church-yards

with my own name upon it; although for myself I should wish to be buried in America."

The name has been prominent in our annals from the first settlement, and has been variously spelt, eight different modes having been noticed.

The emigrant ancestor, Major William Hathorne, came over in the Arabella, with Winthrop, as stated by Savage in his Genealogical Dictionary. He went probably, first to Dorchester, having had grants of land there in 1634; made freeman May 14, 1634, and was one of the ten men in 1635. In 1636 Salem tendered him grants of land if he would remove hither; he came in that or the year following. From that time his name appears on our records, as holding important positions, Commissioner, Speaker of the House of Representatives, Counsel in cases before the Courts, Judge on the Bench, soldier commanding important and difficult expeditions, and in innumerable other cases.

Johnson, in his "wonder working Providence," thus says of him, "yet through the Lord's mercy we still retaine among our Democracy the Godly Captaine William Hathorn, whom the Lord hath indued with a quick apprehension, strong memory, and Rhetorick, volubility of speech, which hath caused the people to make use of him often in Publick Service, especially when they have had to do with any foreign government." He died in 1681. His son John seems to have inherited many of his prominent traits of character, and to have succeeded in all his public honors, was freeman in 1677, Representative in 1683, Assistant, or Counsellor, 1684 to 1712, except the years of Andros' government; a Magistrate in the prosecution of the witchcraft trials, afterwards of the Superior Court; Colonel of a regiment and commander of the forces in the expedition of 1696, on the retire-

ment of Church. He died in 1717. The name appears, thus far, to have been as prominent in the civil history of that period, as it has been in the elegant literature of the present.

Joseph Hathorne, the next in descent, married, June 30, 1715, Sarah, daughter of William Bowditch, and a sister of Ebenezer, the grandfather of Hon. Nathaniel Bowditch, the eminent mathematician. He was occupied principally with the quiet and retiring duties of the farm, and did not take that leading part in publick affairs which his father and grandfather had been called upon to assume.

He died in 1762, having had among other children, Daniel, who, during the period of the Revolution, was in command of several Privateers, and noted for his courage and bravery; died April 18, 1796, at the age of 65. His contemporaries speak of him in high terms of commendation, and his funeral was attended with that respect which real worth ensures. No descendants are now living in Salem who bear his name. The eldest son died young: the second, Daniel, died at sea, unmarried, in 1805, a master-mariner; the third, Nathaniel, was the father of the subject of this notice. The eldest daughter, Rachel, married Simon Forrester, one of the Pioneers in the East India trade, who died in 1817, leaving a large fortune, the results of his successful commercial enterprises.

Nathaniel Hathorne, son of the preceding, born in 1776, married Elizabeth Clarke Manning, daughter of Richard Manning, and sister of Robert, the distinguished pomologist of Salem. Mr. Hathorne, after his marriage, continued to reside in the family mansion, now numbered 21 Union street, and in the northwest chamber of this house, Nathaniel, the author, was born, July 4, 1804. This house was built about two hundred years since by Benjamin Pickman, some additions and alterations having

been made by the several owners; the land, on which it stands, was, originally, part of the grant to Joseph Hardy, who conveyed it Aug. 7, 1685, to his son-in-law, Benjamin Pickman; B. Pickman's wife, Elizabeth, was daughter of Joseph Hardy; Joshua Pickman, a son of Benjamin, conveyed the same to Jonathan Phelps, June 22, 1745, he with his wife, Judith, transferred it to their son-in-law, Daniel Hathorne, Sept. 28, 1772. Rachel, the wife of the grantee, being the daughter of the grantors. This estate remained in the family until 1850, when it was sold by the heirs to Isaac Cushing.

Soon after the death of Capt. Nathaniel Hathorne, which took place at Surinam, in the spring of 1808, the mother went with her children to the family of her father, Richard Manning, at the Manning house, No. 10 Herbert street — this estate extended through to Union street, adjoining that of his birthplace. There they lived till October, 1818, when they went to Raymond, Me., where his grandfather, in connection with his uncle Richard, and others of the family, had made very extensive investments in lands. Hawthorne lived here about a year in a large house built near the shore of Sebago Lake, by his uncle, Robert Manning, in the expectation that the Manning family would remove from Salem to Raymond. Hawthorne returned to Salem to attend school, in the autumn of 1819, living again in the family of his grandmother Manning, and during the vacations, whilst a student at Bowdoin College, also after his graduation. In December, 1828, he and his mother removed to North Salem, to a house built and owned by Robert Manning, adjoining his own residence on Dearborn street. In December, 1832, they moved again to the ancestral mansion in Herbert street. About 1836 he went to Boston to edit a magazine, and after a short residence, returned

again to the same old house, but not long after he went again to Boston, where he stayed until he took up his residence at Brook Farm. He was married in Boston, July, 1842, to Sophia A., daughter of Dr. Nathaniel Peabody of Salem, and lived for some time at the "Old Manse," in Concord, Mass. In October, 1845, he came to Herbert street with his family, as boarders, remaining there six months, when he removed to Boston. In August, 1846, he came back to Salem, and lived at No. 18 Chestnut street. In October, 1847, he removed to 14 Mall street, in this place he lived until April, 1850, and then left Salem for the last time, as a resident.

We have thus given some account of the paternal ancestry of Hawthorne in this country, his birthplace and other residences in Salem, where he passed many years of his life, and where many of his choicest productions were written — leaving to others the delineation of his character and of his writings.

This communication, of which the above is only a brief abstract, was referred to the Publication Committee for insertion in the Historical Collections.

Mr. F. W. Putnam exhibited several specimens of the peculiar fishes belonging to the genera of Tetraodon and Diodon which had been recently presented to the Museum. He called attention to the singular structure of the teeth, which, while appearing simply as one large tooth on each jaw in Diodon, and as two on each jaw in Tetraodon, really consisted of a large number of teeth so closely cemented together by the deposit of dentine as to form the solid compound teeth characteristic of the family. He also pointed out the peculiar structure of the scales, modified so as to serve as spiny organs of defence, which in connection with the power these fishes have of inhaling

air to such an extent as to enable them to float on the surface of the water like an inflated balloon, rendered it almost impossible for any other fish to swallow them. The flesh of many species of this family are well known to be poisonous, and an old sailor will seldom risk eating them.

The following correspondence was announced, —

New England Society of Orange, Feb. 26; Smithsonian Institution, Feb. 15; E. W. Buswell, Boston, Feb. 28; G. F. Choate, Salem, Mch. 6; J. Colburn, Boston, Feb. 20; Wm. Graves, Newburyport, Mch. 2; M. How, Haverhill, Feb. 25; Mrs. E. D. Kimball, Salem, Feb. 22; D. Webster King, Boston, Feb. 20; W. S. Perry, Geneva, N. Y., Feb. 23; William Prescott, Concord, N. H., Feb. 25; A. H. Quint, New Bedford, Feb. 23, 27; J. K. Wiggin, Boston, Feb. 21.

The following additions to the Library were reported.

Donations.

ABBOTT, A., of Newburyport. Moore's Almanack for 1778. An Act for Regulating and Governing the Militia of Massachusetts in 1793. The New England Courant printed in 1723.

BLAKE, C. J., of Boston. Late contributions to Aural Surgery by donor. Read May 24, 1870.

BUTLER, B. F., M. C. Speech in H. R. Feb. 14, 1871, on Expulsion of West Point Cadets.

GARRISON, W. P., of New York. Constitution and By-Laws of the New England Society of Orange, as adopted May 12th, 1870.

LEE, JOHN C. Commercial Bulletin for Feb.

LINCOLN, SOLOMON. Memoir of Mrs. Rowson by Elias Nason. 1 vol., small 4to, Albany, 1870.

SUMNER, CHARLES, U. S. S. Drake's Speech in U. S. Senate, Dec. 16, 1870. Congressional Directory, 3rd Sess., 41st Cong. Schurz' Speech in U. S. Senate, Jan. 27, 1871. Hoar's Speech in U. S. H. R., Feb. 7, 1871. Eulogies delivered in U. S. Cong., Feb. 9, 10, 1871, on Death of Hon. John Covode. Report of the U. S. Commissioners to the Paris Exposition. 6 vols. 8vo. Washington, 1870. Reports of the Total Eclipse of August 7, 1869, 1 vol., large 4to. Message and Documents, 2d Sess., 41st Cong. 1869–70. 1 vol. 8vo.

HINGHAM PUBLIC LIBRARY. Address delivered at the Dedication, July 5th, 1869, by Hon. Thomas Russell.

WATERS, J. LINTON, of Chicago, Ill. Free Labor the first condition of Free Trade. By C. W. Felt.

By Exchange.

BUFFALO HISTORICAL SOCIETY. Proceedings for 1869–70.

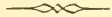
IOWA STATE HISTORICAL SOCIETY. Annals of Iowa for Jan., 1871.

MARYLAND HISTORICAL SOCIETY. Account of the Settlement of Ellicott's Mills, read before the Society, Nov. 3., 1870.

PUBLISHERS. American Naturalist. Christian World. Eclectic. Essex Banner. Gloucester Telegraph. Haverhill Gazette. Historical Magazine. Land and Water. Lawrence American. Literary World. Little Giant. Lynn Reporter. Medical and Surgical Reporter. Nation. National Farmer. Nature. Peabody

Press. Quaritch's Catalogue. Salem Observer. Silliman's Journal. The New Carpet.

Wm. A. Ireland and Wm. H. Kilvert were duly elected Resident members.



Regular Meeting, Monday, March 20, 1871.

The President in the chair. Records of preceding meeting read.

The President presented a copy in manuscript of the Genealogy of the Cabot family, prepared by Hon. Joseph S. Cabot of this city, and which he had recently received from him, a donation to the manuscript department, and made some remarks upon the history of this family in this county. Two brothers came to Salem about 1700, John and George, from the Island of Jersey—John married Anna Orne and was the ancestor of the family in this vicinity and this record refers especially to an account of his descendants. George married Miss Marston, daughter of Benjamin Marston of Salem, died in 1715, leaving a son Marston, who graduated at Harvard college in 1724, and was settled in the ministry at Killingly, Conn. He married Mary, daughter of Rev. Josiah Dwight and died April 8, 1756, leaving many descendants.

Mr. Allen W. Dodge made some interesting remarks on some of the habits and customs of our ancestors as gleaned from an examination of the wills and inventories of estates on file in the Probate office. This subject will probably be alluded to again at some future meeting.

The Secretary announced the following correspondence:

Boston Athenæum, Mch. 10; Boston Public Library, Mch. 13; Corporation of Harvard College, Mch. 13; Mass. State Board of Health, Mch. 18; Mass. State

Library, Mch. 14; New York State Library, Mch. 14; Peabody Institute, Peabody, Mch. 13; R. I. Historical Society, Mch. 15; George W. Duncan, Haverhill, Mch. 4. 7; Mrs. A. T. Endicott, Boston, Feb. 28, Mch. 15; B. H. Hall, Troy, Mch. 18; Mrs. P. A. Hanaford, New Haven, Mch. 17; F. G. Hastings, New York, Mch. 18; Z. A. Mudge, Marblehead, Mch. 18; Josiah Newhall, Lynnfield, Mch. 1, 8; G. H. Preble, Charlestown, Mch. 16; John C. Ropes, Boston, Mch. 17; Henry White, New Haven, Conn., Mch. 18.

The Librarian reported the following additions:

By Donation.

BUTLER, B. F., M. C. Patent Office Reports. Vols. 2, 3, 4, 1868. 3 vols. 8vo. Report of the Department of Agriculture for 1869. 1 vol. 8vo. Acts and Resolutions of U. S. at the 2d Sess., 41st Cong. 1 vol. 8vo. Message and Documents for 1869–70. 1 vol. 8vo. Eighth Census of the U. S. for 1860. 4 vols. 4to. Congressional Globe, 2d Sess. 41st Congress, with Appendix. 7 vols. 4to. 1869–70.

GREEN, S. A., of Boston. Miscellaneous pamphlets, 71.

PHIPPEN, GEO. D. A Treatise of Prayer. 1 vol. 12mo. London.

RANDALL, STEPHEN, of Providence, R. I. Publications of the Narragansett Club. Vol. IV. 1 vol. small 4to. Providence, 1870.

SUMNER, CHARLES, U. S. S. Land Office Report for 1868. 1 vol. 8vo. Finance Report for 1870. 1 vol. 8vo. Mining Statistics West of the Rocky Mountains by R. W. Raymond. 1 vol. 8vo. Report on the Commerce and Navigation of U. S. Fiscal Year ended June 30, 1870. 1 vol. 8vo.

WORTHEN, Prof. A. H., of Springfield, Ill. Geological Survey of Illinois. Vol. IV. 1 vol., small 4to. 1870.

By Exchange.

MINNESOTA HISTORICAL SOCIETY. Report of, to the Legislature of Minnesota for 1870. 8vo. pamph.

VERMONT HISTORICAL SOCIETY. Proceedings. Oct. and Nov., 1870. 8vo. pamph.

PUBLISHERS. American Literary Gazette. Essex Banner. Gardner's Monthly. Gloucester Telegraph. Haverhill Gazette. Lawrence American. Little Giant. Lynn Reporter. Medical and Surgical Reporter. Nation. National Farmer. Nature. Peabody Press. Quaritch's Catalogue. Sotheran's Catalogue.

Henry W. Moulton of Newburyport, and Dirk Teupken of Salem were elected Resident members.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 3. Salem, Mass., April, 1871. No. 4.

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

Regular Meeting, Monday, April 3, 1871.

The President in the chair. Records of preceding meeting read.

THE SALEM FEMALE ANTI-SLAVERY SOCIETY.

The President mentioned that the Records, Correspondence and other papers of this society had recently been deposited with the Institute, and read the following communication from Rev. John L. Russell, accompanying the same.

To the Historical Department of the Essex Institute:

The Abolition of Slavery in the United States of America has become an illustrious fact in the History of this Country. By very small beginnings, and by little springs and rills, the mighty stream of events which rolled onward to the ocean of universal freedom has been nourished and fed. Of one of these, the Records of the "Salem Female Anti-slavery Society," may be mentioned with honor. By a vote of the Society, at the closing meeting of its existence, the records have been entrusted to the historical department of the Essex Institute. To

these the correspondence and business details have been added. To the future historian of the ancient town of Salem, they will present subjects of intense interest and earnest thought. *In minimis maximus* is no less true of man's advancement than of God's operations. In addressing to the historical department these few words by being honored with the duty of presenting the gift, I subscribe myself, Respectfully,

JOHN L. RUSSELL.

The President remarked that early in the spring of 1834, a few ladies having carefully examined the subject of slavery for the purpose of ascertaining what duties may devolve upon the female portion of the community in relation thereto, called a meeting on the 4th of June following, and formed an organization under the name of the Salem Female Anti-slavery Society. Mrs. Cyrus P. Grosvenor was elected the first President. She was succeeded in 1835 by Maria A. Driver, in 1838 by Lydia Dean, in 1843 by Lucy G. Ives, who continued the presiding officer until Jan. 3d, 1866, when its dissolution was deemed advisable; the legal abolition of slavery having been accomplished, it was thought that more good could be effected by working with the Freedman's Aid Society, or some similar organization.

During the thirty-two years of the existence of this society, the members were very assiduous in the promotion of its objects; no exertions were spared, despite of obloquy, and at times great unpopularity, to advance the cause for which they were striving, and which for several years appeared to be almost hopeless.

Frequent meetings were held to receive and impart intelligence on the subject of emancipation; also to devise means to aid kindred associations, and the efforts of zeal-

ous co-laborers; and by means of the press, of lectures and occasional addresses, to diffuse information and awaken a more general interest and coöperation. From 1844 to 1860 inclusive, annual courses of lectures, consisting of some six or eight each, were delivered. Scholars, who rank high in the field of letters, and the leading spirits in this movement were enlisted and took part in these various exercises.

In this connection may be mentioned the names of Wm. L. Garrison, George Thompson, George W. Curtis, T. W. Higginson, Wendell Phillips, Theodore Parker, Edmund Quincy, John Pierpont, Caleb Stetson, Samuel J. May, T. T. Stone, James F. Clarke, Samuel Johnson, O. B. Frothingham, E. B. Willson, Wm. H. Channing and others.

The course of events, however, during the past decade of years, has led to the realization of so many of their long cherished plans and aspirations that the continuance of the organization is no longer necessary. The record of their doings, now closed, has become historic. An impartial future will, doubtless, give due credit to the part which they have performed in this great movement; and do ample justice to the zeal, industry and self-sacrificing spirit that have characterized all their actions.

The Institute, grateful for this mark of confidence, will carefully preserve this valuable donation to the department of manuscripts.

PAPER MONEY.

Mr. John Robinson, having arranged the collection of paper money in the possession of the Institute, was requested to give some account of the same. He stated that until its arrangement the past year, it was seldom seen. This arrangement is now completed and in such

manner that at any time more can be added without deranging in any way the systematic order.

We have two volumes, the first containing the earlier colonial issues, those of the Continental Congress and the State Banks prior to 1864. The second volume contains the various issues during the recent war and foreign bills of all sorts. In Vol. I. the New Hampshire and Massachusetts bills are particularly fine, some being very rare and valuable, especially one of Massachusetts of 1690. Of the Middle States we have some rare and many fine ones; two, from the press of Benjamin Franklin, are now much esteemed. North Carolina, of the Southern States, is the best represented, having a very fine series. Those of the Continental Congress are nearly perfect, from one-third of a dollar to eighty dollars; these were issued at many different dates, some of the bills of which are extremely rare.

In examining the few works we possess relating to this old currency, I find several quite interesting facts which are worthy of notice. In the distribution of the amount of the loan, which, according to wealth and population, was divided among the States the following order was adopted.

Virginia, ...	$496,000	Maryland, ...	$310,000
Massachusetts, ...	434,000	Conn., N. C., S. C., and New York, . . .	278,000
Pennsylvania, ...	372,000		

New York, now so high in the scale, was then only a fifth rate State, while Massachusetts was second.

Another fact—in 1778 and 1779, an army of 40,000 men was kept and national expenses met, by the issue of, in '78, $63,000,000 and in '79, $72,000,000, with only $153,000 in coin in the treasury for the entire two years. Thus we see how our revolution was sustained by an active printing press.

The depreciation of these bills was so gradual that in-

stead of the great loss which some believe our ancestors met, it is evident from the best authority that this was the easiest system of taxation that could be imposed for so great an undertaking and result.

The second volume contains a valuable and an extensive collection of the war issues, nearly all in fine order; also a quite large series of foreign bills, those of China being the most perfect and curious.

It is hoped that, since this collection is so well arranged, it will receive attention and considerable additions; this is always the reward of placing specimens in a form where they can readily be seen, and thus far it has been very apparent to this society. Many of these bills would here make a valuable addition, while separately, in private possession, they are of little consequence.

EGGS OF THE DADDYLONGLEGS.

Mr. James H. Emerton exhibited some drawings which he had made, illustrating the development and growth of some species of insects and gave the progress of his investigations on this subject. He remarked, that three times in the neighborhood of Albany, N. Y., he had found eggs of a Phalangium (Daddylonglegs), probably *P. formosum* Wood. April 3, 1870, he found four eggs on the under side of a damp, rotten stump. The eggs were near together, but not attached to each other or to the rotten wood. The eggs were nearly mature, and April 17 the young came out. April 10, 1870, five eggs were found under rotten wood about three miles from the first place. These eggs were also near together, but not attached or enclosed. The young were nearly ready to hatch, and closely resembled adults except in size and color. March 5, 1871, he found about twelve eggs under the damp bark of a rotten stump not far from the place where eggs were found April 10, the year before. In

loosening the bark, all but three of the eggs were unfortunately lost. These eggs were nearly mature. March 18, the young moved in the egg when disturbed. The eggs were very transparent, especially when wet with water. The legs of the first and second pairs were folded sideways around the body, the third and fourth pairs were turned under the body and forward near the middle line, their extremities coming up each side of the head. The basal joints of the mandibles seemed shorter in proportion than in the adult. While examining two of these in water in a cell they were cracked by too much pressure of the cover. The next day the young spiders were out walking about the bottle. They were .04 of an inch in length. The number of joints of the tarsi was much less than in the adult *P. formosum*, being seven or eight in the first pair of feet, seventeen or sixteen in the second, eight in the third and ten in the fourth.

Charles H. Webber of Salem was elected a Resident member.

The Secretary announced the following correspondence: —

Buswell, E. W., Boston, Mch. 20, 24; Crowninshield, F. B., Boston, Mch. 20; Hall, B. H., Troy, N. Y., Mch. 22; Verrill, A. E., New Haven, Conn., Mch. 21; Hawerman, A. D., Chattanooga, Tenn., Mch. 20; Higginson, T. W., Newport, R. I., Mch. 21; Holmes, J. C., Detroit, Mich., Mch. 30; Lunt, W. P., Boston, Mch. 24; Moulton, Henry W., Newburyport, April 3; Perkins, A. T., Boston, Mch. 24; Preble, Geo. Henry, Charlestown, Mch. 27, 31; Waite, Otis F. R., Concord, N. H., Apr. 1; Westermann, B., New York, Mch. 21; Bowdoin College, Mch. 20; Buffalo Historical Society, Mch. 21; Maine Historical Society, Mch.; Moravian Historical Society, Mch. 20; New Hampshire Historical Society, Mch. 20; New Jersey Historical Society, Mch. 22; New York Historical Society, Mch. 20; Providence Athenæum, Mch. 24; Rhode Island Historical Society, Mch. 21.

The Librarian reported the following additions:

By Donation.

AMERICAN COLONIZATION SOCIETY. Annual Report for 1870.

BOSTON GYNÆCOLOGICAL SOCIETY. Annual Address for 1871, by Winslow Lewis.

BROOKS, MRS. H. M. The Woman's Journal for 1870.

BUTLER, HON. B. F., M. C. Report on Agriculture for Feb., 1871. Ames's Speech in the U. S. S., March 21, 1871.

CROSBY, NATHAN, of Lowell. Speech on Inebriate Asylums.

CROWNINSHIELD, FRANCIS B., of Boston. Reports on the Finances from 1790 to 1814. 1 vol. 8vo. Executive Journal 1815 to 1829. 1 vol. 8vo. Journals of Congress, 1778 to 1788. 2 vols. 8vo.

CUTTER, ABRAM E., of Charlestown, Mass. The Works of Anne Bradstreet. 1 vol. 4to. History of The Cutter Family of New England. 1 vol. 8vo. Miscellaneous pamphlets, 16.

FOWLER, CHARLES B. The Pilgrim's Prayer. 1 vol. 16mo. An Inquiry in the Worship of the Primitive Church. 1 vol. 12mo. Juvenile Letters by C. Bingham. 1 vol. 16mo.

HANAFORD, REV. MRS. P. A., of New Haven, Conn. From Shore to Shore and other Poems, by donor. 1 vol. 12mo. The Life and Writings of Charles Dickens, by donor. 1 vol. 12mo. Belshazzar's Feast, a Sermon by donor.

LEE, JOHN C. Commercial Bulletin for March, 1871.

PEABODY ACADEMY OF SCIENCE. Annual Reports of the Trustees for 1869–70.

STEPHENS, W. H., of Lowville, N. Y. The Oxford Academy Jubilee, held at Oxford in 1854. 1 vol. 8vo.

SUMNER, Hon. CHARLES, of U. S. S. Report on Agriculture for Feb., 1871.

TATE, GEO., of London. Proceedings of the Berwickshire Naturalist's Club. Vol. vi. No. II. 1870.

WALTON, EBEN N. Semi-centennial Celebration of the North Baptist Church in Randolph, Mass., Nov. 7, 1869. 1 vol. 8vo.

WENHAM, Town Clerk of. Reports of the Town of Wenham for 1870.

By Exchange.

NEW ENGLAND HISTORIC-GENEAOLOGICAL SOCIETY. New England Historical and Geneaological Register. April, 1871.

NEW BEDFORD FREE PUBLIC LIBRARY. Annual Report of the Trustees, 1870.

PHILADELPHIA ACADEMY OF NATURAL SCIENCES. Proceedings of. Sept., Oct., Nov., and Dec., 1870.

WISCONSIN STATE HISTORICAL SOCIETY. Address before the. By Hon. C. J. Walker, Jan. 31, 1871. 8vo pamph.

PUBLISHERS. American Literary Gazette. American Naturalist. Book Buyer. Christian World. Essex Banner. Fireside Favorite. Gloucester Telegraph. Haverhill Gazette. Land and Water. Lawrence American. Literary World. Little Giant. Lynn Reporter. Medical and Surgical Reporter. Nation. Nature. Peabody Press. The Book Seller's Guide. Quaritch's Catalogue.

REGULAR MEETING, MONDAY, APRIL 17, 1871.

THE President in the chair. Records of preceding meeting read.

A letter was read by the President from H. M. Goatkin, fellow of St. John's College, Cambridge, England,

requesting an exchange of lingual ribbons of the Marine Mollusca; also in Protozoa or Diatomacea. The letter was referred to Rev. E. C. Bolles.

THE NEW AUSTRALIAN FISH.

Mr. F. W. Putnam gave an account of the interesting and very important discovery of a fish, by Hon. Wm. Forster, in the fresh waters of Australia, that seemed to combine characters of the Ganoids with those of Chimeroids, which were an order of the subclass to which the sharks belonged. This fish has been referred by Mr. Krefft, on account of the resemblance of the teeth, to the genus *Ceratodus*, known only from teeth found in the Devonian period, and Dr. Günther, who has lately made an examination of specimens, confirms Mr. Krefft's opinion, and is also led from its peculiar structure to unite the subclasses of Ganoids, Dipnoi and Selachians together as one subclass, which he calls Palæichthyes.

Mr. Putnam thought that, while we only knew the fossil *Ceratodus* from its teeth, it was venturing too far to refer the Australian fish to the same genus, especially as the fossil teeth have characters that have heretofore associated the genus more intimately with sharks than with Ganoids; and as we are apt to be misled by any single character, teeth being by no means an exception.

In relation to the new classification proposed by Dr. Günther, Mr. Putnam, while agreeing with him in uniting the Ganoids with the Dipnoi, as both Mr. Gill and himself * had previously done, and while admitting that the Chimeroids have affinities with them, was yet doubtful about placing the Selachians in the same subclass without uniting the Marsipobranchiates with them, for

* In a review of the classification of the Vertebrates, in "Huxley's Classification of Animals."—American Naturalist, Vol. 3, p. 610.

he thought that this last group was as closely allied to some forms of the Ganoids as were the Chimeroids to other forms; and in fact the bony fishes were also so closely united with the Ganoids as to make any of the proposed subclasses very difficult if not impossible to define. So long as living fishes alone were considered, the several subclasses seemed to be well defined, but now that fossil fishes are receiving more attention, we find that many of the proposed groups must be modified.

John S. Carter of Salem was elected a Resident member.

The Secretary announced the following correspondence: —

From Basel, Naturforschende Gesellschaft, Dec. 10; Bremen Naturwissenschaft Verein, Dec. 7; Buffalo Society of Natural Sciences, April 7; Edinburgh Royal Society, Oct. 7; Leipsig, Die Königlich Sächsiche Gesellschaft der Wissenschaften, Dec.; Meklenburgh, Verein der Freunde der Naturgesichte, Dec. 17; Minnesota Historical Society, April 11; Ohio Historical and Philosophical Society, April 1; Stettin Entomol., Verein, Sept.; Western Reserve Historical Society, April 11; Yale College, April 5; Bartlett, W. S., Boston, April 4; Hotchkiss, Frank E., New Haven, Mch. 29; Piper, W. H. & Co., Boston, Apr. 3; Preble, G. H., Charlestown, April 6, 17; Westermann & Co., New York, April 14.

The Librarian reported the following additions:

By Donation.

ALMON, A. B. Miscellaneous pamphlets, 250.

BUTLER, B. F., M. C. Howe's Speech in U. S. H. R., March 27, 28, 1871. Sumner's Speech in U. S. Sen., March 27, 1871.

COOK, GEO. H., of New Brunswick, N. J. Report of the State Geologist of New Jersey for 1870.

GREEN, S. A., of Boston. Miscellaneous pamphlets, 25.

HIGGINSON, T. W., of Newport, R. I. Army Life in a Black Regiment. 1 vol. 12mo.

POOLE, WM. F., of Cincinnati, O. Report of Cincinnati Public Library, 1870–71.

SUMNER, HON. C., U. S. S. Sumner's Speech in U. S. S., March 27, 1871. Outrages in the Southern States. 1 vol. 8vo.

WILLIAMS, J. O., of Boston. Mammoth Trees in California. 8vo pamph.

WINTHROP, R. C., of Boston. Proceedings of the Trustees of the Peabody Education Fund, Feb. 15, 1871. Oration on the Two Hundred and Fiftieth Anniversary of the Landing of the Pilgrim Fathers. 8vo pamph.

By Exchange.

BOSTON NUMISMATIC SOCIETY. Amer. Journal of Numismatics for April, 1871.

CONNECTICUT ACADEMY OF ARTS AND SCIENCES. Transactions. Vol. I, Part II. 1 vol. 8vo.

MASSACHUSETTS HISTORICAL SOCIETY. A Dialogue written by Gov. Wm. Bradford of New Plymouth. 1 vol. 8vo. Boston, 1870.

MORAVIAN HISTORICAL SOCIETY OF NAZARETH, PA. The Moravian Episcopate by Edmund De Schweinitz. 8vo pamph.

NOVA SCOTIAN INSTITUTE OF NATURAL SCIENCE, Halifax. Proceedings and Transactions of. 1869-70. Vol. II, Part IV.

PUBLISHERS. American Literary Gazette. American Naturalist. Essex Banner. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Lawrence American. Little Giant. Lynn Reporter. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem Observer.

SEMI-CENTENNIAL ANNIVERSARY, FRIDAY, APR. 21, 1871.

THE Semi-centennial Anniversary of the Essex Historical Society, or what is known as the Historical Department of the Institute, occurred this day, and was observed by appropriate exercises in the afternoon and evening, at the rooms in Plummer Hall. The exercises were opened by prayer by the Rev. E. S. ATWOOD.

The President, HENRY WHEATLAND, made the following introductory remarks:

At the close of this half century in the history of our society, it was deemed meet to mark the date by some suitable observance; accordingly at a meeting in December, votes were passed confirmatory of the expression of this opinion, and the appointment of a committee to make the necessary arrangements.

An historical sketch of the Institute has been printed and widely distributed, and notices have appeared in several publications of a complimentary character. It would therefore seem unnecessary to give a detailed account of our history, but merely to allude briefly to the most salient points in the record.

Some fifty years since Salem had residing within her limits many eminent scholars, scientific and literary —

also those who took leading positions in commercial and other enterprises that tend to the prosperity of a community. At this time the Salem Athenæum had collected many valuable works, and the East India Marine Society a museum of natural history and ethnology—the latter especially rich in those specimens that illustrate the habits and customs of the people of India and the Pacific Isles. These institutions had acquired a merited celebrity, and were attracting the attention of scholars, tourists, and the general public. The ample material for the organization of an active society of history was waiting for some exciting cause to put in motion the crystallizing process.

Soon after the death of the Rev. Dr. Bentley, which occurred in December, 1819, much regret was expressed that the valuable and large mass of historic material, books, etc., which he had collected during a successful ministry of nearly forty years, should be removed from Salem. There being then no place of deposit, of course the tendency was to go elsewhere. To prevent a similar occurrence in the future, at the suggestion of Hon. J. G. King and George A. Ward, a meeting was convened on the afternoon of Saturday, April 21, 1821, just fifty years since, Judge Story presiding. This meeting organized under the name of the Essex Historical Society, and appointed a committee to prepare rules and orders, also a petition to be presented to the Legislature for an act of incorporation. The act was obtained in the June following, and on the 27th of that month the first corporate meeting was held, and an organization was effected with the venerable Dr. E. A. Holyoke as President, who continued its presiding officer until his decease in April, 1829, at the advanced age of 100 years and 7 months. In 1847 the union with the Natural History Society was

discussed, and in February following, the act was passed constituting the members of the two societies members of the Essex Institute. It was then organized into three departments, that of History, Natural History, and Horticulture—Horticulture having been a leading object of the Natural History Society, and to the horticultural exhibitions held under its auspices that society was largely indebted for its success.

The bequest of Miss Caroline Plummer in 1854, of a sufficient sum to erect this building, to the proprietors of the Salem Athenæum, and the removal of the library and collections of the Institute to the same, in 1857, formed a memorable epoch in its history. The endowment of a fund of $140,000, by George Peabody, the great philanthropist, for the promotion of science and useful knowledge in this his native county, which was placed in the hands of nine trustees who were incorporated as "Trustees of the Peabody Academy of Science," the purchase of the East India Marine Hall, the refitting of the same for the deposit of the valuable museum of the East India Marine Society, and the extensive scientific collections of the Institute, deserve a passing notice. Though the Institute was thus relieved of the care of its scientific collections, yet the growth of the library and the increase of specimens illustrating the other departments of which the Institute takes cognizance, require constant vigilance to provide the requisite means to have the same properly arranged for consultation and use by the members and students in quest of information in their special line of inquiry.

The last subject to which I shall allude is the amendment of the charter in 1870, which provides that the Institute shall have for its objects the promotion of the Arts, Literature, and Science, in addition to those for which the Essex Historical and the Essex County Natural His-

tory Societies were incorporated. A fourth department was thus added, that of Fine Arts — so that the organization consists of four departments, that of History, Natural History, Horticulture, and the Fine Arts. Initiatory steps have been taken to the formation of an art museum, which, if properly cared for, would do much to the promotion of culture and refinement among the people.

An excellent select choir, under the direction of Gen. H. K. Oliver, then sang the following Original Hymn, written for the occasion by Rev. Jones Very:

Amid the swift, onrushing years,
  We hear a voice, that bids us stay;
Back to the storied Past we turn,
  And reverently its call obey.

For not dissevered, weak, alone,
  Do we amid the Present live;
But to our lives the by-gone days
  Their knowledge and their virtues give.

Made wise by wisdom of the Past,
  We for the Future shall prepare;
Sharing our Fathers' noble aims,
  We shall their fame and glory share.

But soon forgotten, or destroyed,
  The records of that early age;
Had not their sons, with loving care,
  Memorials left for History's page.

Honor we give to those, who here
  Recorded for our use their lore:
Whose names and virtues we revere,
  Though seen with us their forms no more!

Inspired by their example high,
  May we their chosen path pursue;
Alike to present, and to Past,
  In all our thoughts and acts be true.

Abner C. Goodell, Jr., the Vice President of the Historical Department, then delivered an address of which the following is an abstract:

In commencing, he said that the commemoration of the fiftieth anniversary of the foundation of the Essex Historical Society, naturally suggested as a theme befitting the occasion, a consideration of the interdependence of history and the other sciences. The steps in the formation of the society had been so often traced that a fresh treatment of so familiar a topic, would not be expected.

Returning to pursue the theme first proposed, he instituted a brief comparison of some salient features of every day life, now and fifty years ago, in order to appositely illustrate his argument. No doubt the American citizen of 1821 felicitated himself that he was born in an age so auspicious. It was a generation after the American Independence had become an accomplished fact. The telescope was then an old invention, and among the actual achievements of that age was the mariner's compass, the art of printing, the use of logarithms and the true principles of chemistry, the discovery of the circulation of the blood, and other important facts—all inventions which seemed to complete the busy progress of civilization. Yet, viewed from the stand-point of the present day, there was a vast difference in physical comfort and luxury. The speaker pictured the comforts and conveniences of the present day, and said for all this improvement they were indebted to the progress of science. The discovery of the planet Neptune was an illustration of the perfection, the almost prophetic power of the science of Astronomy. The improved microscope and spectroscope were also among the mechanical triumphs of modern science. He alluded to the advantages derived from the perfection of the science of chemistry. Within fifty

years geology and palæontology had overcome great obstacles. History ceased to be history when it failed to recognize the power of science. The interdependence of the sciences was everywhere apparent. The closest relations exist between geology, palæontology and archæology on the one hand, and history on the other. The science of human physiology had also a direct bearing upon history. The history of science should not be confounded with history written upon a scientific basis. The conclusion of the scientific man should be inductions. The use of statistics affords an instance of a purely scientific plan applied to history. Carried still farther this science might be useful in solving the problems of political economy. Every part of science which is not learned from original discovery, was learned from history. The best scientific treatises were purely historical. The whole tendency of modern science went to prove that there was a still higher province for this blended history and science, and that was the development of a system of ethics, with all the certainty and regularity of mathematics. The speaker then referred particularly to the society, its history and its work. What existed in the day of its founders only in name, now afforded for public use a large and commodious building, a library of 26,000 bound volumes, more than 100,000 pamphlets, and 2,500 volumes of newspapers, bound and unbound, including duplicates. On the other side of the library table the Athæneum displays nearly 14,000 volumes more, in every department of literature. The publications of the Society embrace the three numbers of the Journal of the Natural History Society, six volumes of Proceedings, ten volumes of Historical Collections, and an eleventh volume commenced, some occasional publications, two volumes of the Monthly Bulletin, and five of the Naturalist, this last though afterwards

transferred to the Peabody Academy of Science was inaugurated by the Institute. In 1866 the cabinets contained about 55,000 classified specimens in the various branches of Natural History, and with those in the East India Marine Hall, they now numbered several hundreds of thousands. The Peabody Academy of Science have these in charge, and they are available for use to the members of the Institute and all other students of science on the most liberal terms. In numismatics, ethnological specimens, and manuscripts, there are also considerable collections, and the fine arts, especially the art of music, are beginning to receive special attention. The public have always been invited to participate in the studies, and enjoy the advantages offered by the Institute, upon almost equal terms with members. Finally a printing office has been established which performs typographical work in a style not excelled by any other press in the country.

The address occupied about forty minutes, and was listened to with the deepest interest and warmly applauded at the close. It is printed in the *Historical Collections* of the Institute, vol. xi, No. 1.

"America" was sung by the choir, after which remarks were made by Rev. George D. Wildes of New York, Gen. Henry K. Oliver, J. Wingate Thornton, Esq. of Boston, and Dr. George B. Loring.

The observances of this anniversary were appropriately concluded by a social gathering of the members and friends of the Institute, in the evening, at Plummer Hall, which was entirely informal and conversational.

Mr. David Pulsifer, of the Secretary of State's office, Boston, presented a certified copy on Parchment of the Act of Incorporation of the Essex Historical Society — which was gratefully received.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 3. Salem, Mass., May, 1871. No. 5.

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

Regular Meeting, Monday, May 1, 1871.

The President in the chair. Records of preceding meeting read.

ON THE GEOLOGICAL SURVEY OF ESSEX COUNTY.

Prof. Alpheus Hyatt showed a series of specimens illustrating, in part, the geology of this county, also a geological map of Marblehead Neck, and offered some interesting remarks in relation thereto, of which the following is an abstract.

This society has had in view for many years past the thorough exposition of the history of this county, both political and physical.

The political history has been well advanced by the numerous papers and essays of prominent members; so also has the Natural History. No attempt could be made however to organize a survey which would strike directly at the accomplishment of this object until funds were provided for the employment of a corps of men and the publication of the results in a systematic manner.

When the Peabody Academy was founded and the collections of this society handed over to its keeping, the

idea of a general Natural History Survey was for the first time definitely announced and provided for in its plan of organization. The Geology fell to my share, and since my acceptance of a position in the Massachusetts Institute of Technology, I have, with the assistance of the fourth year's class of Mining Engineers from that Institution, been able to continue the work.

The first fruit of this labor is exhibited here to-night in a map of Marblehead Neck. The ground-work of the whole is a copy of the Plane Table sheet of the United States Coast Survey, which has been given to me especially for this work through the kindness of Prof. Pierce. The wonderful accuracy of this map is shown by the test to which these investigations have subjected it. The copy before you has been enlarged three times, and is on a scale of .3000 or about eighteen inches to the mile. Notwithstanding this enlargement I have been able to identify every small indentation in the coast-line, and the outline of every projection; as a topographical map for the foundation of a geological survey it is perfect.

The principal intention has been to map out in detail the actual outcrops of rock which project above the surface. These are painted in solid colors. Dark bluish purple shows the porphyry, which occupies the upper two-thirds of the neck and a strip on the harbor-side, reaching to the east end of Devereux beach; dark drab mica-schists and fine-grained gneiss, which fill out the southeastern portion; while patches of vermilion scattered over both indicate the presence of an eruptive granite.

The precise outline of each outcropping or exposed rock was not attempted, but the general direction of the longest axis of each mass is given, and such an approximation to the precise outlines as could be obtained by a

sketch taken on the spot. These are connected by ground shades of the same color, but lighter hue, which indicate to the experienced eye the character of the rock lying under the soil. Thus the theoretical conclusions are separable from the observed facts, and every person can see the face of the country as it is, the conventional signs and colors being readily translated by the table attached to the sheet.

Marblehead Neck was selected as the initial point, because it is one of the three porphyry outcrops within the limits of this county, and from these it is convenient to lay our courses in order to meet the regularly stratified rocks which lie to the westward.

It would be premature at this stage of the investigation to endeavor to forestall the results which may be finally worked out, but it is possible to make certain statements of considerable interest.

The porphyry of our vicinity whether Lynn, Marblehead or Newburyport is a recomposed rock, a conglomerate composed of more or less rounded pebbles of more ancient banded porphyry. Taking our departure from these points we meet in the neighborhood of Newburyport with a transition rock made up partly of porphyry, and then with stratified diorites and slates, which surround the porphyry outcrop on the sea-face, and stretch up to the north and south of Kent's Island, and are lost in the marshes.

The northwesterly dip, and northeasterly strike of these diorites and slates, and the presence of slate rocks in Topsfield and Middleton, are difficult to account for unless we imagine the porphyries to be interstratified with them. The succession of the strata in this part of the county then would be Eozoönal limestones and serpentines, then slates, then the porphyries of Kent's Island

and Lynn, then slates and diorites, and lastly, the porphyries of Marblehead Neck. Either this is the explanation or else we have several anticlinal axes or folds in the porphyry. In either case all the porphyries are probably older than the Eozoönal rocks of Newburyport, and underlie them. The porphyry of Marblehead Neck has the stratified micaceous rocks, mentioned above, lying upon its southeastern face, with dip and strike precisely conformable to the more ancient shore-line formed by the porphyry itself.

The porphyry of Lynn has upon its eastern face the outcropping edges of an enormous overflow of igneous granite, which anciently filled the valley between Peabody village and Swampscott, but which is now only represented by Prospect Hill and others on the west, and patches which still remain plastered against the western sides of the hills to the east.

The farther or westerly side of this porphyry, as also of the Newburyport exposure, is occupied by a series of rocks with a regular northwesterly and southeasterly trend. These overlie the series of serpentines and limestones which crop out so abundantly at Newburyport and Lynnfield. At this last locality the relation of these lime rocks to the porphyries is obscured by masses of what I am disposed to consider an eruptive granite. In fact, all the difficulties of the survey have arisen from the enormous sheet, or rather, sheets of igneous rocks, for there seems to have been several which overspread the surface of the country.

The principal seat of one of these eruptions, and perhaps two of them, can be traced to a large part of Marblehead and the whole of Salem township. The rock underlying these localities is a dense, dark hornblendic, often micaceous granite, varying in many places to lighter

colored and more crystalline. This is, accurately speaking, shivered to pieces by eruptive forces, which have at the same time filled the numberless crevices and hollows between the fragments with one form of the igneous granite alluded to. This is always lighter colored, and often reddish on account of its flesh-colored feldspar. There are perhaps eight or ten square miles of this broken rock, and yet in many places, if the injected granite were removed, every dissevered piece of the dark granite would fit together edge to edge like a consolidated block-puzzle.

It is only fitting here to say that the successful prosecution of the survey must be largely attributed to the encouragement and assistance of Dr. Sterry Hunt. The communication made by this gentleman at the Salem meeting of the American Association, upon the rocks of this region, incited Mr. Bicknell to renew his formerly unsuccessful search at Newburyport for the Eozoön. The subsequent discovery of this fossil and the beginning of the field work were the indirect consequences of this and of his subsequent visits. The President and Directors of the Eastern Railroad have also substantially assisted in the progress of the survey and I have personally received aid from others to whom my indebtedness will be duly acknowledged in more formal publications.

Note by Dr. T. Sterry Hunt. In a communication to the *Boston Natural History Society* on the 19th of October last, and subsequently in the *American Journal of Science* for February and March, 1871 (pages 84 and 182), I have expressed the opinion that the porphyries of the eastern coast of Massachusetts, are stratified rocks, belonging together with their associated diorites and slates (greenstones, chloritic and epidotic rocks), to the

Huronian system, or Green Mountain system. As regards the limestones with Eozoön, from eastern Massachusetts, which in the *American Journal* for Jan., 1870, I referred to the more ancient Laurentian system. I have in that same journal for July, 1870, pointed out the fact that the Eozoön of Hastings county, Ontario, occurs in a series of crystalline schists which I consider newer than the Huronian, and the equivalent of the White Mountain gneisses and mica-schists, so that, as I there remark, "the presence of this fossil can no longer serve to identify the Laurentian system. It will be remembered that the *Eozoön Bavaricum* of Gümbel occurs in Bohemia, in a series of crystalline schists above the Laurentian, occupying probably the position of one or the other newer systems just mentioned. I have in the *American Journal* for last March (page 183), moreover, called attention to the fact that the crystalline limestones which are associated with the White Mountain or Terranovan system in Maine, closely resemble in mineralogical characters those of the Laurentian. It will therefore remain for farther study, to determine how far the crystalline limestones of eastern Massachusetts belong to the Laurentian, and whether some of them are not included in one or the other of the newer systems of crystalline schists. The porphyry conglomerate noticed by the late President Hitchcock and described by Prof. Hyatt, are referred to in my paper of last October, mentioned above. This rock is, I conceive, to be distinguished from the old Huronian porphyry, on which it often reposes, and from the ruins of which it is derived. Similar conglomerate porphyries along the shores of the Bay of Fundy appear to be of Upper Silurian age.

GEOLOGY OF THE PHOSPHATE BEDS OF SOUTH CAROLINA.

Dr. A. S. Packard, Jr., made some remarks on the geology of the phosphate beds of South Carolina. During a recent visit to Charleston, he had observed the phosphate diggings on the Ashley river, and at a locality on the northeast railroad eight miles from Charleston, but through the courtesy of C. C. Coe, Esq., Superintendent of the Marine and River Phosphate Mining and Manufacturing Company, and Dr. C. U. Shepard, Jr., he had enjoyed special facilities for studying the Quaternary, or Post Pliocene formation in which the phosphate bed occurs, having made two excursions in company with these gentlemen on the Company's steamer Gazelle. He was also indebted to Prof. C. U. Shepard, Sr., for much valuable information regarding the chemical as well as geological history of these interesting beds. Analogous beds have been discovered in the later tertiary of England near Cambridge, but they are becoming exhausted, and manufacturers of superphosphates are now importing large quantities of the crude phosphate rock from Charleston, S. C., as well as the phosphate, or apatite, rock from the Laurentian formation of Canada, which Dr. T. Sterry Hunt, the distinguished chemist of the Canadian Geological Survey, believes to have resulted largely from the decomposition of shells, especially those of Lingula.

The phosphate beds of South Carolina are spread over an area along the coast one hundred miles along, and about twenty miles in breadth; the formation is not continuous, being sometimes, as stated (in conversation) by Prof. C. U. Shepard, Jr., replaced by ferruginous sand. It has already been largely used as a fertilizer for worn out lands of the sea island cotton region, and promises from the unlimited supply of the rock, to become a large

industrial interest of the state, six million dollars having already been invested in lands and mining and manufacturing materials by northern capitalists alone.

The relation of the phosphate beds to the Quaternary formation of the state and of the latter to the glacial beds of sand and clay of the northern states, were, however, the principal points he would allude to. At a celebrated locality of Quaternary fossils at Simmon's Bluff on Wadmalaw Sound, about thirty miles by steam from Charleston, he made with the kind and generous aid of Dr. Shepard, Jr., a large collection of fossils, from a bed of sand and mud about four feet in thickness. This bed corresponded with the marine clays of New England and Labrador, and the ancient sea bottom with its multitude of shells, which remained just as they had died in their holes, reminded him of an ancient raised sea-bottom at Hopedale, Labrador.

These clay beds graduated into clay and sand, containing a ferruginous layer, supposed by Dr. Shepard, Jr., to be the horizon of the phosphate beds. These beds correspond to the beds of clay at Gardiner, Maine, where Sir Charles Lyell discovered the bones of the Bison and Walrus, and contains bones of the Megalonyx, Mastodon, Elephant, Tapir, two species of Horse, Peccary, Rhinoceros and Manatee. The sands graduate into the beach sands of the close of the Quaternary, just as do the Bison and Walrus beds of the Kennebec river. The phosphate beds, then, were probably rolled masses of Eocene rock crowded with shells, mingled with the bones of the animals above mentioned, deposited and arranged by the waves of a shallow sea a few feet deep. This sea was much shallower even than that which covered the ancient sea bottom beneath, which must have been only from one to five or ten fathoms deep, as the same shells are at the

present day thrown up on the neighboring beaches in great abundance, and he had dredged some of them at a depth of from five to thirty feet at Beaufort, N. C.

After their deposition the carbonate of lime of the shell marl of the Eocene rocks had been replaced by phosphate of lime. How this had been effected, and whence the phosphate of lime was derived, was a question still unsettled by chemists. He alluded to the theory of Prof. Shaler that this phosphate deposit had been formed at the bottom of the Gulf Stream, which, according to that geologist had probably flowed over the site of the present phosphate beds; and in opposing the theory suggested that the phosphate beds were deposited in shallow water, perhaps lagoons as suggested by Prof. Holmes, as they rested in a shallow water deposit above alluded to. There was no apparent evidence, as well shown by the facts published by Tuomey in his geological survey of South Carolina, of a depression of the coast. On the other hand there is no apparent evidence of glacial action on the coast, since the Quaternary sands are marine or aerial, and Tuomey states that he has nowhere in the state of South Carolina seen any angular blocks, nor a pebble a foot in diameter. Moreover, the life of the Quaternary in this state indicated even a warmer climate than at present obtains.

Since these remarks were made, he had met by accident with the paper by Desor, than whom no one can speak with greater authority, in which he has made a comparison * between the glacial marine beds of the North and the marine coast deposits of the Southern states, parallelizing the deposits in a masterly manner. His remarks

* Post Pliocene of the Southern states and its relation to the Laurentian of the North and the deposits of the valley of the Mississippi. By E. Desor. American Jour. Sciences and Arts. 1852. Vol. 14. p. 49.

entirely confirm the views given above. One difficulty Desor had in parallelizing the Laurentian beds of the North with those of the South containing the remains of land animals, was the apparent absence of the remains of land animals in the clays of the North. But since then teeth of the bison have been found at Gardiner, Maine, in the upper part of the clays. It may also result from farther investigation that the phosphate beds were laid down at a later period than we have supposed; at the time when the great mammals found in the cave at Phœnixville by Mr. Wheatley flourished, perhaps during the earlier portion of the river terrace period when the mammoth and mastodon lived both in the northern and southern states.

Thus, the parallelism between the Quaternary beds North and South would seem to be even more exact than Desor could with his data make it twenty years ago. The climate gradually grew warmer from Labrador to Florida; the Gulf Stream did not apparently change its bed during the Quaternary period; the oscillations of level of the coast of South Carolina were slight and involved but a few feet, where in Canada and Labrador the rise and fall involved several hundreds; and the denudation effected in the North by land ice, was caused in the South by oceanic currents, waves and atmospheric agencies. There are apparently no facts to show that while the glaciers lined the coast of New England, the waters of South Carolina were not as warm, if not warmer, than at the present day, from the effects of the Gulf Stream.

Mr James H. Emerton exhibited the following species of plants in flower which he had collected this afternoon in South Salem and Swampscott, and made some appropriate remarks in relation to them.

Ranunculus sp., near the outlet of Legg's hill ponds.
Ranunculus fascicularis, hillside west of Forest River near Lynn road.
Caltha palustris.
Anemone nemorosa.
Hepatica triloba, Swampscott near Salem line. Sepals dropping from most of the flowers and new leaves half grown.
Aquilegia Canadensis, great pasture, very few flowers open.
Saxifraga Virginiensis.
Sanguinaria Canadensis, Swampscott near Salem line. Leaves as high as the flowers and many flowers without their petals.
Fragaria Virginiana, roadside near Forest River.
Houstonia cœrulea.
Viola cucullata.
Viola blanda.
Acer rubrum, roadside, Swampscott.
Salix, two species on the Eastern Railroad.
Benzoin odoriferum, meadow north of Legg's hill.
Gnaphalium uliginosum, pastures and roadsides.
Erythronium Americanum, near Legg's hill.
Arisæma triphyllum, near Legg's hill.
Carex Pennsylvanica, and another species, great pasture.
Equisetum arvense, Marblehead Railroad near Lynn road.
Equisetum sylvaticum, near Legg's hill with *Erythronium Americanum*.

The Secretary announced the following correspondence: —

From Smithsonian Institution, April 18; Francis H. Appleton, Boston, April 29; Joseph Banvard, Patterson, N. J., April 20; James S. Bryant, Hartford, April 18; A. Crosby, Salem, April 19; Asa Gray, Cambridge, April 19; S. A. Green, April 4; Richard M. Hodges, Cambridge, April 19; J. C. Holmes, Detroit, Mich., April 21; O. W. Holmes, Boston, April 20; Frank E. Hotchkiss, New Haven, April 21; Laburton Johnson, Bradford, April 18; Nathaniel Paine, Worcester, April 20; A. P. Peabody, Cambridge, April 20; G. H. Preble, Charlestown, April 21; W. Hudson Stephens, Lowville, N. Y., April 1; E. M. Stone, Providence, April 22; J. Wingate Thornton, Boston, April 18; B. Westermann & Co., New York, April 19; W. O. White, Keene, N. H., April 28; M. P. Wilder, Boston, April 21.

Mr A. C. Goodell, Jr. alluded briefly to the plan, for some time in contemplation by the Essex Institute of a survey of the Natural History of the county. He congratulated Mr. Hyatt upon the results of his labors in this direction auguring favorably for the completion ere long of this desirable work.

Remarks were made by Mr. James Kimball and others on the papers presented at this meeting.

The Librarian reported the following additions:

By Donation.

ANTHONY, H. B., of Washington, D. C. Congressional Directory by B. P. Poore.

BUTLER, Hon. B. F., M. C. Hoar's Speech in U. S. H. R., March 29, 1871. Edmund's Speech in U. S. S. April 14, 1871. Harlin's Speech in U. S. S. March 29, 1871. Land Office Report for 1868. 3 vols. 8vo.

CONNECTICUT RIVER RAILROAD COMPANY. Annual Report. 1870.

GREENE, S. A., of Boston. Miscellaneous pamphlets, 11.

LEE, JOHN C. Commercial Bulletin for April, 1871.

PACKARD, A. S. Annual Report on the Injurious and Beneficial Insects of Mass.

PEABODY ACADEMY OF SCIENCE. Memoirs, Vol. I, No. II.

PERRY, Rev. W. S., of Geneva, N. Y. Memorial of Rev. Benjamin Dorr, D. D, by Geo. Lewis.

POORE, ALFRED. Miscellaneous pamphlets, 20.

PREBLE, CAPT. GEORGE H., U. S. N. Memoir of William P. Fessenden.

SNOW, E. M., of Providence, R. I. Report of the Births, Marriages and Deaths in Providence for 1868.

STONE, ROBERT. Commerce and Navigation for 1850-54. 2 vols. 8vo. Report on the Finances for 1856. 8vo. Compendium of the U. S. Census for 1850. 8vo. Hymns for the Sanctuary. 12mo. Psalms and Hymns. 1 vol. 12mo. The Christian Examiner, 1826 to 1860. Quarterly Journal of the American Unitarian Association. 1854 to 1859. The Monthly Miscellany, 1841 to 1843. Year Book of the Unitarian Churches, 1856 to 1870. Monthly Journal of the American Unitarian Association, 1860 to 1869. Miscellaneous pamphlets, 25.

SUMNER, CHARLES, U. S. S. Sumner's Speech in U. S. S. March 27, 1871.

WATERS, J. LINTON, of Chicago, Ill. A Western Enterprise. 1871. 8vo pamph. Catalogues of Medals, Tokens.

YOUNG MEN'S ASSOCIATION, OF BUFFALO, N. Y. Annual Report, Feb. 20, 1871.

By Exchange.

BOSTON SOCIETY of NATURAL HISTORY. Proceedings of. Vol. III, sigs. 24, 25.

BOWDOIN COLLEGE. Catalogue, 1870-71.

MASSACHUSETTS HISTORICAL SOCIETY. Proceedings of. 1869-70. 1 vol. 8vo.

NEW JERSEY HISTORICAL SOCIETY. Proceedings of. Vol. II, No. 3. 1871.

ST. GALLISCHE GESELLSCHAFT. Bericht Vereinsjahres, 1868-69.

PUBLISHERS. American Naturalist. Canadian Naturalist. Essex Banner. Gloucester Telegraph. Haverhill Gazette. Lawrence American. Literary World. Little Giant. Lynn Reporter. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailor's Magazine and Seamen's Friend. Sotheran's Catalogue. The Book Buyer.

A committee consisting of Messrs. James Kimball, W. Neilson, C. Cooke, W. P. Upham and J. H. Emerton, was appointed to nominate officers for election at the annual meeting.

Annual Meeting, Wednesday, May 10, 1871.

The President in the chair. Records of preceding meeting read.

The following reports on the condition of the Institute were read and accepted.

REPORT OF THE SECRETARY.

In looking back through the record of the year, it becomes the duty of the Secretary to arrange and relate briefly the doings and progress of the Society since the last report. For that purpose it has been found more convenient to dispose of the matter under various heads with the exception of Finance, Library and Museum, which will receive full notice in the reports of the officers of those departments.

Membership.—Twenty-eight persons have been elected and have accepted resident membership, while the loss during the year by death is smaller in numbers than ever before since our society has been so large. Thomas Hunt, died at Salem, May 21, 1870, aged 64 years, 9 months. Daniel Perkins, died at Salem, June 25, 1870, aged 59 years, 4 months. Asahel Huntington, died at his sea side residence in Beverly, Monday, Sept. 5, 1870, aged 72 years. Stephen D. Poole, died at his residence in Lynn, Sept. 22, 1870, aged 53 years, 10 months. Samuel R. Curwen, died at Salem, Nov. 11, 1870, aged 49 years, 10 months.

Correspondence. — This in character and multiplicity continues as extensive as ever.

Publications. — Historical Collections, Vol. X. Parts 2 and 3; and of the Bulletin, twelve numbers have been issued; also the long delayed and final parts of the Proceedings.

The BULLETIN, taking the place of the PROCEEDINGS, is now well up to time, and for the coming year arrangements have been made to secure its prompt appearance. This is a very important measure, as it renders the publication more profitable by increasing the number of subscribers and bringing the subscriptions in more promptly.

Meetings.—There have been held of business and public evening meetings, twenty-two; Special, one; Field Meetings, four; at Bradford, Swampscott, West Peabody and Methuen, where the usual courtesy and attentions were extended to the Society by the residents.

At the public evening meetings various valuable and interesting papers have been presented during the winter, to an audience often numbering less than twenty-five persons, yet at other times, when the subject of discussion had been announced in the papers, a fair, and, at times, a large number have attended; this leads to the conclusion that the attendance can be materially augmented by a little previous arrangement, and a notice of speakers and subject in the papers a day or two before the meeting. When we consider the character of these meetings, well repaying the two hours spent at them, it is to be regretted that more do not avail themselves of these free lectures and discussions, the variety of subjects being so great that each must interest some, while none can fail to gain information from all. There have also been a social meeting at Hamilton Hall, and an excursion to Plymouth by steamer, under the auspices of the Institute. The fiftieth anniversary of the formation of the Essex Historical Society was celebrated at the Institute rooms on the twenty-first of last month. An able address was delivered in the afternoon by Mr. A. C. Goodell, and in the evening a company viewed the collections and partook of a collation.

Horticulture. — Three free exhibitions took place in the summer, one each in June, July, and August, the fall exhibition in September lasting three days. These exhibitions were attended by a fair number of visitors. The collection of fruit and flowers, the latter especially, consisted of choicer specimens than were perhaps ever before exhibited at the rooms, showing a more refined taste as well as a greater number of persons interested in Floriculture, the collection being from a larger number of exhibitors than at any previous year, not comprised, as often before, of large showy flowers from a few gardens. By very little effort these exhibitions can be brought to far greater notice in the county and made very much larger, and the society might gain from them a yearly profit, in lieu of barely paying their expenses, as they have every convenience for successfully carrying them forward.

Fair. — During the latter part of October, and the first of November a large fair was held at Mechanic Hall, by the ladies of Salem and vicinity, for the benefit equally of the Salem Oratorio and Essex Institute. It being the opening of the remodelled building, and gotten up with taste, filled with attractive articles, and with many persuasive ways of raising money, the success was such that each society received upwards of sixteen hundred dollars, a sum greatly needed and gratefully received by the Essex Institute.

In General we find the society has improved its time by carrying out its objects and adding to its collections. Many minor improvements have been made during the year and everything kept to the previous standard. There are many things which those immediately interested in the society desire to have done, one — which our President has had in his mind and heart for several years

—the establishing of a Memorial Hall and "Public Library." Here is a grand foundation, which with private and civil coöperation, might easily accomplish the result, and meet a great want in our city; another that, perhaps, might be accomplished at the same time, is the building of a fire-proof room or hall, where the more valuable and unreplaceable portions of the collections might be safely kept; this would also be the means of enlarging our collections by the great amount of valuable documents and paintings that would at once be given or deposited, if we had the facilities for properly guarding them against fire. However, it is not well to be too aspiring, we must be satisfied with our present condition, and when we think of the entire working income of the society for the past ten years as averaging less than fifteen hundred dollars, and never reaching two thousand, while not many years ago it was mere nothing, the amount that has been accomplished is most surprising, and reflects credit on the head of this society, who has since its formation made a frugal allowance do a great amount of work.

Mr. President:—In retiring from the position of Secretary, I desire to call to mind that a year ago to-day we were regretting the absence of our former Secretary, who had left us during the year for a European tour; his return a few weeks since is opportune, in giving us just time to replace his name on the ballot, where we see it to-day, a position that I am heartily glad to have him fill again and feel great satisfaction in handing the Secretary's records over to one whose experience renders him so well fitted to perform the duties of the office.

Respectfully submitted.

John Robinson,
Sec'y Essex Institute.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 3. SALEM, MASS., JUNE, 1871. NO. 6.

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

ANNUAL MEETING, WEDNESDAY, MAY 10th, 1871.

[*Concluded.*]

REPORT OF THE SUPERINTENDENT OF THE MUSEUM.

As the report of the Curators of the Historical Department will cover all that has been done in the Museum during the year, there is little for me to report except to state that the collection of antiquities and manuscripts has received the continued care of Messrs. Robinson and Upham, and that their arrangement has been satisfactorily advanced. The many specimens received by the Institute in the Natural History Department have been sent to the Peabody Academy of Science, in accordance with the agreement between the two Institutions, and have been duly acknowledged and cared for by the Academy.

I may be permitted in connection with this report to call attention to the importance of having a person who is thoroughly identified with the Historical Department of the Institute for Superintendent of the Museum. as it is to that department the Museum under his charge is now principally confined, and as my duties at the Academy

render it impossible for me to give the time necessary for the performance of the important duties devolving upon the Superintendent, I must respectfully request that some other person be elected to the office which I have had for so many years the honor of holding.

F. W. Putnam,
Supt. Mus. E. I.

TREASURER'S REPORT.

It will be perceived by the following exhibit that valuable additions have been made to the treasury during the year. The legacy of the late Charles Davis of Beverly, of five thousand dollars ($5,000) ; and donations from friends of fourteen hundred and eighty-two dollars and seventy-two cents ($1482.72), a nucleus of a publication fund, have been received and invested under the direction of the Finance Committee ; the income arising therefrom to be appropriated in accordance with the request of the donors. The receipts from the Ladies' Fair in November of sixteen hundred and sixty-four dollars and eighty-one cents ($1664.81) were expended for a piano, settees and other fixtures for the lecture and concert room.

DEBITS.

Athenæum, for rent and Librarian,	$350.00
Salaries, 688.00; Gas, 49.21; Coal, 156.87,	894.08
Sundries, 151.36; Social meetings and Excursions, 806.80,	958.16
Publications, 1800.00; furnishing Lecture Room, 1465.02,	3265.02
Deposit in Savings Bank, 30.00; Loans, 1642.72,	1672.72
Investment of Davis Legacy,	5000.11
Concerts and Musical Library,	886.62
Balance Account of last year,	160.23
Historical.	
Binding, 134.62; Books, 35.00,	169.62
Natural History.	
Binding, 100.00; Books, 11.10; Sundries, 16.70,	127.80
	13,484.36

CREDITS.

Dividends of Webster Bank, 40; Social Meetings and Excursion, 1207,	1247.00
Life Membership, 30.00; Donations, 1521.72; Sundries, 24.32,	1576.04
Oratorio and Institute Fair, 1664.81; Concerts (two seasons) 1005.38,	2670.19
Sale of Publications, 762.91; Assessments, 1330.00,	2092.91
Athenæum, proportion of coal, janitor, etc.,	139.38
C. Davis Legacy, 5000.00; Interest, 190.00,	5190.00
Balance,	335.97
Historical.	
Dividends Naumkeag Bank, 26; Michigan Central. R. R., 50.00,	76.00
Natural History.	
Dividends Lowell Bleachery, 80.00; P. S. & P. R. R., 12.87, Horticultural Exhibitions, 64.00.	156.87
	13,484.36

HENRY WHEATLAND,
Treasurer.

LIBRARIAN'S REPORT.

The condition of the Library is good. Attention has been directed to completing the serials, more especially the reports and other publications of the various institutions and corporate bodies, and commendable progress has been made.

As the additions by donations, exchanges and otherwise, have been reported at the regular meetings and printed in the BULLETIN, it is only requisite to present at this time the following statistics:—

Donations.—Folios, 20; Quartos, 46; Octavos and lesser folds, 879; Pamphlets and Serials, 4,449; Almanacs, 62; Total, 5,456.

Exchanges.—Quartos, 5; Octavos and lesser folds, 227; Pamphlets and Serials, 1,791; Total, 2,023.

The Donations have been received from one hundred and forty-seven individuals, and sixteen societies and incorporated bodies; the Exchanges from eighty-five different societies and incorporate bodies of which thirty-nine are foreign.

W. P. UPHAM,
Librarian.

The President made the following communication:

The subject of erecting a Monument, a Memorial Hall, or of testifying by some mark of esteem to those who took part in the recent war for the Union, has been discussed in the newspapers and in the social circle. The City Government has also had at different times several plans under consideration, but no definite action has thus far been taken.

It has also been frequently stated with much regret that Salem has no Public Library, and that in this respect she is far behind her neighbors, Lynn, Peabody, Danvers, Beverly, Ipswich, Georgetown, Newburyport and other places, which each have a well sustained Library. In most of these cases the liberality of one or more of its citizens, or of some of its sons, who have been fortunate in commercial or other enterprises elsewhere, remembering the places of their birth and childhood with grateful feelings, gave the first impulse. Thus, Mr. George Peabody founded those at Peabody, Danvers, and Georgetown, and contributed a liberal fund to the one in Newburyport, which owes its origin to the generosity of Mr. Little. Mr. Heard erected a building, furnished a collection of books and a fund, for at least its partial support, in the town of Ipswich. The Public Library in Boston was indebted largely, in its incipient stages, to Mr. Joshua Bates. Mr. Albert Fearing followed the example of Mr. Heard, and founded a library for his native town of Hingham. Mrs. Eben Sutton founded a reference library in Peabody, in connection with the Institute of that place. The Messrs. Smith and Dove contributed liberally to one in Andover, and also built at their own expense a beautiful building for the library of the Theological Seminary there located. Many instances of a similar character can be cited.

Let us look at the condition of things in Salem. The

Salem Athenæum, founded many years since by the wisdom of those far seeing people who resided here in the early part of this century, possesses some fifteen thousand volumes in the various departments of the arts, literature and science, and a building erected from funds bequeathed by Miss Caroline Plummer. This lady, presuming that the Athenæum Library might at some future time be thrown open to the public, provided in her will that if the said library should ever become a public one, her bequest should not be forfeited.

The Essex Institute has accumulated a library of some twenty-five to thirty thousand volumes and about one hundred thousand pamphlets systematically arranged for reference and consultation; also a goodly collection of portraits of the old worthies of Salem; manuscripts, specimens of currency, historical relics, etc., which are deposited in Plummer Hall. The scientific collections, which are very extensive, having been deposited with the Trustees of the Peabody Academy of Science in East India Marine Hall.

Cannot some arrangement be made so that these two libraries, with that belonging to the Salem Charitable Mechanic Association, and perhaps others, be united, and thus form a basis for a noble public Library? Are there not some Mæcenases to furnish the amalgam that will cement the union, and thus bring about this glorious result?

Furthermore, on the land in the rear of Plummer Hall, a safe and fire-proof building could be erected, which might be a Memorial Hall, consecrated to the memory of those who have devoted their lives to the preservation of the Union during the crisis through which this nation has recently passed. Let this building be a place of deposit for the portraits and other memorials of those who first

laid the foundations of this place; of those who have conducted the affairs during the several periods of her history; and, above all, of those who took part in the recent war for the preservation of the Union. This building would also be a suitable depository for an Art Museum, which now is becoming an essential aid to the proper education of the people.

The care and management of the library and the Memorial Hall, could devolve upon a board of Trustees, selected by the city and the various institutions that may contribute to this object.

To this end it is necessary that not only the City Government, but the people, one and all, should aid in this undertaking to the extent of their respective means, and work with the determination that success shall crown their efforts. Let us make a beginning, and we shall soon have a Public Library that will compare favorably with those of other places in the Union, material which will be a good nucleus for a valuable Art Museum, and a very rare collection of antiquarian relics.

Thus, while we shall be doing honor to those to whom we owe so much, we shall provide a suitable depository for works of art and historical relics, for the education and improvement of the people.

This communication was referred to a committee, consisting of the President, Vice Presidents and Secretary, with the request to report whenever a plan for the realizing of any of the suggestions therein contained should be sufficiently matured for the action of the Institute.

George H. Perkins of Salem and George Haskell of Ipswich were elected resident members.

The following officers were elected for the ensuing year, and until others shall be chosen in their stead: —

President.

HENRY WHEATLAND.

Vice Presidents.

Of History — A. C. GOODELL, JR. *Of Horticulture* — WM. SUTTON.
Of the Arts — GEO. PEABODY. *Of Natural History* — F. W. PUTNAM.

Recording and Home Secretary.

AMOS H. JOHNSON.

Foreign Secretary.

A. S. PACKARD, JR.

Treasurer.

HENRY WHEATLAND.

Librarian.

W. P. UPHAM.

Superintendent of the Museum.

JOHN ROBINSON.

Curators of Historical Department.

W. P. Upham, M. A. Stickney, John Robinson.

Curators of Natural History Department.

H. F. King, C. M. Tracy, William Neilson.

Curators of Department of Horticulture.

John Robinson, Caleb Cooke, James H. Emerton.

Curators of Department of the Arts.

James A. Gillis, F. H. Lee, H. F. G. Waters.

Lecture Committee.

James Kimball, George Perkins, Wm. Northey, Wm. Neilson.

Finance Committee.

J. C. Lee, R. S. Rogers, James Upton.

Field Meeting Committee.

A. W. Dodge, C. M. Tracy, E. N. Walton, Caleb Cooke, A. B. Hervey.

Library Committee.

J. G. Waters, Alpheus Crosby, H. M. Brooks.

Publication Committee.

A. C. Goodell, Jr., F. W. Putnam, R. S. Rantoul, H. M. Brooks.

Regular Meeting, Monday, May 15, 1871.

Mr. James Kimball in the chair, after the reading of the records and announcement of recent donations to the Historical departments and the Museum, the Secretary, Dr. A. H. Johnson, presented some

MEMENTOES FROM THE RECENT FRANCO-GERMAN WAR.

These were collected by the donor in the vicinity of Paris from the battle field of Mt. Avron, from Fort Rosny, and the grounds about St. Cloud. They included pieces of German bombs, a fragment of a gun carriage, and a portion of marble from the ruined Palace of St. Cloud. In his narrative of the circumstances under which these mementoes were obtained, the secretary stated that at the time the German troops made their triumphal entry into Paris, the French expressed their aversion to their conquerors with a childish sulkiness. The faces of the public statues were concealed with black veils. The shops and restaurants accessible to the Germans were closed. Some adventurous dealers who furnished food and drink to Prussian soldiers speedily found their gains cancelled by the demolition of their windows and counters. At night the streets were unlighted, not because there was no gas, but in order that the hated invaders might not see the magnificent city which lay at their mercy. It was an aggravating circumstance that the pale light of the moon revealed in some measure the magnificent buildings and Boulevards. By day, many of the Parisians avoided the quarters of the city occupied by the Germans, avoided even looking upon the marching columns of their foe, and shrunk in turn from being seen by them. The stranger from a neutral power enjoyed at this time unusual facilities for visiting localities which had acquired peculiar interest during the recent con-

flicts. If provided with a proper passport, he was allowed to cross the French lines, although not unchallenged, yet unmolested, and after a drive of a few hundred yards, would find himself in a district occupied almost exclusively by Germans. Hardly a villager belonging to the small villages outside the city walls, had ventured to remain by his property. The triumphant Germans were filled with content, and good nature, and cordially courteous to the few Americans who came to inspect the obstacles which had been overcome, and to learn the dangers German heroism had faced and survived.

It was owing to this condition of the troops, that a common travelling pass bearing the official seal and endorsement of the foreign department at Berlin, dated four days previous, secured for its bearer admission to forts Valerian and Rosny, and past German sentries to the heights of Mt. Avron.

With the exception of such relics of the late battles as the German troops had removed, the field of conflict seemed ungleaned. Although it was well known that terms of peace had been signed; during a day's ramble among the forts and over battle fields but a few miles outside Paris, not a Frenchman was met. Fragments of shell of which those exhibited were specimens, lay thickly strewn over the heights of Mt. Avron, and showed at a glance, how untenable the Germans, by their concentrated fire, had made this advanced position of the French.

The effect of the German fire upon Fort Rosny, one of the most severely bombarded of the works about Paris, showed the impracticability of large barracks in the interior of forts. For such buildings furnish an excellent mark for the enemy, and precarious shelter for troops. The large stone buildings in Rosny had been, as it were, eviscerated by exploding bombs, and converted

into heaps of ruins within bare stone enclosures, while the external walls of the forts seemed to have sustained no injury which could not be quickly repaired by night work.

On driving over to the grounds about the Palace of St. Cloud, it was surprising to find the ruins of the Palace so little frequented by curious visitors. Amid the ruins there were many things worth removal for curious keepsakes, and the ornaments about the Palace gardens broken by shot and shell offered many a tempting fragment to the visitor. It is not to be wondered at, that at a later day, foreigners visiting this unprotected property, should yield to the demoralizing influence of the surrounding ruin, and almost with the feeling that they were saving from oblivion some precious relics, bring away with them portions of broken statues, and even break portions from others already hopelessly disfigured, by the iron rain which had fallen about them.

With the mementoes above enumerated, Dr. Johnson also presented some specimens of the "Erbs wurst" or Pea-sausages, so largely used as rations by the Prussian army, and commemorated in the verses of Hans Breitmann when describing "Breitmann in Bivouac"—

> "He sits in bivouacke.
> By fire, peneat' de drees;
> A pottle of Champagner
> Held shently on his knees;
> His lange Uhlan lanze
> Stuck py him in de sand;
> *While a goot peas-poodin' sausage adorns his oder hand.*"

These sausages were invented by a German cook by the name of Grünberg who sixteen years ago furnished similar ones for a marine expedition to Japan. Since that time having improved his invention, Counsellor Engelhard at the beginning of the late war, recognized the importance of the production—tested it with the third army

Corps and the Guards, and soon contracted for one million of these sausages, assuring to the inventor a premium of thirty-five thousand thalers. Before the needs of the government were supplied, Engelhard's manufactory produced about *nine million pounds* of "Erbs wurst." They are made from ground peas and *fat* pork intimately mixed, and compressed into a large intestine. They are in size from five to eight inches long and three inches in diameter. A section three inches long from one of these cylindrical masses, when dissolved in boiling water, furnishes a hearty meal for one man, containing as it does a suitable proportion of vegetable and animal food.

These specimens presented to the Institute were given to the donor by Fraülein von Bismarck, a cousin of Prince Bismarck, who with self-denying patriotism imitated by many German ladies of noble family, had left her comfortable home to watch over the interests of the wounded soldiers at the hospital barracks at Berlin. There she took charge of the cooking department which was a pattern of system and cleanliness. From the stores she presented these specimens of condensed food, which are now, according to a pledge to her, deposited in the historical collections of the Institute.

The manufactory which furnished the "Erbs wurst" employed two thousand men at one time, produced one hundred and twenty thousand pounds of "Erbs wurst," and two hundred thousand pounds of other conserves, and worked over the flesh and bones of six thousand oxen.

The secretary presented also specimens of silver ore from the mines of Saxon Freiberg, giving at the same time an account of a descent into these mines.

F. W. Putnan gave a very clear and instructive description of the process of manufacturing type.

The PRESIDENT presented a map of Hawaii exhibiting the volcanic eruptions of 1822–1840–1852–1855–1859, and 1868, given to the Institute by Stephen H. Phillips, Esq.

The LIBRARIAN announced the following additions since the meeting of the 10th inst:

Donations.

BEAMAN, CHARLES C., Jr. The Alabama Claims. 1 vol. 8vo.

BUTLER, Hon. B. F., M. C. Porter's Speech in U. S. H. R., April 4, 1871. Butler's Speech in U. S. H. R., April 20, 1871. 8vo pamph.

CITY OF BOSTON. Boston City Documents for 1870. 3 vols. 8vo.

DEPARTMENT OF THE INTERIOR. U. S. Geological Survey of Wyoming and Contiguous Territories. 1870. 1 vol. 8vo.

FOOTE, CALEB. Files of several county papers for Feb., March and April, 1871.

GREEN, S. A., of Boston. Miscellaneous pamphlets, 14.

HYATT, A. Miscellaneous pamphlets, 25.

JOHNSON, SAMUEL. The Worship of Jesus. 12mo pamph.

PERKINS, GEO. A. The Spirit of Missions, 19 Nos. The Schoolmate, 4 Nos. History of the Worcester Family. 1 vol. 8vo. The Court and City Kalendar of London for 1766. 1 vol. 16mo. Farmer's Almanacs from 1804 to 1862 inclusive. Miscellaneous pamphlets, 13.

Exchanges.

BIBLIOTHÈQUE UNIVERSELLE ET REVUE SUISSE. Archives des Sciences Physiques et Naturelles. Nos. 156, '7, '8. 1870–71. 3 pamphlets, 8vo.

BOSTON PUBLIC LIBRARY. Bulletin for April, 1871.

IOWA STATE HISTORICAL SOCIETY. Legislative Documents for 1870, 2 vols. 8vo. Legislative Supplement, 1870, 1 vol. 4to. Laws of Iowa, 1870. 1 vol. 8vo. House Journal, 1870. 1 vol. 8vo. Iowa Insurance Reports, 1868, '69. 2 vols. 8vo. Iowa Agricultural Report, 1868. 1 vol. 8vo. Census of Iowa, 1869. 1 vol. 8vo. Geology of Iowa, 2 vols. 4to. Senate Journal, 1870. 1 vol. 8vo. The Annals of Iowa for April, 1871. 8vo pamph.

MASSACHUSETTS HISTORICAL SOCIETY. Collections of. Fourth Series, Vol. IX. 1 vol. 8vo.

NEW YORK STATE LIBRARY. Annual Report of the Trustees, 1871.

NEW YORK LYCEUM OF NATURAL HISTORY. Annals. Vol. IX. No. 13.

PUBLISHERS. American Literary Gazette. Christian World. Eclectic. Essex Banner. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Lawrence American. Little Giant. Lynn Reporter. Lynn Transcript. Nation. Nature. Medical and Surgical Reporter. Peabody Press. Salem Observer.

The SECRETARY announced the following correspondence:

Boston Society of Natural History, May 5; Iowa State Historical Society, May 4; Charles C. Beaman, Jr., New York, May 6; John T. Carter, Salem, May 15; A. L. Huntington, Beverly, May 14; A. Lackey, Haverhill, May 1; W. Neilson, Salem, May 12; J. Pearson, Schenectady, N. Y., May 4; Geo. H. Preble, Charlestown, May 1; A. A. Scott, Saugus, May 8.

Field Meeting at North Beverly, June 15.

THE RAMBLE.

The Institute, with her ripe experience in Field Meetings, was not to be allured, by the almanac announcement that spring was present, into rambles over fields doubtfully released from the dominion of winter—wet, cold, and showing only at wide intervals, the green of some venturesome plant pitifully striving for life; it might find its own predicament too exactly typified in some of the stunted plants, which, alternately cheered by days of sunshine and disheartened by nights of frost, seemed repressed and discomforted. Young enough to be enthusiastic, the Institute is now far enough removed from extreme youth to have her enthusiasm tempered by good judgment, therefore she selected a day in the middle of the first month of summer, to lead her disciples and friends for the first time this year, into fields well stored by nature with forms of life. But

> "The best laid schemes o'mice an' men
> Gang aft a-gley."

The morning which should have proved inviting, threatened to drench all who should venture from shelter, and these threatenings kept so many cautious persons at home, that not more than one hundred ladies and gentlemen presented themselves for the start.

The region selected for examination, was in North Beverly. To reach it, the excursionists from Salem took an early train at the Eastern Railroad depot. On dismounting, after a brief ride, Mr. Daniel Welch appeared and greatly lightened the cares, and added to the comfort of the party, by taking the provisions and all superfluous baggage to Mystic Hall, where in due time the collation was to be served.

The chief objects of interest in this locality are Wenham Lake and the Salem Water Works upon its shore. To these more permanent features, nature, but four days previous, had added the fortunately rare spectacle of the path of a tornado, clearly defined by uprooted trees, and houses demolished or twisted from their foundations.

Wenham Lake, by reason of the picturesqueness of its situation and the quiet beauty of its shore, has long allured innumerable visitors, who have widely spoken its praise. The selection of its waters to supply the city of Salem, and the consequent construction of the necessary reservoir and machinery upon its border, have greatly added to its local reputation. But the purity of its waters have long given it a *transatlantic* fame. About the streets of London, and other English cities, one frequently sees upon carts and signs, the words, "Wenham Lake Ice." Probably not one-half of the ice thus advertised, has really crossed the seas. We are suspicious that the genuine value of the word Wenham, prefixed to ice as indicative of excellence, has proved too great a temptation to dealers who would affix some superlative term to their productions.

The reservoir on Chipman's Hill, and the engine and pumping machinery, together with all the apparatus of the Salem Water Works, received the first attention of the Institute party. For here was not only one of those proofs of human power, which make one more pleasingly conscious of the possibilities of manhood, but enhancing the beauty of the machinery, more than the floral decorations, was the sense of partial ownership, which each citizen of Salem might rightly feel.

Capt. Daniel H. Johnson, the superintendent of the works, by his clear and patient description of their details, won the gratitude of the entire party.

A few of our number visiting the outlet of the lake, were fortunate in witnessing the passage of the dam by thousands of Alewives, on their way to the ocean. Mr. Putnam directed attention to a peculiar manœuvre of the fish, and stated that it was a habit of all species, to turn the head up stream and to pass over falls tail foremost. By this means they escape two dangers; one, that of strangulation, which might otherwise occur from the water coming violently in contact with the delicate membrane of their gills, the other that of fracture of their scales, the latter by no means a light injury, since the place of the broken scales soon becomes the site of a fungous disease which is quite generally fatal.

Other interesting localities were not neglected by our ramblers. Several old buildings and landmarks were duly inspected by those especially interested in antiquities; at half past one o'clock all repaired to the hall, where the collation stood in waiting and received due attention.

At 3 P. M. the meeting for discussions and reports was held in the church, and Hon. Allen W. Dodge, was invited to preside. Records of preceding meeting read.

The SECRETARY announced the following correspondence:

Boston Public Library, May 26; Buffalo Historical Society, May 22; Buffalo Society of Natural Sciences, May 31; New York Historical Society, May 20; New York Mercantile Library Association, May 23; New York State Library, May 30; Ohio Historical and Philosophical Society, May 25; Quebec Literary and Historical Society, May 30; Western Reserve and Northern Ohio Historical Society, June 12; William Clagston, Springfield, May 23; J. Colburn, Boston, June 8; E. H. Dalton, Taunton, June 2; Frank E. Hotchkiss, New Haven, May 19, June 2; Andrew W. Morgan, New York, May 24; Edwin Noyes, Waterville, Me., June 12; J. Prescott, Boston, June 8; M. A. Stickney, Salem, May 24; Westerman & Co., New York, May 26.

The LIBRARIAN reported the following additions:

By Donations.

ALLEN, J. F. Patent Office Reports, 1848 to 1851, 4 vols. 8vo. Report on Agricul-

ture, 1865 to 1868, 5 vols. 8vo. Christian Examiner, 95 Nos. Journal of Foreign Literature, 8 Nos. Boston Cultivator, 48 Nos. Christian Register, 53 Nos. Journal of the American Unitarian Association, 125 Nos.

ALMON, A. B. Miscellaneous pamphlets, 75.

BENSON, L. B. A Dissertation on Geometry. 12mo pamph.

BOARD OF PUBLIC CHARITIES OF PENNSYLVANIA. Report for 1870, 1 vol. 8vo.

BROOKS, C. T., of Newport, R. I. Roman Rhymes, 12mo. Cambridge, 1869.

CANADIAN GEOLOGICAL SURVEY. Geology of Canada, 1866 to 1869, 1 vol. 8vo.

CITY OF SALEM. City Documents, 1870-'71, 1 vol. 8vo.

CLEVELAND, Mrs. W. S. Miscellaneous volumes, 143. Columbian Sentinel, 37 Nos. Essex Register, 71 Nos. Miscellaneous pamphlets, 25.

ESSEX AGRICULTURAL SOCIETY. Transactions. 1870. 8vo.

GREEN, S. A., of Boston. Report of the Boston Provident Association, 1861-'67. 1 vol 8vo. Miscellaneous pamphlets, 13.

HEWES, JAMES T. Miscellaneous pamphlets, 21.

LEE, JOHN C. Commercial Bulletin for May, 1871.

MORSE, E. S. Miscellaneous pamphlets, 21.

NATIONAL ASSOCIATION OF WOOL MANUFACTURES. Bulletin, April, 1871.

PAINE, NATH'L, of Worcester. Worcester Directories for 1868-'69-'70, 3 vols. 8vo.

PUTNAM, Mrs. EBEN. Andrews against Universalism, 1 vol. 12mo. Dictionary of Self Knowledge, 1 vol. 8vo.

SUMNER, CHARLES, U. S. S. Report on Agriculture for March and April, 1871.

WALKER, FRANCIS. Notes on Chalcidiae, 12mo pamph., 1871.

WHEATLAND, STEPHEN G. American Law Register, 28 Nos. Miscellaneous pamphlets, 25.

Exchanges.

ARCHIV FÜR ANTHROPOLOGIE. Vierter Band, 4to. Braunschweig, 1871.

BIBLIOTHEQUE UNIVERSELLE ET REVUE SUISSE. Archives des Sciences Physiques et Naturelles, No. 159.

BOSTON SOCIETY OF NATURAL HISTORY. Proceedings, Vol. XIII, sigs. 26, 27, 28.

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BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 3. SALEM, MASS., JULY, 1871. NO. 7.

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

FIELD MEETING AT NORTH BEVERLY, JUNE 10th, 1871.

[*Continued.*]

TORNADO, OR CYCLONE, AT WENHAM.

MR. DODGE said, that since the appointment of the meeting, there had occurred in this immediate neighborhood, an event so rare in New England and of a character so fearful and destructive, he would make it the subject of his remarks. He alluded to the tornado or cyclone of the Sunday previous, which passed within a mile of his own residence, and the effects of which he had himself witnessed. The first we heard of it in this vicinity was just before five o'clock P. M., at or near Swan's crossing in Danvers, where it was seen by two men as they were riding by, to whom it had the appearance of a column of vapor and dust rushing past in a north easterly direction, but doing no damage. It was next seen by Daniel H. Johnson, the Superintendent of the Salem Water Works, whose duties called him that day to Wenham Lake. From him is the following graphic description.

"It was my good fortune last Sunday afternoon at a few

minutes past five to be at the ice houses, near the northerly side of the lake, and see the cyclone come towards me across the lake, pass by within two hundred feet, in its course of destruction through Wenham, Hamilton and Essex.

My party were awaiting a shower to pass over, and were standing in a sheltered spot admiring the beauties of the thick heavy black clouds, passing over our heads in an easterly direction while a lower stratum of air near the earth was moving in a north easterly direction as indicated by a vane on the ice houses. The clouds kept shutting in closer, it was growing darker and darker, the wind blowing a gale, when across the lake comes a water-spout, as I supposed, in the shape of a tin tunnel such as is used in filling bottles, the broad mouth being thousands of feet in diameter away up in the clouds, the small end but fifty to one hundred feet in diameter touching the water.

The water-spout in its passage across the lake was taking up water all the while; the wind increased in violence bringing a wave nearly three feet high along with it, which washed well up on to the road near where we were standing. A large dory anchored a short distance from us was lifted into the air, twisted around like a top and fell bottom upwards into the lake. We ran so as to be as near as possible, and were but two hundred feet distant, when it struck a gravel-bank and orchard just to the west of the highway which offered considerable resistance, when up go the gravel, large stones, rail fences, hundreds of feet into the air appearing like ribbons,—twisting trees right out of the ground by the roots, and branches fly in every direction. We watched it move on until in three or four minutes it was out of sight, when it strikes a plowed field — the tunnel being black with loam from the earth away into the clouds —

then strikes a barn while the timbers and boards fly in every direction.

Its course was a remarkably straight line a few points to the north of east. The whizzing noise of the cyclone was terrific, ten times louder than the hum of our cotton factory, and the whole scene was peculiarly grand, wild and fearful."

Mr. Dodge resumed his remarks:

Continuing its course over fields, hills and valleys, here and there uprooting trees, it struck upon the road that leads from Wenham Centre to the Neck, where it made sad havoc of an orchard belonging to Abraham Dodge, demolishing his barn, as also a barn of Simeon Dodge in which was a valuable horse that escaped harm as if by a miracle. Passing on with fearful speed, it was seen to uproot large trees and even to whirl them along in the air, to overturn stone wall removing portions of it to some distance. It next struck the house, barn and outbuildings on the farm occupied by Asa W. Trout, on the easterly spur of Brown's hill in Hamilton, and here it seems to have spent its fury. The roof was lifted from one side of the house and deposited in fragments on the ground and the windows were smashed in on the side most exposed. The barn was made a total wreck and the pieces strown in all directions, large oak timbers being carried to some distance. An orchard on the side of the hill consisting of a large number of stalwart trees that had defied the storms of nearly a century, were twisted up by the roots and their branches and leaves coated with dirt that had been caught up by the cyclone as it crossed a neighboring corn-field. Even a horse that was feeding near the barn, was taken up bodily and dropped in a field some ways off and has not got over the injuries caused by his involuntary jaunt in the air. Thence, the cyclone

took its course towards Chebacco pond, levelling some pine and other trees, till it reached Essex doing but slight damage there and so passed out to sea.

What is not a little remarkable, is the occurrence the same afternoon in the interior of the State of a similar or the same cyclone, of which the following account appears in the newspapers.

"A terrible tornado passed through the towns of Paxton, Holden and West Boylston, Sunday afternoon, demolishing every building in its track and tearing up trees by the roots. In the town of Paxton it demolished the barn of L. N. Parkhurst and blew off one gable of his dwelling house. From there it went in a northeasterly direction, and blew down the buildings of Mr. Bigelow, on the old town farm. Thence it went through the woods sweeping all before it and striking the house and barn of Lewis Martin, in Holden, entirely demolishing both. The village of Holden was next taken in its destructive march, and here five barns, three houses, and one carpenter shop were blown down. Three persons were injured, one, Charles Burrett seriously. A strip of heavy stone wall, some twenty rods in length, was completely blown over, and large trees were blown thirty rods, with upward of a ton of earth upon their roots. The tornado appeared to move at the rate of seven miles an hour and was not more than ten rods in width."

Mr. Dodge then stated that in his opinion these cyclones were one and the same, that at the interior being the beginning of that which ended at Essex, and for this opinion he gave the following reasons.

1st. The direction in which they passed was the same. By drawing a straight line on the large map of the State published by the Legislature a few years since, through Paxton, Holden and West Boylston, it would

also pass in a north easterly course through Swan's crossing over Wenham Lake, to Brown's hill and that part of Essex where the cyclone was last seen.

2d. The time of the occurrence of the cyclones was the same, allowing for the time it would take in its travelling between the two termini, at the rate of seven miles an hour, as it was estimated to have travelled, beginning at four and one half o'clock P. M. and finishing at a little past five o'clock of the same day.

3d. The width of the track — or in other words, the diameter of the cyclone — was the same in both cases from one hundred and fifty to one hundred and sixty feet; wherever there was any means of measuring the track, it varied but little from this width.

4th. As cyclones are of so rare occurrence in New England, it is more probable that this occurring not only on the same day but at nearly the same hour, moving in the same direction at the same rate of speed and of the same width, should be one and the same rather than that there should be two cyclones, separate and distinct in their origin and yet each combining all these elements.

But it may be said that if this be so, why was not its pathway across the country as distinctly marked as it was at both ends? To this it may be replied that the face of the cyclone may have been more or less intensified by circumstances or causes unknown to us, or the tunnel-shaped volume of vapor or other matter of which it was composed, may have been so drawn up at intervals as to do no damage. But it would be presumptuous for him to attempt a satisfactory solution of the question proposed, when the books that treat of the subject of cyclones, tornadoes, whirlwinds and other similar phenomena, leave the reader quite in the dark upon many points of enquiry.

The lines of demarcation between them seem to be somewhat confused. But the following points seem pretty clearly established.

Tornadoes over the sea are accompanied often with one or more complete water-spouts and over the land with partial water-spouts or with columns of dust. There is a close similarity of these phenomena. Tornadoes frequently burst forth upon the land suddenly, perhaps first on the side of a mountain and moving forward along a straight or curved track, with dark clouds moving towards the sea, while a breeze may be blowing in an opposite direction. They show their terrific force by overturning, uprooting, breaking or twisting off trees; by demolishing buildings or lifting these and other heavy bodies into the air to scatter their parts around at great distances, or sometimes to set them down again nearly unharmed; by lifting other objects, such as the beasts, persons, and sometimes even large cannon, and transporting them to considerable distances, destroying crops and farm improvements of all kinds in their course. As a rule the energy of the wind and the havoc it produces are greatest near the circumference of the whirl, and places over which at any moment its centre is situated may experience for the time an almost total lull of wind, to be renewed however in all its violence as the posterior margin of the whirl reaches them. This whirling motion is universal, and shows that the phenomena are in all cases associated with, or dependent on some form of whirling wind. Abundant facts prove that very heavy objects can thus be elevated and suspended for a considerable time before they are allowed to fall, though we are as yet unable to understand exactly in what manner so great a lifting power is exerted on those objects.

Hurricanes prevail more particularly, and with the

greatest fury in the torrid zone, always however at some distance from the equator, which they never touch or cross. In the polar regions they are unknown, but they occur occasionally in the temperate zones. In 1831, Wm. C. Redfield published in the "American Journal of Science" the first of a remarkable series of papers upon the phenomena of storms, in which he clearly established the fact that storms are progressive whirlwinds of a large diameter, and, what is remarkable, as is now well ascertained, those in the southern hemisphere rotate in an opposite direction from those in the northern, the former turning in whirls with the hands of a watch placed face upwards, the latter in the contrary direction to the movement of the hands of the watch. Mr Redfield subsequently suggested, what is now an accomplished fact, that the telegraph was likely to prove a most valuable instrument in giving notice of the approach of storms and hurricanes, and that to the United States it would prove more specially valuable when extended to the West India Islands.

From the accumulation and induction of facts in the domain of nature, are often deduced with absolute certainty the great laws — laws uniform and fixed — that control and regulate every department of that vast domain. The humblest observer and worker in our own Essex Institute — may her shadow never be less! — helps to this discovery by patient waiting and knocking for a response from the great mystery within, not growing weary or discouraged because it cometh not in a day, in a year, or in a series of years, but recording well ascertained facts for those who may afterwards take his place and so keeping up the line of waiters and watchers till the darkness flee away, and the bright light of morning gild the horizon.

Mr. F. W. Putnam was the next speaker. After a few remarks on the Cyclone and the track it had left, he alluded to the dust storms and the importance of collecting dust from such storms, when they occur, for microscopical observations, as the dust often contains, in abundance, interesting diatomes, etc., brought from a distance and from unknown localities. He then spoke of

THE FISHES COLLECTED IN THE LAKE.

There were two species of pickerel, two of sun fish, the perch, three of the shiner family, a sucker, the eel, the little darter, the horned pout and the alewife. The last was very abundant at the outlet as the water commissioners had kept the dam closed for a day in order that the members of the Institute should see the descent of the fish on their way to the sea. He then explained why it was that the fish all went over the dam tail first, as the water in the rapid current would otherwise be forced under the gill covers and destroy the delicate gills, while at the same time suffocating the fish, as the structure of the gills is adapted for allowing the water to be taken in at the mouth passing over the gills and out under the gill cover. It is owing to this fact that a fish, when quiet in the water, always keeps its head up stream if there is the slightest current, and the whole structure of the fish, including shape, scales and fins, is perfectly adapted to this purpose.

The alewives, which were now on their way to the sea, were all adult fishes that had entered the lake about the middle of May and had deposited their spawn along the shore. They were now returning to their winter quarters in deep water off our coast (for he did not believe that they migrated far south, as was generally supposed), and would return to the lake each season for the same

purpose, until their work and short lives were done. Young alewives, transparent little fellows about an inch in length, and not long hatched, were noticed swimming in small schools along the edge of the lake. These were the young from the eggs laid by the very fish that were now so anxious to return to the sea, and these young would follow in three or four months, when they would be about four inches in length, and they would return to the place of their birth, as full grown fish, in their third year.

The alewives are very prolific, each female laying about one quarter million of eggs, and though, possibly, not over one tenth of these eggs results in the production of full grown fishes, yet this tenth would give an immense number of young fish developed in such a body of water as Wenham Lake—say twenty-five million young for every thousand adult females that enter the lake. There was a time when the alewives must have swarmed into the lake by the hundreds of thousands, but their free run to and from the sea has been cut off by the erection of dams, the using of water and the excessive fisheries, to such an extent that now but comparatively few enter the lake, though, thanks to the noble work of our State Commissioners of Fisheries, in connection with the commissioners of the other New England States, the alewife with its cousin the shad, and the brilliant trout and silvery salmon, are fast becoming plenty in our rivers and lakes, and if the work of the commissioners continues to receive the well earned support of the people, and every one helps to enforce the laws providing for the free passage of fish over all our dams and preventing excessive fishing at the time of spawning, we shall have no cause of complaint about the want of good fishes and good fishing. For it is now well demonstrated that fishes can be made

a regular and as sound a source of income as stock raising and farming, and fish farming, as it has been called, now takes its place among the regular resources of our country and state.

Mr. James H. Emerton exhibited several specimens of native plants collected during the forenoon and made some remarks in relation to the same.

Dr. Henry Wheatland alluded briefly to some historical associations connected with this parish of Beverly, which was organized in 1714, and was for some years known as the "*Precinct of Salem and Beverly.*" The first minister,

REV. JOHN CHIPMAN,

son of Deacon Samuel Chipman of Barnstable, born Feb. 16, 1690–1, a graduate of Harvard College in the class of 1711, ordained over this parish, Dec. 28, 1715, and after a pastorate of nearly sixty years, the longest in Beverly, was gathered to his fathers, on the 23d of March, 1775, at the advanced age of eighty-five years. During this long period, nothing transpired to disturb the harmony that prevailed; he was faithful in the discharge of every duty incumbent upon his ministerial office: and was the honored and beloved pastor, who, on each returning sabbath, gave words of counsel, sympathy and wisdom to his people, who were wont to assemble within these venerable walls; uninterrupted prosperity followed, the church enlarged her borders, and the society flourished in all its interests.

A correspondent in the "Essex Gazette" says: —

"Beverly, March 29, 1775.

On Thursday last died, the Rev. John Chipman, in the 85th Year of his Age; and Yesterday was decently in-

terred. He was born at Barnstable, educated at Harvard College, and settled in the North Parish in this Town, Dec. 28, 1715, being their first Minister. It pleased the Father of Spirits to indue him with superior natural Powers, which he greatly improved, by a close Application to his studies, and making Divinity his principal Study. He was well qualified for the important Work to which he was called; and was a great Blessing in his Station. He had many Children: whom he educated and governed with great Wisdom and Prudence. His Family has been called a School of useful Knowledge and Virtue. And as he knew how to govern his own House, so he did also know how to take Care of the Church of God. The People of his Charge had happy Experience of his Ability in this Respect, while he presided over them; particularly when (some years past), this Country swarmed with itinerant Preachers and ignorant Exhorters, who threw these Churches in general into great Disorder and Confusion, propagated pernicious Errors, excited wild Enthusiasm, and promoted unchristian Divisions and Separations; by the Blessing of God on Mr. Chipman's wise Conduct, Peace and Order were preserved in his Parish, and solid, rational Religion flourished. As he was well furnished for the great Work of the Ministry, with Respect to the natural Powers of his Mind, his Knowledge and Learning, and Wisdom and Prudence, so he was also with Respect to Piety and serious Godliness. It pleased God, in his younger Years, to impress his Mind with a lively Sense of the important Things of Religion; and this he preserved through Life. By this he was excited to great Fidelity and Care in the Discharge of the Duties of his important Office. He watched for Souls, as knowing he must give Account, praying with and for his People with Fervency and Affection, and many Tears. It may perhaps be said, his Speech was contemptible, but this was said even of St. Paul, and yet he was not a whit behind the very chief of the Apostles, either for Abilities or Usefulness. His Preaching, in Imitation of that great Apostle's, was not with enticing Words of Man's Wisdom. He did not seek the Applause of Men, but the eternal

Welfare of immortal Souls: And he chose that Method of preaching which he thought would be most likely to answer this important End; and he was not deceived herein, for his preaching was attended with much Success. His People were highly favored of the Lord, in being directed to so able, faithful and successful a Minister, and in having him continued with them for such an unusual Length of Time; and it is hoped they remember it with Gratitude. He performed the Duties of his Office, with very little Intermission, almost 56 Years, when, being about 80 Years of Age, by the usual Infirmities of such an Age, and a distressing Asthma, he was taken off from his public Labours, and another Minister, the Rev. Mr. Hitchcock, settled as a Colleague with him; whom God preserve, and make a like Blessing to them. The four or five last Years of his Life he was almost entirely confined to his House, still honouring the Religion he professed and preached, by his Patience and cheerful Resignation to the Will of God under all his Sufferings. And when the Days that were assigned him here were finished, God gave him a very easy Passage into a better World. His Departure, it is said, seemed more like falling asleep than dying. May his numerous Offspring, and all that knew him, especially Ministers of the Gospel, follow the excellent Example he has left us. For blessed is that Servant whom his Lord, when he cometh, shall find so doing."

The house occupied by him on the road to the principal settlement in Beverly is still standing and is the residence of some of his descendants.

REV. ENOS HITCHCOCK.

The second minister was ordained as colleague in 1771 and the two pastors lived together in great mutual affection and harmony, the younger exerting himself for the interests of the people, spiritual and temporal, enjoying their esteem and acquiring the friendship of neighboring societies and ministers. Mr. Hitchcock was a native of Springfield, Mass., and a graduate of Harvard College in

1767. He warmly espoused the cause of his country, imbibing deeply the principles of the American Revolution, and, in 1777, entered the army as chaplain and continued until the close of the war. On the 1st of Oct., 1783, he was installed over the Benevolent Congregational Society in Providence, R. I., his connection with the church in Beverly having been amicably dissolved in 1780. Soon after he was elected into the Fellowship of Rhode Island College and for many years was one of its most enlightened and efficient directors. He was a good preacher, a learned divine, a man of active benevolence and deeply interested in the cause of popular education. He early turned his attention to the establishment of public schools for the instruction of the children of the poor, as well as those of the wealthy, visited these school frequently and made such suggestions as tended to aid the efforts of the teachers and at the same time to awaken the energies of the pupils. He also addressed parents and others on the importance of education and published several books that were replete with useful information on this subject and highly esteemed. He died at Providence. Feb. 27, 1803, in the fifty-ninth year of his age.

REV. DANIEL OLIVER

the third minister, ordained Oct. 3, 1787; the pulpit, since the retirement of Mr. Hitchcock, having been temporarily supplied by several persons. Mr. Oliver was the son of Nathaniel and Mercy (Wendell) Oliver, and father of Gen. H. K. Oliver of Salem. He was born at Chelsea, April 4, 1753, and graduated at Dartmouth College in 1785. He dissolved his connection with this church in August, 1797, and was for several years engaged as a missionary to the Indians in the Genesee River country and in the Eastern parts of Maine. He died at Rox-

bury, Mass., Sept. 14, 1840, aged eighty-seven years. For two or three years after the dismission of Mr. Oliver, the pulpit was again temporarily supplied by Messrs. Story, Alden, and Micah Stone, until the ordination of

REV. MOSES DOW

on the 18th of March, 1801, as the fourth minister. Mr. Dow was born in Atkinson, N. H., Feb. 4, 1771, and a graduate of Dartmouth College in the class of 1796. He retired from this pastoral office in April, 1813, with the highest testimonials of the council that granted his dismission as "an able, faithful, discreet and devoted minister of Jesus Christ." He was afterwards installed at York, Me., Nov. 9, 1815, and resigned the position, Feb. 17, 1830. He died at Plaistow, N. H., in 1837, aged sixty-six.

Rev. E. M. Stone, for many years a pastor of this church, the author of the history of Beverly and now the devoted and able minister at large in Providence, and others were mentioned.

Allusion was also made to Hugh Hill, the distinguished commander of one of the privateers from Beverly during the revolutionary war, whose country seat is within the limits of this parish, and where he resided from 1803 till his decease, which occurred Feb. 24, 1829. [See Hist. Coll. of Essex Institute, Vol. IV, page 181.]

Mr. Henry Wilson of Beverly, mentioned some interesting facts respecting the church in which the meeting was held, the frame of which was the identical one erected one hundred and fifty-five years ago, although the exterior and interior have both been considerably modified, in adaptation to the present wants of the community. In

1837 the parish adopted resolutions to remodel the house, this was accomplished in about five months, and on the first day of February, 1838, it was reopened with appropriate services.

Remarks were also made by Messrs. Timothy Ropes, E. N. Walton, E. W. Harrington, C. Cooke, and others; and after passing a vote of thanks to the proprietors of the Church and of Mystic Hall, and to all others who had extended courtesies to the party, the meeting adjourned to Friday afternoon, at the Institute rooms.

ADJOURNED MEETING, FRIDAY, JUNE 20, 1871.

In Plummer Hall, at 4 P. M.

Daniel H. Johnson and Edwin C. Bolles both of Salem were elected resident members.

Deficiencies in the Library.

It is intended from time to time, to publish lists of deficiencies in the Library, hoping that the friends of the Institute, who may notice the same, will be induced to aid in completing the sets. Any number or volume, not designated (within brackets) under any title, will be acceptable.

DEFICIENCIES IN DIRECTORIES.

(Continued from Vol. III. page 13.)

CAMDEN, N. J., by W. H. Boyd [1860].

ELIZABETH, N. J., by A. Boyd [1868-9].

ESSEX, HUDSON AND UNION COUNTIES, N. J., by W. H. Boyd [1859].

HOBOKEN, N. J., by Gavit [1851-5]; by Gopsill [1861-2].

HUDSON, N. J., by D. E. Gavit [1851-5]; by James Gopsill [1861-2].

JERSEY CITY, N. J., by D. E. Gavit [1851-5]; by James Gopsill [1858-9]; by James Gopsill, [1861-2].

PLAINFIELD, N. J., by A. Boyd [1868-9].

RAHWAY, N. J., by A. Boyd [1868-9].

NEWARK, N. J., by B. T. Pierson, [1835-6, 1836-7, 1837-8, 1838-9, 1839-40, 1840-1, 1841-2, 1842-3, 1843-4, 1844-5, 1845-6, 1846-7, 1847-8, 1848-9, 1849-50, 1850-1, 1851-2, 1052-3, 1853-4, 1854-5, 1855-6, 1856-7, 1857-8, 1858-9, 1859-60, 1860-1, 1861-2, 1862-3]; by C. H. Folwell [1863-4, 1864-5]; by James Gopsill [1865-6, 1867, 1868]; by A. S. Holbrook [1867-8, 1868-9]; Business Directory, by W. H. Boyd [1857-8, 1858-9].

PATERSON, N. J., by W. H. Boyd [1857, 1859].

TRENTON, N. J., by Clark, Moore & Runn [1851-5]; by W. H. Boyd [1857; 1859].

ALLENTOWN, PENN., by W. H. Boyd [1860].

ALLEGHANY, PENN., by Geo. H. Thurston [1868-9].

EASTON, PENN., by W. H. Boyd [1860].

ERIE, PENN., by J. H. Lant [1855-6].

HARRISBURG, PENN., by W. Divine [1867-8]; by W. H. Boyd [1860].

LANCASTER COUNTY, PENN., by W. H. Boyd [1859-60].

LEBANON, PENN., by W. H. Boyd [1860].

MEADVILLE, PENN., [1869-70].

PHILADELPHIA, PENN., by James Robinson [1807]; by B. & T. Kite [1811]; by J. A. Paxton, [1819]; by Edward Whitely [1829]; by M'Carty & Davis [1821]; by Robert Desilver [1824, 1828, 1835-6]; by A. M'Elroy [1837, 1839, 1840, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1854, 1855, 1856, 1857, 1858, 1859]; by S. E. Cohen [1860]; by M'Elroy [1860, 1861, 1862, 1864, 1865, 1866, 1867]; City and Business Directory, by James Gopsill [1868-9]; Business Directory by W. H. Boyd [1858].

PITTSBURG, PENN., by G. H. Thurston [1868-9].

POTTSVILLE, PENN., by W. H. Boyd [1860].

READING, PENN., by W. H. Boyd [1860].

WEST CHESTER, PENN., [1857-8].

DELAWARE STATE, by W. H. and A. Boyd [1859-60].

BALTIMORE, MD., by R. J. Matchett [1824, 1833, 1837-38]; by John Murphy, [1845]; by R. J. Matchett [1847-8, 1853-4]; by John W. Woods [1856-7] by W. H. Boyd [1858]; by John W. Woods [1864, 1865-6]; by Houston [1867].

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 3. Salem, Mass., August, 1871. No. 8.

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

Field Meeting at East Gloucester, Thursday, June 29th, 1871.

THE RAMBLE.

Coming from its first Field Meeting at Wenham Lake and its shores, to the ocean about Cape Ann, from the placid waters of an inland lake, surrounded by woods and fertile fields, to look upon the restless Atlantic, sending its waves against a rocky coast, the disciples of the Institute were subjected to a contrast whose influence even if unrecognized must have been beneficially felt. The morning threatening rain had suggested disappointment, so the reappearance of a clear sky added its exhilaration to the ramblers.

Of the two hundred and more who came from Salem and vicinity to participate in the day's search for instruction, all seemed more than usually interested in the natural features of the region visited.

From the rendezvous at the Baptist church the party proceeded in different directions on their explorations. Some accepting the courteous invitation of Thomas Niles, Esq., went to the inner side of the Point, visiting what

is known as Eastern Point Farm, the adjacent beach, and the light house, the beauty of the locality abundantly rewarding the pedestrian effort. Others passed over the ridge of the promontory to the seaward side, where rugged rocks echoing the beat of the waves, and surrounded by the foaming surf, contrasted sharply with the quiet wash of the waters upon the beach at the inner shore.

At this spot, known as "Bass Rocks," was much material to weave into entertaining fancies. The sheltered ledges formed here a cave worthy of, and naturally fitted with, some thrilling legend. The waves which broke at its entrance sounded as from some distant sea, hinting that concerning this cavern they had a tale to tell of events far remote in the past; there a marvellous passageway through solid granite, with irregular steps of trap rock from the water's edge to the summit of a granite boulder, suggested ascending and descending Indian braves, or smugglers bending beneath the weight of mysterious bundles, or more picturesque pirates with wild faces, untrimmed beards, and a small arsenal of horrifying weapons worn at their belts, each using at times this flight of natural steps as their ladder to fortune. If such events were realities instead of fancies, the name "trap" rock might have a moral as well as a mineralogical significance. At another point was a natural stone basin, whose picturesque interior, massive setting, grand surroundings, clear water, large number and variety of living occupants, constituted a royal aquarium — one of Neptune's adornments of the approaches to his territory. In most aquaria one thinks of the peril of the animals from the owner's lack of skill, or his negligence to keep the waters clear, or to observe the conditions of marine life. You fear lest the beautiful form of life you see to-

day, may mysteriously take on the repulsive appearance of death to-morrow. But here where twice each day the whole Atlantic lifts her waters, enfolds this nursling sea, washes its sides with sparkling water, and resupplies its wants with nourishing streams from her own bosom, one always expects to find vigorous life, refreshing to look upon. Nor is the expectation disappointed. Bright colored shells pave the floor of the basin with a rich mosaic. Sea anemones cover the roughness of the rocks with their base, unfold their soft tints, and wave their tufted crown of tentacles gracefully to and fro. Branching sea-sponges spring from the interstices of the rocks. The rays of the star-fish peep through the sea-plants, beneath whose growth lie many marine animals in partial concealment. Through the meshes of the weeds one can see the hermit-crabs dragging their second-hand houses across the miniature highways of this marine township, reminding one of the frequent migrations of the ancient buildings of Salem when they fall into the hands of speculators. Now and then a crab bustles actively across an open space, then disappears beneath a thick growth of confervæ, which he agitates by his continued movements, and makes you think that the concealed regions of this watery district must be even more densely populated than that which lies open to the sun.

The party spent much time in studying this beautiful assemblage of representatives of ocean's inhabitants which here in so rare a manner presented themselves for examination.

Some of the residents of East Gloucester whose means enabled them to give visible form to the ideas of beauty which such natural features must suggest, invited some of our party to visit their residences along the shore, where the combination of tastefully kept grounds about a coun-

try house both in keeping with the surrounding country, together with a magnificent sea-view, gave the visitors great pleasure.

The time for the ramble seemed too brief. The different sections of the party came tardily together for the collation, appointed at the church vestry at one o'clock. But the zest for active labor begotten by the morning's enjoyments enabled all to perform the duty of the hour.

The meeting was called to order at 2.30 P. M., the President in the chair.

Records of preceding meeting read.

The Secretary announced the following correspondence :—

From Frankfurt, a. M., Senckenbergische Naturforschende Gesellschaft, Dec., 31, 1870; New Brunswick Natural History Society, June 15; New York Lyceum of Natural History, June 26; Smithsonian Institution, June 22; Wien, K. K. Zool, Botan. Gesellschaft, Feb.; James S. Bryant, Hartford, Conn., June 15; W. H. Yeomans, Columbia, Conn., June 14.

The Librarian reported the following additions :—

By Donations.

Bryant, W. S., of Hartford, Conn. Hartford Directory, 1828. 1 vol. 16mo.

Clogston, Wm., of Springfield. Directories—Kingston and Rondout, 1869-70, 1 vol. 8vo. Utica, 1865, 1 vol. 8vo. Schenectady, 1865, 1 vol. 8vo. Rome, 1870, 1 vol. 8vo. Oswego, 1866-7, 1 vol. 8vo. Boonville, 1868, 1 vol. 12mo. Malone and Franklin County, 1868-9, 1 vol. 12mo. Lowville, 1867-8, 1 vol. 12mo. Carthage, 1867-8, 1 vol. 12mo. Rome and Oneida County, 1859-60, 1 vol. 12mo. Watertown, 1867-8, 1 vol. 12mo.

Folger, W. C., of Nantucket. Reports of the towns of Cohasset, Scituate and Marshfield for 1870-71. 8vo pamphlets.

Green, S. A., of Boston. Revised Gospel of St. Mark. 1 vol. 12mo. Miscellaneous pamphlets, 24.

Tucker., W. P. Diocese of California. 8vo pamphlets. 1871.

By Exchange.

Botanisk Tidsskrift Kjöbenhavn. Tidsskrift, Fjaerde Binds, Andet and Forste Haefte. 2 pamphlets, 8vo. 1871.

Kongelige Danske Videnskabernes Selskabs. Oversigt, 1870. No. II. 8vo pamph. Kjöbenhavn.

K. K. Zoologisch—Botanische Gesellschaft in Wein. Verhandlungen, Band XX. Heft 1-4 1870. 8vo pamphlets.

MASSACHUSETTS HISTORICAL SOCIETY. Collections. Vol. 1. Fifth Series, 1 vol. 8vo. Boston. 1871.

MERCANTILE LIBRARY ASSOCIATION, Boston. Fifty-first Annual Report. 8vo pamph. 1871.

NATURHISTORISCHE GESELLSCHAFT IN HANNOVER. Bwanzigfter, 4to pamph. 1869-70.

NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Register and Journal, July. 1871.

PEABODY INSTITUTE, Baltimore, Md. Fourth Annual Report of the Provost to the Trustees, June 1, 1871.

ROYAL SOCIETY OF TASMANIA. Monthly Notices of Papers and Proceedings for 1868-9.

SENCKENBERGESCHE NATURFORSCHENDE GESELLSCHAFT. Abhandlungen, Siebenter. Bd. 1869-70. 4to pamph. Bericht, June, 1869. June, 1870.

VEREIN ZUR VERBREITUNG NATURWISSENSCHAFTLICHER KENNTNISSE IN WIEN. Schriften, Vols. IX, X. 1868-70.

YEOMANS W. H., of Columbia, Conn. Report of the Connecticut Board of Agriculture for 1869. 1 vol. 8vo. Miscellaneous pamphlets, 37.

PUBLISHERS. Gloucester Telegraph. Haverhill Gazette. Land and Water. Lawrence American. Little Giant. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem Observer.

THE PRESIDENT referred briefly to the connection between Gloucester and Salem in their early history, and said that this town was of historical interest to many present, in the fact that the early settlers at Salem came first to Gloucester, and resided about two years before taking up the more permanent abode with which they became subsequently identified. He called upon Mr. George D. Phippen of Salem to speak upon

THE FLOWERS COLLECTED.

MR. PHIPPEN commenced by saying that he was reminded of a former officer of the Institute, who, when called upon to speak on an occasion similar to this, commenced his remarks with the familiar quotation, "What went ye out into the wilderness for to see?" While we may not designate this region by such an appellation, it is always our desire on occasions like this to visit the wildest locations of the neighborhood, in order that our collections may be the more rich and rare; even a "reed

shaken by the wind" becomes an agreeable sight to one coming from the dusty streets of the city.

The flowers upon the table, not collected by my own hand, suggest the shady coppice, as well as the rocky promontory, and the sandy shore. Among which are the arethusa, the dwarf laurel, the iris, the cranberry, the anagallis, the calestegia or wild morning glory, and many others which under specific names were assigned to their proper group in the natural arrangement, the only classification at this late day worthy of consideration. The most peculiar specimens presented were the full blown heads of the yellow thistle, Cirsium horridulum, new to most of the party, but not uncommon in many sandy localities near the sea. Notwithstanding its forbidding prickles, which gave rise to its specific name, several ladies present, impressed with its novel beauty, plucked large bunches of its showy blossoms with which to embellish their vases at home, hitherto filled with the more delicate products of the green house and flower border.

It is presumed to be generally understood that all the beautiful plants of our gardens and conservatories were once wild, — the cultivated offspring of ruder and more simple types; our own country meanwhile furnishing to other nations many an exotic of rare worth and beauty, and quite as highly prized as any of theirs are to us.

This splendid array of ornamental plants now so accessible, and with which many of our gardens are richly stocked, is the result of many long years of cultivation, with changes and mutations induced or retained by the hand of man, and generally at the expense of what may be called the integrity of the plant, that is, more or less to the sacrifice of its vital and generative forces. Many plants with such an origin, though extremely ornamental

or useful to us, are most carefully propagated by cuttings, and are in fact but the assiduous multiplication or rather prolongation of the same individual life, which is not the case with plants of a more primitive type, that consequently are freely propagated by their own prolific seed.

This we understand to be one phase of the high mission of man while a denizen upon the earth, to exercise the noble privilege of subduing all things unto the best wishes and purposes of his race, having this promise ever before us taught by science as well by our sublime religion, that by seeking we shall find, by knocking it shall be opened unto us; a sure reward sooner or later always repaying the patient investigator.

It therefore becomes not irreverent to declare that in a certain sense and in a delegated manner man is a creator, calling into being forms that without his aid might never exist.

The grains and edible roots so indispensible to man and the lower animals are so few as to be "almost counted upon the fingers" but in their varieties are almost endless; while many of them in a primitive wild state can no longer be found upon the earth. Much the same is it with the fruits proper, and while this has been so long true, there still remains unknown and unappropriated hundreds of plants capable of yielding both food and ornamentation, that still remain in the wilds of the earth just as they came from the great Creator's hand, simple and undeveloped.

When we allude to the plants of the garden and greenhouse, how few of the large number do we find well understood in their possible modifications and whose manifest changes scarcely ever weary us. If this developed few in their numerous varieties were taken from their places on the shelves and in the borders, our gardens would be bare indeed.

The botanist and the florist, though sometimes combined in the same individual, possess severally elements of knowledge and taste of great divergency, the former always looking with jealousy upon the labors of the latter; knowing well that the doubling of flowers and the variegation of the foliage of plants are accidents or innovations more or less destructive to plant vitality and the purity of the species.

The tendency of reversion to primitive types is so well understood that no florist can keep a fine selection of rarities without the most careful destruction of *rogues* among his plants, and the most diligent *strain* of his seeds. Upon a cessation of this care these varieties fall back year by year with considerable rapidity to their primitive species or type.

In our day, varieties seem to be almost manufactured to order, be the caprice of the market what it may. Who has not been surprised as well as delighted by the rapid increase of plants of different genera and species, adorned with particolored foliage, some of which, like the zonale geraniums, taking on hues like the rainbow, and vieing even the plumage of birds. The rapidity and seeming spontaneity of these changes must to the ordinary observer be puzzling indeed.

Though we have claimed these as the product of the hand of man, it is more nearly like retaining the angel till he blesses us, rather than calling him from the skies.

It is not uncommon to find similar accidental forms even among wild plants in their native abodes, as we can bear witness, having found double mountain laurel, striped cardinal flower, yellow columbine, quilled whiteweed, linear petaled œnothera, double saxifrage and many others not readily called to memory.

Albinos and stripes among the green spray of the natu-

ral foliage often occur, which might be retained and made permanent by bud grafting. From such accidents as these it is, that the florist moulds his novelties, being careful to intensify the derivation by grafting, by slipping, or by seeding the plant and watching its offspring.

Much might be said of the numerous hybrids that may be produced by a judicious crossing of near affinities, and pressing each novel tendency till it becomes intensified and fixed by breeding, requiring perhaps several generations.

Deviations are much more likely to occur among plants under cultivation than those in a natural state.

The readiest change for a plant to make is in the color of its blossom, otherwise plants vary chiefly in the direction of their prominent peculiarity, or that of prospective usefulness; selection, both natural and applied, tending to the same end. With the edible roots, we may expect improvement in that direction, with fruits, in their enlargement and the luscious quality of their flesh, with flowers, in the multiplication of their petals, or in changes of their hues. Neither the fairest apple nor the richest pear has yet been attained; and the most fragrant rose and most gorgeous lily are still in reserve for the gratification of the taste of man.

When we remember the almost endless changes that a few years since were produced from the simple scarlet eight-petaled dahlia of Mexico, or with the kingly robes of the lily and tulip, with multiplications of the rose, the peony, the fuchsia, the petunia, the verbena, etc., we are apt to feel in their abundance, that the climax has been achieved; but to all whose taste seeks continued gratification we may say with confidence, and that without treading upon ground appropriated by Darwin or hastening to his conclusions, that there is absolutely no end to the de-

velopment and mutability of all that is excellent for food or gratifying to our taste of the beautiful, among the vast array of the species that compose the Vegetable Kingdom.

Mr. James H. Emerton of Salem spoke of the insects collected in the morning's ramble, among them some specimens of the lace winged fly (*Chrysopa*) and its eggs, which had been found attached to grass leaves from a field near the shore, each egg raised upon a hair-like stem. The young larvæ of this fly and the structure of their mouths, by which they are enabled to suck the juices of insects without eating the solid parts, were described, with illustrations on the black-board.

He then passed around among the audience some sixty spiders and several cocoons of spider's eggs, which had been collected in the morning, and made some remarks on them, and the growth of spiders in the egg.

Rev. J. H. Gannett of East Gloucester alluded to the appearance of this village as he saw it from the deck of a vessel in the harbor some twenty-four years since, and gave a very interesting sketch of its growth, and of the church in which this meeting was held.

HISTORY OF THE BAPTIST CHURCH IN EAST GLOUCESTER.

The first Baptist meeting of which there is any recollection in East Gloucester, was held about thirty years ago, the Rev. William Lamson, pastor of the Baptist church in the town of Gloucester, and now pastor of the Baptist church in the town of Brookline, Mass., preaching to a very few persons in a small building used for a school house.

From this date it appears that they continued to hold

meetings from time to time, convening with the various families and members who worshipped on the Sabbath with Bro. Lamson's church.

East Gloucester at this time was very sparsely settled, but as business increased, dwelling houses were rapidly erected, stores were opened, school houses were built. The friends of Zion feeling called upon to make an organized effort for the moral and spiritual good of their growing village, a union sewing circle was formed; but it being ascertained that the prevailing sentiment was Baptist, it was decided to erect a chapel.

In the year 1858 a small building was erected 50 feet by 36. It was dedicated the fall of the same year, the sermon being preached by William Lamson, D. D., text, Joshua, v : 15.

Previously (in 1855) there had been a small Sabbath school organized in the village and held in the hall of the engine house, and also one on what is known as Rocky Neck. This school met in the house of Bro. David Smith, and was under the charge of Sister Susan E. Wonson.

As soon as the chapel was dedicated and opened for meeting, these schools were transferred to this place and given in charge to Bro. Geo. Parsons, who is still the superintendent.

At first the people were supplied with preaching by different persons occupying the desk. In 1858 Father Lisle was invited to become their preacher (we cannot say pastor, for this enterprise was nothing more than a branch interest—a mission of the first Baptist church.)

In 1861 Bro. Cheever of Manchester was invited to assist Bro. Lisle in a series of meetings. A powerful reformation followed, but there being no church organization most of the converts joined other churches.

Father Lisle left, and in the spring of 1863 the society

invited the Rev. Andrew Dunn to supply the desk. In July of the same year (63) a council was convened to consider the propriety of organizing a church (an independent society). After a satisfactory examination a church was constituted, composed of fifty-six members. Two deacons were chosen, viz.: Brethren Geo. Parsons and Herbert Stanley who still serve the church. Bro. Dunn stayed with them as their pastor for four years, then resigned.

The infant church in the spring of 1867 sent to the Theological Institute at Newton, for a candidate, whereupon a young man by the name of J. H. Gannett was sent them, to whom the church and society extended a call to the pastorate. He accepted, and entered the work August 1st, 1867, receiving ordination the 22d of the same month, Rev. G. Cole of Weymouth preaching the sermon.

The church for years had been in a low condition, and was still, the Sabbath school few in numbers, sadly in want of efficient teachers, and entirely destitute of library books. During the following winter (1867–68) one hundred dollars expended in books supplied the school with a good library. This seemed to be the only movement manifested for the better — the meeting continuing dull, the preaching powerless. Our village had increased in population and now numbered about 1500, and it seemed expedient to have a larger place for worship.

The building was raised ten feet, lengthened about twenty-five, a vestry was finished under the entire length, and a spire of seventy-five feet added. Eighty pews were placed in the auditorium, the settees being moved into the vestry below. The entire expense was about $5,000. About $3,000 of it was raised, leaving the society in debt $2,000; the following year $1,000 of this

was paid and the remaining $1,000 now stands as a debt against the society. On the 3d of Feb., 1869, the house was dedicated to the service of Almighty God, William Lamson D. D., of Brookline, preaching the sermon. Text "The tree is known by his fruit."

The pews were rented to pay the necessary running expenses (all monies being formerly raised by subscriptions) and instead of $500 or $600, as in previous years, the rentals amounted to $1,600. The congregation was very much increased, and the whole enterprise received a stimulus.

In January, 1870, a series of meetings were commenced, Bro. Needham, the Irish Evangelist, preaching a few times — which resulted in a powerful awakening. The large vestry was filled to overflowing, night after night — souls were constantly inquiring "what shall I do to be saved?" — others were rejoicing in a newly found Redeemer.

This interest lasted till late in the spring, when the pastor had the joyful privilege of leading into the baptismal waters seventy-four happy converts — ten others were received by letter and experience.

The present number is one hundred and forty-eight. The church has two deacons. Only two pastors have ministered at her altar, Bro. Dunn and the present incumbent.

The ladies of this society have assisted very largely in the support of this enterprise. They have furnished the house throughout, besides placing a good organ in the orchestra.

Our village now numbers 2,100, and we need a still larger house for worship. May the Lord furnish one in his own good time. The church will be nine years old July 13th, 1872.

Mr. Gannett also spoke of the geology of the Cape, and expressed the hope that if there were any present interested in that direction they would open these hard leaflets and read the tables written there by the hand of God. We have on Massachusetts' southern shore a long, sandy beach called Cape Cod, and here on the other side of the bay is a rocky cape. The southern shore is changed by the waves, but these rocks for years have remained the same.

The President stated that the geology of this county was a problem not yet satisfactorily solved. The attention of Prof. T. Sterry Hunt of the Canadian survey and other geologists has been directed to this subject, and these gentlemen will give it a careful consideration. Prof. A. Hyatt, a member of the Institute, is collecting materials for a report on this subject. At a meeting of the Institute, a few weeks since, he exhibited a beautifully executed map of Marblehead Neck, and gave the results of his observations in that locality and its immediate vicinity. It is intended to continue these observations each successive season, until the whole county has been examined; thus we may expect, ere the lapse of many years, to have the materials for the long desired report on the geology of the county ready for the press, with correct maps illustrating the same.

THE STUDY OF THE LOWER FORMS OF LIFE.

Concerning the plate containing sixty varieties of spiders, captured and commented upon by Mr. James H. Emerton, Dr. A. H. Johnson remarked, that as it had passed from hand to hand through the audience for inspection, possibly the thought had arisen, that to catch and study these little animals is frivolous business — amusing,

perhaps—but hardly profitable. To meet this idea the speaker said that many are unaware that it is through laborious study of the organism and development of the lower animals, that data are obtained to interpret the more complex organization of the human system. Facts obtained by such study, as another has said, "furnish the alphabet which we must learn in order to read the more intricate compositions of nature."

Thus, the human lungs present to the eye a very intricate structure, difficult to explain. But the simpler lungs of the frog, or the transparent lungs of the turtle, show at a glance the general plan upon which the respiratory organs of the higher animals are formed, viz.:—that of a sack or pouch, divided by partitions into numerous chambers or cells, upon whose walls the minute blood vessels form a mesh work, while these cells, by means of a system of tubes, are open to the external air, which they can alternately receive and discharge.

So concerning the circulation of the blood through the capillaries, the transparent web of the frog's foot under the microscope has furnished demonstrations and taught lessons which one might seek in vain in the human system.

One of the lowest forms of animal life is the microscopic amœba, an animal which appears like a mere structureless drop of jelly. Yet it has been seen to assume a great variety of forms by alternate expansions and contractions, to fold itself around and to take into its cavity other animalcules or portions of plants, parts of which it consumed, and other parts rejected as indigestible. Curiously enough, the white corpuscles of the human blood have been seen to imitate the amœba so closely that they have been named amœboid cells. They were first studied by being removed from the circulation, and placed

under the microscope in an artificial serum, while the ordinary animal temperature was preserved as well as possible. But the mesentery of the frog has been found to furnish the best opportunity to watch their movements, and revealed very novel and startling facts concerning their behavior. Here they have been seen to take granular pigment, purposely injected into the veins, into the interior of their bodies, and after bearing it to a greater or less distance through the circulation, to again eject it. Or they have been seen to pass through minute apertures in the capillaries bearing the pigment with them into the surrounding tissues. Owing to these free movements they have been called wandering cells. They suggest an explanation of the agency by means of which diseased action in one portion of the system is sometimes transferred to remote portions of the human frame. It would be impossible to ascertain these facts from an examination of the opaque tissues of the body. Yet they are of immense practical importance. Hence it is a philanthropic work to study the tissues of the smaller animals by means of which such information is obtained.

It has been recently suggested that the Society for the Prevention of Cruelty to Animals should make exertions to put an end to physiological experiments upon the lower animals. Such action will be deprecated by all who would act for the prevention of cruelty to men. For such experiments are still necessary to furnish the knowledge requisite to proper action for the relief of human suffering.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 3. Salem, Mass., September, 1871. No. 9.

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

Field Meeting at East Gloucester, Thursday, June 29th, 1871.

[*Continued.*]

Rev. Mr. Bolles of Salem said he supposed all had heard of ministers who went to church, leaving their sermons at home, and had to send for them, sometimes getting the last Sunday's sermon from the messenger. In the same way he had lost his text, and a boy of sixty years who volunteered to go for it had not returned. In other words he had left his box of specimens upon a rock near the ice houses.

Mr. Bolles spoke of two specimens of considerable importance. He had found near the water side two specimens of a land shell, one of the largest in Massachusetts, about the size of a walnut, of a yellow color, banded by about six or eight bands of dark brown. Their interest does not lie in their color or size, but depends upon the fact that this is an English shell, supposed by some to

have been transported upon this coast from the gardens of England. It is called the

HELIX HORTENSIS OR GARDEN SNAIL.

In England, the species is a very brilliant shell, the varieties of banded ones (bright yellow on brown, or brown on yellow), being much more numerous than plain brown or yellow shells. But in the eastern part of this country the land mollusks have shells which are mostly uniform in color and somewhat dull—brown being the prevailing hue. And these specimens of the garden snail which we find here are mostly of a uniform yellow —the banded ones being scarce and when found not very bright in color.

The question is, how did these shells come upon the American coast? We might say that they came over from Europe in the Mayflower or subsequent vessels. As so many trace their ancestry, we might say that three brothers of them came over a great many years since and settled here, and all these snails were derived from that stock. But this theory is upset by the fact that these shells are found upon islands far out to sea, uninhabited and seldom visited. We cannot suppose the hand of man placed them there. Upon the coast of Maine, eight miles out from land, nearly off Harpswell, is an island,—we call it an island by courtesy, although it is very small, the sea side but a mass of rocks, and the inside a gentle slope with a few stunted cedar trees and a profusion of the plants of the wild morning glory. Turn over almost any shelving stone and you will find the nest of the stormy petrel. There we find immense quantities of these shells, which you may gather by the quart. The island is almost unapproachable. The day I landed I had to employ a boatman to keep the boat off the rocks by rowing while I explored the island. On that little strip no man planted

these shells, and yet you will scarcely find a spot in Maine yielding a richer harvest to the conchologist.

Helix albolabris, *Helix alternata* with its curious albino variety, two of the three species of *Succinea* in Maine, many species of the minuter *Helices* with *Zua* and various *Pupidæ* literally cover, in places, the ground and the rank stems of the weeds which luxuriate in the guano-enriched soil. Could the *Helix hortensis* have been imported from the gardens of England to mingle with these native shells?

LIMNÆA COLUMELLA.

The second point of interest we found was a deposit of fresh water shells at the pond on the top of the hill. Bodies of fresh water in this country exhibit a large number of shells, several of the genus called Limnæa. The kind frequenting this pond is the Limnæa columella, a shell which does not exceed one-half inch in length, and is often much smaller. While exploring the shores of the pond we saw what seemed to be a deposit of seeds, but on stopping to examine it we found it to be a complete mass of very minute shells. There was not one that was one-eighth of an inch long. They seemed like little yellow grains of glass. I never saw such immense quantities of them as you may find along the margin of that pond. You might gather millions of them. Every stick and rock was covered with them. There they lie, millions of them, dried up upon the margin of that water. We could not get a single specimen that was grown up. They reach their highest state of development early in the spring, and after leaving their eggs, the business of their life being concluded, they die. We found a number of dead adult shells there. Thus this mollusk follows the law of progress. Having fulfilled its function it leaves the rising generation to carry on the work. I never

tire of looking upon the pictures and legends we have written upon the created things of this world. One brother spoke of the lessons written upon the rocks. Every other thing in nature is a similar page written in divine love. Upon every fibre of animal life, every grain and seed. every leaf, and everything we can see and understand, the same mystery of life is written. There is an invisible, infinite world, whose wonders our eyes may sometime be sharp enough to observe.

Rev. Richard Eddy of Gloucester being called upon, said that he had a very great affection for the old time people of Salem for the good care which they took of and the sympathy they extended to the founder of his native state, Rhode Island. While the gentleman was speaking of the fact that in some sense it is given us to be creators, I wondered if you had been favored with the sight of some of the albums and scrap books which the ladies of this place have made so beautifully from sea flowers which they gather here.

After brief remarks from Messrs. William B. Trask, of Boston, E. N. Walton, of Salem and James Davis of Gloucester, the following resolution was unanimously adopted.

Resolved, That the thanks of the Essex Institute be extended to the proprietors of this church, to Rev. J. H. Gannett, Messrs. Thomas Niles, Herbert Stanley, J. Warren Wonson, Leander McFarland, George Parsons, Mrs. Mary Wonson, Mrs. Julia Daniels, Mrs. Gannett and all others who have contributed to render this meeting at East Gloucester so agreeable and profitable.

Adjourned :—

Meeting near "Ship Rock" in Peabody, Wednesday, August 2, 1871.

THE RAMBLE.

Contiguous to the northwestern boundary of Salem is a considerable territory lying within the townships of Lynn, Peabody, and Lynnfield, sparsely inhabited, diversified in surface, and largely covered with a good growth of forest trees, varieties of the pine and of the oak predominating, though specimens of the maples, ashes, walnuts, elms, birches, etc., are found. Numerous boulders, varying in size and position, are scattered around, giving evidence of having been brought during the glacial period. A careful examination of them, together with the other rocks in situ, is worthy the consideration of the geologists.

The southeastern portion of this region, formerly known by the name of "The Rocks," recently by the more euphonious one of "Rockville," was selected for the ramble this day. A small chapel near by, in part sustained as a mission chapel by the First church in Peabody, was kindly tendered to the Institute as the place of rendezvous and for the afternoon session.

This region is a favorite resort to the student of nature and the lover of the picturesque. To them the varied surface and diversity of soil furnish specimens to investigate and views of great beauty to study and admire. A scramble up some of the hillsides among the lichen covered rocks, the gnarled trunks and the twining vines, is well repaid by an extensive prospect, comprising the surrounding country dotted with villages and isolated farm buildings, and the distant ocean whitened with the sails of numerous vessels and occasionally darkened by the cloud of smoke from a passing steamer.

Among these hills are many secluded recesses and shady nooks, the homes of some of our choicest floral gems—here the botanist and zoologist can each find specimens of interest in their respective lines of investigation.

To the older members of the Institute this locality has a peculiar interest. The late Dr. Andrew Nichols, one of the founders and the first president of the Natural History Society, and a zealous student of nature, was wont to ramble over these hills and dales, in quest of his favorite objects for study and investigation, and became very conversant with the many curious and interesting forms there found. He contributed largely to the success of the early field meetings, pointing out interesting localities during the ramble, and communicating freely the results of his observations at the afternoon session. No object was too insignificant to his finely cultivated eye, no fact too small to escape in its meaning and instruction his noble and loving heart, but with a true and humble faith he saw beneficence and wisdom in them all. He passed away on the 31st of March, 1853, as the little Draba verna, a plant which he detected many years previous in this vicinity, on some rocks moistened by the later snows of spring, was opening its tiny petals to another vernal season.

The party from Salem left that place in a special train at 9 A. M. Soon after arrival, being reinforced by members and friends from other towns, they divided into several groups. Some spent the forenoon in wandering about the fields and among the pine groves in the midst of which "Ship Rock" is situated, some went to the vicinity of Bartholomew's Pond and were successful in collecting many choice specimens in botany and zoology, whilst others took different directions as inclination prompted.

The land in the region of which Bartholomew's pond may be considered as the centre, comprising some two or three hundred acres more or less, and extending from Brown's Pond on the old Lynn road to the Lynnfield road, combines many attractive features for a *Public Park*. It seems desirable that measures should soon be adopted to secure this land for this purpose. Cannot the citizens of Lynn, Peabody and Salem, individually or in their corporate capacity, make a movement in this direction. Nature has already done much—a comparatively small expenditure only will be required to render it one of the most attractive places of resort by the citizens of these several municipalities.

It may be appropriate in this connection to allude to another subject of a similar import. In Salem and the vicinity, comprising a circuit of some ten or fifteen miles, are large tracts of pasture and woodlands, over which the waves of an increasing population are gradually rolling. If this movement should continue in the corresponding ratio of the past twenty-five or thirty years, only a short time will elapse ere this whole area will be occupied by residences or for strictly private purposes. Would it not be well to have portions of this land in different localities secured, as opportunity may offer, to be appropriated, when required, for public use?

At noon several little picnic parties were scattered among the trees, enjoying the contents of their baskets; while the main body gathered at the chapel and there partook of the collation spread in the shade of the building.

The afternoon session was called to order at 3 o'clock, the President, Henry Wheatland, in the chair. In the absence of the Secretary, Wm. P. Upham was requested to act.

Records of preceding meeting read.

The SECRETARY announced the following correspondence: —

From Buffalo Historical Society, July 5; Chicago Academy of Sciences, May 26; Maryland Historical Society, July 11; Munich R. B. Akademie der Wissenschaften, Feb.; New England Historic-Genealogical Society, June 28; Tasmania Royal Society, Dec. 8, 1870; John Akhurst, Brooklyn, New York, July 21, 26; N. E. Atwood, Provincetown, July 17; S. C. Bancroft, Salem, Aug. 1; Edwin C. Bell, Titusville, Penn., July 31; George B. Blodgette, Rowley, June 30; James P. Boyce, Lynn, July 18; John Ward Dean, Boston, July 7; H. W. Dutton, Boston, July 5; B. Groce, Peabody, July 19; T. Sterry Hunt, Montreal, June 28; E. H. Knight, Salem, July 21; John W. Porter, Salem, July 15; R. S. Rantoul, Boston, July 10, Aug. 1; W. E. Rogers, Paris, Tenn., June 30; E. A. Smith, Boston, July 7; C. M. Tracy, Lynn, Aug. 1.

The LIBRARIAN reported the following additions: —

By Donations.

U. S. OFFICE OF THE CHIEF OF ENGINEERS. U. S. Geological Exploration Vol. III. 1870, 1 vol. 4to. Atlas, 1 vol. folio.

NEW YORK CHAMBER OF COMMERCE. Annual Report. 1870–1, 1 vol. 8vo.

BOLLES, E. C. Brooklyn City Directories, 1866-7, 1868-9, 1869-70. 3 vols. 8vo. Cincinnati Directory, 1856, 1 vol. 8vo. Syracuse City Directories, 1862, 1864-5 1866-7. 3 vols. 8vo. Miscellaneous pamphlets, 38.

BUSWELL, E., A Chain of Scripture, 1 vol. 12mo. London. 1659.

CLOGSTON, WM., of Springfield, Mass. Meadville Directory, 1869-70, 1 vol. 8vo. Steubenville Directory, 1856-7, 1 vol. 8vo. Lockport Directory, 1867-8, 1 vol. 8vo. Steubenville, Wellsville, East Liverpool and Wellsburgh Directory, 1870-1, 1 vol. 8vo.

EDDY, HARRIET. Miscellaneous pamphlets, 7.

GREEN, S. A., of Boston. Cambridge Directories, 1857, 1866, 2 vols. 8vo. Cornwell's Geography, 1 vol. 12mo. Butler's Grammar, 1 vol. 12mo. Miscellaneous pamphlets, 5.

HALE, HENRY. Atlas of Massachusetts, 1 vol. Folio. 1871.

LEE, JOHN C. Commercial Bulletin for July, 1871.

MORSE, Mrs. E. S. Constitutional Telegraph for 1802, 1 vol. Folio.

PERKINS, JONATHAN C., Eclectic Magazine. 27 vols. 8vo. Edinburgh Review, 1 vol. 8vo. The New World, 2 vols. 4to. Transactions of the Essex Agricultural Society, 11 nos. London Quarterly Review, 9 nos. North American Review, 6 nos. Miscellaneous pamphlets, 230. Massachusetts Documents, 1844-5-6-7-8.

SAWYER, F. A., U. S. Senator. Congressional Globe, parts 2, 4, 6. 3 vols. 4to. 1869-70. Appendix to part 7, 1 vol., 4to. Land Office Report, 1869, 1 vol. 8vo. Report on Education, 1870, 1 vol. 8vo.

SILSBEE, Mrs. B. H. The Classical Library, 5 vols. 16mo. Domestic Verses, 1 vol. 12mo. Acton, 1 vol. 12mo. Colman's Poems, 1 vol. 12mo. The Huguenots, 2 vols. 12mo. Smith's Poems, 1 vol. 12mo. Margaret, 1 vol. 8vo. Edith, or the Light of Home, 1 vol. 8vo. Boston Almanacs, 7 vols. 16mo. Cowper's Poems, 1 vol. 12mo. Priestley's Discourse, 1 vol. 8vo. Priestley's Lectures, 2 vols. 8vo. Moore's Universal Geography, 2 vols. 8vo. Hadad, 1 vol. 12mo. Blair's Sermons, 5 vols. 8vo. Akenside's Poems, 1 vol. 8vo. Johnson's Dictionary, 1 vol. 8vo. Man on History, 1 vol. 12mo. Night Thoughts, 1 vol. 12mo. Oberon, 2 vols. 16mo. Locke's Essays, 3 vols. 12mo. Mathilde, 6 vols. 12mo. Aikin's Let-

ters, 1 vol. 12mo. Historie Romaine, 2 vols. 16mo. Book of Ferns, 1 vol. 4to. Atlas of United States, 1 vol. 4to. Miscellaneous pamphlets, 16.

STICKNEY, MATTHEW A., Railroad Reports, 16 nos.

UPHAM, J. BAXTER, of Boston, Mass. Report of the School Committee of Boston for 1870, 1 vol. 8vo.

WALTON, E. N. Report of the School Committee of Rockport for 1871. 8vo pamph. Minutes of the Salem Baptist Association, held in Beverly, June 6, 1871. 8vo pamph.

WARD, Mrs. JAMES. Evenings at Home. 1 vol. 12mo. Scott's Kian Life. 1 vol. 12mo. Miscellaneous pamphlets, 13.

WHEATLAND, E. Life of Christ. 1 vol. 4to. Combe on Constitution of Man. 1 vol. 8vo. Letters to Mothers. 1 vol. 12mo. Self Instructor. 1 vol. 12mo. Memoirs of Josephine. 1 vol. 16mo. Brackenbridge on South America. 1 vol. 8vo. Barnaby Rudge. 1 vol. 8vo. Life of John Smith. 1 vol. 16mo. Ruth Hall. 1 vol. 12mo. A Blind Man's Offering. 1 vol. 12mo. How to be a Lady. 1 vol. 16mo. Scientific American, 234 nos. National Portrait Gallery, 30 nos. Journal of the American Unitarian Association, 27 nos.

WHEATLAND, M. G. Atlantic Monthly. 7 nos. Galaxy. 12 nos. Old and New 13 nos. Miscellaneous pamphlets, 86.

YOUNG MEN'S CHRISTIAN ASSOCIATION, Worcester, Mass. Annual Report. 1871. 8vo pamph.

Exchanges.

AMERICAN ANTIQUARIAN SOCIETY, Worcester, Mass. Proceedings. No. 56. 8vo pamph. 1871.

AMERICAN CONGREGATIONAL ASSOCIATION, Boston, Mass. Annual Report, May 30, 1871. 8vo pamph.

AMERICAN ENTOMOLOGICAL SOCIETY. Transactions of. Vol. III, No. II. 8vo pamph. 1870.

BLACKMORE MUSEUM, Salisbury, England. Flint Chips by E. T. Stevens. 1 vol. 8vo.

BRONSON LIBRARY, Waterbury, Conn. Annual Report for 1870-1. 12mo pamph.

CHICAGO HISTORICAL SOCIETY. Constitution and By-Laws. 8vo pamph. 1871. Report of Trade and Commerce of Chicago. 8vo pamph. 1871.

NATURFORSCHENDER VEREIN IN RIGA. Correspondenzblatt, 18 Jahrg. 1870. Denkschrift, 27 März, 1870.

NEW YORK LYCEUM OF NATURAL HISTORY. Annals, Vol. X. Feb.-March. 8vo pamph.

PHILADELPHIA ACADEMY OF NATURAL SCIENCES. Proceedings of. Part I. Jan., Feb., March. 1871. 8vo pamph.

PUBLISHERS. American Literary Gazette. American Naturalist. Christian World. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Advance. Land and Water. Lawrence American. Little Giant. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Salem Observer. Sailor's Magazine and Seaman's Friend. Silliman's Journal.

The PRESIDENT, in his opening remarks, said that the last meeting of the Institute in this place was held on Thursday, Aug. 15, 1864, and that our late worthy associate, Rev. Stillman Barden, of Rockport, was present,

occupied the chair, and gave an interesting geological account of "Ship Rock and its Surroundings." This was the last meeting of the Institute which our friend attended. His health, not good at that time, soon began to fail more rapidly, and after a lingering illness of several months, he died on the 7th of August, 1865, at the age of fifty-three. He was a devoted pastor, a kind friend, and an active member of the Institute. He had given considerable attention to geological pursuits, and during his residence of a few years in Rockport, was, if necessary assiduous in making collections of the minerals of that locality, and had just entered upon a series of observations and research that would have resulted in extending largely our knowledge of the geology of the region, when summoned to his final rest. A biographical and obituary sketch prepared by Rev. Mrs. P. A. Hanaford has been printed in the 7th volume of the Historical Collections.

It is meet that the Institute should occasionally visit its property, the famous boulder known as "Ship Rock," and hold a meeting in some convenient place near by. This boulder came into the possession of the Institute through the instrumentality of the late Dr. Andrew Nichols, in November, 1847, who was desirous that the society should be the owner and guardian of this interesting and valuable specimen. The late Mr. Pickering Dodge of Salem obtained by subscription among several of his friends the requisite funds to purchase the rock and adjacent land and to make some improvements, including an iron ladder to aid in ascending to the summit, from which an extensive view is obtained. This purchase was made of Caleb Osborne, who obtained the property of Amos Trask, Jr., June 27, 1831, being part of the distributive share in the real estate of his father, Joseph

Trask, of Danvers, who died in 1813. This property had undoubtedly been in the possession of the Trask family for two or three generations. It would be an interesting subject for the antiquarian to trace back the ownership to the original grantee and also ascertain the origin of the name "*Ship Rock*," and the various traditions respecting the same. Some of these are more or less fanciful. The President stated that among the recent donations to the Society was a photograph, from Mr. W. B. Trask of Boston, of the old Trask house on Boston Street, Salem, that was built by one of his ancestors about 1680.

INDIAN RELICS FROM BEVERLY.

Mr. F. W. Putnam exhibited a small but very interesting collection of stone relics found in Indian graves in Beverly in July last, and presented to the Peabody Academy of Science by John Lovett of Beverly, and Messrs. David Moore, John Felt, C. Cooke and himself.

These relics were of great interest, as their authenticity as coming from graves was beyond question, Mr. Putnam having taken some of them from the graves himself, and having been shown the exact spot where the others were found. The only regret is that the relics from the three graves were mixed together so that the collection has to be spoken of as coming from three graves without being able to designate the particular article from each, except that one of the graves contained two pipes, a second, one pipe, while the third did not contain any. The three pipes were of soapstone, of the same general size, character and shape, consisting of a flat base about four and one-half inches in length, narrowing at each end, and about two inches in width at the central and widest portion under the bowl. This base was perforated by the hole for the passage of smoke from the bowl to the mouth

of the smoker, the base of the pipe thus answering for a stem. The hole was about one-eighth of an inch in diameter, and was evidently bored to the bowl before the thin base of not over a quarter of an inch in average thickness was finished off, as a small ridge was left over the hole along the upper edge of the stem portion. About the bowl are several holes through the flat portion, probably used for fastening the pipe to a wooden holder or for the attachment of ornaments. The bowl is smaller at its base than at its top, and largest in the centre where the diameter is one and one-half inches. The height of the bowl is two and one-half inches, with a slight rim at its edge. This description answers to the two pipes exhibited, and the third, which did not fall into the possession of the Academy, was said to be of the same shape and size. One of the pipes has two lines cut round the upper portion of the bowl, and the bottom of the base is nearly covered with transverse, longitudinal and cross lines. In one of the graves was found a small piece of smooth sandstone about two and a half inches long by three-quarters of an inch in width and one-eighth of an inch in thickness, on which were several markings, which may have a meaning, but at present all that can be said is that they consist of two or three lines sweeping from the left upper corner to the bottom and then up to the right upper corner, with two lines drawn across the surface about a quarter of an inch apart, connected by eight cross lines, making such a picture as a child would draw to represent a ladder, and at the side of this are two lines coming together at the top, as a child would draw a tent, and two other semicircular lines are crossed by several smaller ones. The opposite surface of this stone is not finished as smoothly as the one having the markings.

The other relics consisted of one well made spear

point, one partially made arrow point, two "skin dressers" and three narrow, flat stones smoothly finished and with a hole bored through one end. The smallest of these stones is about twice as long as wide, and has a blunt but sharpened edge. The other two are about half as long again as the short one and are square edged, and are also distinguished from the small one by the presence of notches on the end where the hole is. One of them is of a fine sandstone and was evidently used for the purpose of sharpening other implements on.

There were also three flat pieces of sandstone well worn and grooved by serving as sharpening stones, and also another smooth oval stone.

Besides these stone implements and the pipes, there were several quite large pieces of mica found in the graves, and several of the implements, as well as the earth taken from the bottom of the grave, are colored quite red, evidently by red ochre being put in the graves.

The only remains of the skeletons consisted of a small portion of the skull found in one of the graves, and the enamel of one molar tooth. All else had been reduced to dust. The graves were on the top of a large gravel hill and had been scooped out, and after the body had been put in the grave had been filled in with the surface soil and not with the gravel taken out, as was distinctly seen, as these graves were reached not by digging down from the top but by coming on them from the side in digging away the hill, thus exposing them in section. A detailed description of these relics, accompanied by figures, will be given in the sixth volume of the *American Naturalist.*

Mr. James H. Emerton exhibited a large collection of plants that had been made during the forenoon rambles,

representatives from the different localities visited, and specified among others several species of water plants which were very interesting to the audience—thus the (Bladderwort) *Utricularia inflata* with its leaves bearing little bladders filled with air that float the plant at the time of flowering, hence its name. The *Limnanthemum lacunosum*, so called from the situation where it grows, the *Nuphar advena*, and the favorite water lily of our ponds, *Nymphea odorata*. He described two species of native orchis, *Platanthera psycodes*, and *lacera* for the purpose of showing the method of fertilization by the help of insects; first in spiranthes, and afterwards in other specimens of the orchis family, particularly the ragged orchis (Platanthera lacera). In the orchis the stamens and pistils are united into one organ, the stamens being above the pistils. In spiranthes a modified stigma, projects between the true stigma and the stamen. As the pollen ripens, it projects from the stamen and attaches itself to the viscid surface of this modified stigma. When an insect enters the flower, this viscid stigma becomes detached and adheres to it, so that the insect carries it away and the pollen with it. On entering another flower the insect pushes the pollen against its stigma, and thus it ensures the fertilization of one flower by the pollen of another. In other orchids, the same result is obtained in different ways.

Mr. William B. Trask, of Boston, being called upon by the President, made a few remarks in regard to the old "Trask House," 158 Boston street, Salem, which was photographed in June last, and a copy of it presented to the Institute. This house was built, it is supposed, about the year 1680, by William, eldest son of Capt. William Trask. It was occupied by him and his family,

and used in part, for many years, according to tradition, as a public house, under the cognomen of the "Black Horse Tavern." Mr. Felt, in his "Annals of Salem," informs us that in the year 1690, Wm. Trask was recommended as an innkeeper. Six generations of his descendants were born, have lived and died there. Isaac Bullock, who deceased Dec. 30, 1870, in the 71st year of his age, was the last of the descendants of Capt. Wm. Trask, who drew their first breath within the walls of this old mansion. Mr. B., in one of his illustrated books that he has left behind him, showing his refined taste and great genius, gives a colored view of the old house, his home. He remarks that it was used as a tavern from 1690 until about 1740, which would be a period of about fifty years. A part of the ancient bar remains in the lower western room. The house of the father, Capt. Wm., is mentioned in his will of 1666, written a few days before his death. This house is supposed to have been about one hundred feet in the rear of the present edifice. The original well dug by the "old planter" as early it may have been as 1627–8, nearly two and a half centuries ago, is still used. It is quite deep. The water is superlatively good, and the supply abundant. It is said to have been in the front yard of the former house; it is in the rear of the present one.

It will be remembered by those conversant with the early history of Salem that Capt. Trask was an important personage in the town and colony, in a civil and military capacity. He was a particular friend and companion of Governor Endicott, but came to this country before him, probably with Roger Conant. From a document extant in the Massachusetts archives, we learn that in 1648-9, Wm. Trask exchanged two hundred and fifty acres of land with the Governor for five hundred apple trees of three

years' growth. His orchard was just back of the old burial place, where a number of his descendants are interred. In his will before referred to, he especially appoints that his wife Sarah "shall have some of the fruit of the orchard for her own use and a little spot for a garden if shee desires it during the time of her life." We have been told, on good authority, that a portion of the remains of Capt. Trask's mill, behind the homestead, on the Harmony Grove side of the river, was visible in the early part of the present century.

Mr. Trask said that he had been highly gratified with his visit to the "Old Ship Rock" to-day, and was glad to think that this boulder, which, with the land adjoining, was formerly in his family, had come into the possession of the Institute, where it would be so well taken care of and preserved. Had this massive granite rock been found in the neighborhood of his own residence, he thought it not unlikely that before this time that boulder of many tons' weight would have been blasted and converted into stones for underpinnings and for cellar walls.

Mr. F. W. Putnam mentioned another singular erratic known by the name of "*Phæton Rock*" which is said to possess more interest geologically than Ship Rock, and expressed the desire that measures should be taken to have the same purchased by the Institute.

After remarks from several members, this subject was, on motion of Mr. W. P. Upham, referred to a committee, to consider and report.

After the transaction of some unimportant business, and the passage of a vote of thanks to the proprietors for the use of the chapel and to other parties who have extended favors—the meeting adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

Vol. 3. Salem, Mass., October, 1871. No. 10.

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

Meeting near "Ship Rock" in Peabody, Wednesday, August 2, 1871.

[*Continued.*]

WIGWAM ROCK.

This communication from Mr. Jones Very on "*Wigwam Rock*," received since the Rockville meeting, is here inserted as an appendix to the report of that meeting.

Dear Sir:—I wish to correct a statement of mine in the first number of the second volume of the Historical Collections. I there stated "that Wigwam Rock was probably the same as now called Ship Rock." A recent ramble in that vicinity has convinced me that it is not.

Samuel Very's farm was much farther to the west of Ship Rock. It was bounded on the west by Cedar Pond. A cart road runs northeastward from this pond through the woods to a public road, known on the old maps as Putney's road, running from Lowell Street to Newburyport turnpike. Following this cart road from the pond, about a sixth of a mile, I found a large rock, half as large as Ship Rock, making a corner boundary stone of two

old stone walls, covered with lichens, and having every appearance of having been built two hundred years ago. This I believe to be the Wigwam Rock mentioned in the deeds of Edmond Butler and Richard Way. The first, in 1652, is as follows: — "Edmond Butler, Salem, sold to Richard Way, for twenty pounds, fourteen acres of upland, lying next Thomas Goldthwait's land on the north; and ten acres lying on the south and a little below Wigwam Rock; and a piece of land running down to the river." 1st Book, p. 15. The deed of Richard Way to Samuel Very, 1656, runs thus: — "And one acre of land which sometime was Edmond Butler's, where the house of Philip Verren, deceased, formerly stood; and a parcel of land containing about one acre and a half, exchanged with the town, on the south side of the brook near the farm; and also fourteen acres of ground, or thereabouts, bounded with a parcel of ground of Thomas Goldthwait's on the marsh; and the ten acres on the east and to the south, a little below a rock, known by the name of Wigwam Rock; and to the northeast on Thomas Antrim, with a small strip of land running down to the river to the south, containing about two roods; to have and to hold." 1st Book, p. 74.

The ten acre lot described in these deeds was probably that lying to the east and south of this corner boundary stone. The land slopes off from this stone, and on the other side of the cart road makes a steep descent of fifty or sixty feet. Thus the words "a little below" would correspond. It is a suitable place, too, for an Indian camp, as my friend, the farmer, thought. Local tradition is silent. There are a number of other very large boulders, some as large as Ship Rock, a little to the left as you follow this road; but none so likely to be Wigwam Rock as the one I have described. — JONES VERY.

Special Meeting, Tuesday, September 5, 1871.

HON. OTIS P. LORD'S MEMORIAL ADDRESS ON ASAHEL HUNTINGTON.

The meeting was called to order by the President at 7.30 P. M., with the following remarks.

Members and Friends of the Essex Institute:—We are assembled this evening to pay a tribute of respect to the memory of one who has been, for many years, a prominent citizen in this community. His pleasing and cordial greetings in our streets and the usual places of resort will be long remembered. He had been called by his fellow citizens to occupy several places of honor and trust, and always discharged the duties incumbent thereon to the satisfaction of his constituency. He always took a lively interest in the various institutions of this city, having for their objects the promotion of religion, benevolence, literary or general culture, especially in this institution, which for four successive years (1861—1865) elected him to its presidency.

It is therefore appropriate that we should assemble, on this the first anniversary of his decease, to listen to the reading of a memoir of his life and character, prepared at our request by the Hon. Otis P. Lord.

Mr. Lord had long been one of his most intimate and cherished friends, and his acceptance of this duty merits our warmest thanks. Allow me to introduce to you Mr. Lord.

Mr. Lord then delivered his memorial address, which was listened to with intense interest and was a faithful and correct delineation of Mr. Huntington's character.* At its conclusion

* This memoir is printed in the 11th volume of the *Historical Collections* of the Institute.

Hon. Allen W. Dodge alluded briefly and in fitting terms to the just and beautiful tribute to the memory of our deceased friend which Mr. Lord had presented this evening, and after narrating some reminiscences of the early life of Mr. Huntington, especially when a law student and residing in Newburyport, on his motion it was

Voted, That the thanks of the Essex Institute be presented to the Hon. Judge Lord for his memorial discourse on the late Asahel Huntington, so rich and accurate in its facts, so felicitous and touching in its portrayal of his character, and that he be requested to furnish a copy for publication in the Transactions of the Institute.

Regular Meeting, Monday, October 16, 1871.

The meeting was called to order by the President at 7.30 P. M.

Records of preceding meeting read.

The Secretary announced the following correspondence :—

From U. S. Department of Agriculture, Aug. 10, 14, 24, 30; American Antiquarian Society, Sept. 19; Bergen Museum, June 30, July 27; Boston Public Library, Sept. 14; Buffalo Historical Society, Aug. 16, Sept. 14; Leeds Philosophical and Literary Society, Aug. 24; London Society of Antiquaries, Aug. 26; Massachusetts Historical Society, Sept. 14; Minnesota Historical Society, Oct. 10; Moravian Historical Society, Sept. 18; Mount Holyoke Seminary, Oct. 12; New York Genealogical and Biographical Society, Oct. 11; Ohio Historical and Philosophical Society, Sept. 28; Pennsylvania Historical Society, Aug. 28; Washington Young Men's Christian Association, Aug. 3, 10; Yale College, Corporation of, Sept. 21; C. A. Baker, Cambridge, Aug. 6; George F. Browning, Salem, Aug. 11; D. A. Chever, Denver, C. T., Sept. 24, 29; Henry Cook, Boston, Sept. 8, 12; J. H. Gannett, East Gloucester, Sept. 19; P. A. Hanaford, New Haven, Sept. 8; James W. Harris, Cambridge, Sept. 22; Daniel H. Johnson, Salem, Aug. 30; Noyes, Holmes & Co., Boston, Aug. 18, Sept. 16, Oct. 6; Jonathan Pierce, Boston, Aug. 12; T. Prime, Rowley, Sept. 8; B. T. Reed, Boston, July 29; J. Hammond Trumbull, Hartford, Sept. 11.

The Librarian reported the following additions : —

By Donation.

Atwood, E. S. The Scotsman, Aug. 4, 7, 8, 1871. Edinburgh Daily Review, Aug. 5, 1871. Scott's Centenary, Aug. 15, 1871.

BAKER, CONRAD, of Indianapolis, Ind. Reports of the Adjutant General of Indiana, 8 vols. 8vo.

BEMIS, LUKE, West Chester, Pa. West Chester Directory, 1857-8, 1 vol. 8vo.

BOLLES, E. C. Catalogus Collegii Sanctissmæ Trinitatis, 1871. 8vo pamph.

BROWN, AMMI. Boston Directories, 1853, 4, 6, 7, 8. 5 vols. 8vo. Patent Office Reports, 1853, 1856. 2 vols. 8vo. Catalogue of Boston Public Library, 1854. 1 vol. 8vo. Light from the Spirit World. 1 vol. 12mo. Boston Almanacs, 1857, 1865. 2 vols. 16mo. Miscellaneous pamphlets, 207.

BYRKIT, J. W., of Indianapolis, Ind. Indianapolis Directories, 1858-9, 1865, 6, 8, 9, 1870. 6 vols. 8vo. Amended Charter and Revised Ordinance of Indianapolis. 1 vol. 8vo. 1859.

CABOT, JOSEPH S. Monographie des Melastomacées, 1 vol. folio, Londres, 1833. Plantarum Icones, 1 vol. folio, Londini, 1789. Nicholson's Encyclopedia, 12 vols. 8vo. Domestic Encyclopedia, 3 vols. 8vo. Say's Political Economy, 1 vol. 8vo. Young Mechanic, 1 vol. 8vo. Abrege Du Dictionnaire De L Académie Francoise, 2 vols. 8vo. Historical Collections of United States, 2 vols. 4to. Universal Dictionary, 1 vol. 4to. Italien Dictionaire, 1 vol. 4to.

CLOGSTON, WM., of Springfield, Mass. Springfield Directories, 1854-5, 1866-7, 1867-8, 1868-9, 1869-70. 5 vols. 12mo. Haverhill and Bradford, 1859, 1 vol. 8vo. Northampton, 1868-9, 1 vol. 12mo. Norwich, 1860, 1 vol. 12mo.

CONSTANT, G., of Smyrna. Armeniau Service Book. 1 vol. 16mo.

COX, E. T., of Indianapolis, Ind. First Annual Report of the Geological Survey of Indiana, 1869. 8vo pamph. Maps and Colored Section referred to in the Report of State Geologist. 1869. 2 vols. 8vo.

DEVEREUX, G. H. Tides. New Theory by D. K. Chase. 8vo pamph. Boston, 1871.

EMERTON, J. H. Indianapolis Journal, Aug. 28, 29, 30, 31. Sept. 1, 2.

GOULD —— of Topsfield. Baltimore Directory for 1824, 1 vol. 12mo. Johnson's Dictionary, 1 vol. 8vo. Miscellaneous pamphlets, 4.

HOLMES, THOMAS, of Merom, Ind. Catalogues of Officers and Students of Union Christian College for 1864-5, 1865-6, 1866-7, 1867-8, 1869, 1870, 1871, 6 pamphlets, 8vo. Rules and Regulations of U. C. College, 8vo pamph. Course of Study in U. C. College, 1860. 8vo pamph. Constitution and By-Laws of U. C. College, 1859, 8vo pamph.

INDIANAPOLIS STATE BOARD OF AGRICUTURE. Transactions of the Agricultural Society of Indiana, 1853, 1 vol. 8vo. Agricultural and Geological Reports, 1869, 1 vol. 8vo. Agricultural Reports, 1854-5, 1870. 2 vols. 8vo.

JOHNSON, SAM'L. Martin's Philosophy, 1 vol. 8vo. Pike's Arithmetic, 1 vol. 8vo. Laporte's Exercises, 1 vol. 8vo. Ferguson's Astronomy, 1 vol. 8vo. Spanish Grammar, 1 vol. 8vo. Kreb's Latin, 1 vol. 12mo. Morse's Universal Geography, 1 vol. 8vo. Jacob's Latin Reader, 1 vol. 12mo. Arnold's Greek Exercises, 1 vol. 12mo. Emerson's Arithmetic, 1 vol. 12mo. Parker's Philosophy, 1 vol. 12mo. Russell's Elocutionist, 1 vol. 12mo. Fowle's Speller, 1 vol. 12mo. Smith's Arithmetic, 1 vol. 16mo. Worcester's Geography, 1 vol. 16mo. Emerson's Arithmetic, 1 vol. 16mo. Bullion's Grammar, 1 vol. 12mo. Latin Tutor, 1 vol. 12mo. Paley's History, 1 vol. 16mo. Dwyer on Elocution, 1 vol. 12mo. Colburn's Arithmetic, 1 vol. 12mo. Tower's Reader, 1 vol. 12mo. Parker's English Composition, 1. vol. 12mo. Bugard's French Translator, 1 vol. 12mo. Miscellaneous pamphlets, 30.

LEE, JOHN C. Commercial Bulletin, Sept., 1871.

LEVETTE, G. M., of Indianapolis, Ind. Transactions of the Indiana State Horticultural Society, 1867, 1869, 1870, 1871. 4 vols. 8vo.

MASON, LEVANT L., of Jamestown, N. Y. Soldier's National Cemetery at Gettysburg, Pa., 1863, 1 vol. 8vo. Directory of the Oil Regions, 1 vol. 8vo.

MILTON PUBLIC LIBRARY. Catalogue for 1871. 1 vol. 8vo.

MORSE, E. S. Indian Almanac for 1864.

NICHOLS, W. F., Armenian Almanac, 1871. Collections of Monuments of the National Museum. 4 vols., 4to. Naples, 1870.

PACKARD, A. S. Report on the University of the State of Missouri, June 28, 1871. 8vo pamph.

PALFREY, C. W., Steam Engineering by James Stewart, 1 vol. 12mo. Miscellaneous pamphlets and serials, 361.

PICKERING, JOHN, Miscellaneous pamphlets, 57.

RAUCH, JOHN H., of Chicago, Ill. Report of the Board of Health of Chicago for 1867, 8, 9. 8vo pamph.

U. S. DEPARTMENT OF INTERIOR. Ninth Census of the U. S. Statistics of Population, Advance Sheets, 4to pamph.

WARD, MRS. JAMES, Blunt's Coast Pilot, 1 vol. 8vo. Cooper's Tactics, 1 vol. 12mo. Log Books, 7 vols. folio.

WATERS, J. LINTON, of Chicago, Ill. Report of the Chicago and North Western Railway Company. 8vo pamph. 1871. Miscellaneous pamphlets, 10.

WILLARD, JOHN H., of Troy, N. Y. Catalogue of Troy Female Seminary for 1871, 8vo pamph.

By Exchange.

AMERICAN PHILOSOPHICAL SOCIETY OF PHILA. Proceedings, Jan. to July, 1871, No. 86. 8vo pamph.

BERGENSKE MUSEUM IN BERGEN. Indftillinger fra Bergens Formandlkab for 1867, 8, 9, 70, 4 vols. 8vo. Forhandlinger, 1869-70. 2 pamphlets, 8vo. Smaakvede ar Henrik Krohn, 12mo pamph. Bergenseren eller nogle Ord of det Bergenske Folkesprag, 12mo pamph. Gierftad Grand, 12mo pamph. Miscellaneous pamphlets, 13.

BIBLIOTHEQUE UNIVERSELLE ET REVUE SUISSE. Archives des Sciences physiques et Naturelles. Nos. 160, 161, 162, 163. 4 pamph. Genève, Lausanne, Paris, 1871.

BOSTON PUBLIC LIBRARY. Nineteenth Annual Report. 1871, 8vo pamph. Bulletin for July, 1871.

BOSTON SOCIETY OF NATURAL HISTORY. Memoirs, Vol. II. Part. I, No. II. 4to pamph.

CINCINNATI PUBLIC LIBRARY. Fourth Annual Report, June, 1871, 8vo pamph. Catalogue for 1871. 1 vol. 8vo.

GEORGIA HISTORICAL SOCIETY. Wilde's Summer Rose; or the Lament of the Captive, by Anthony Barclay, Esq. 12mo pamph.

GESELLSCHAFT NATURFORSCHENDER FREUNDE IN BERLIN. Sitzungs-Berichte, Jahre. 1870. 8vo pamph.

IOWA STATE HISTORICAL SOCIETY. Annals, July, 1871. 8vo pamph. Davenport, 1871.

NATURWISSENSCHAFTLICHEN VEREINE IN BREMER. Abhandlungen, Bd. II. Heft. III. 1871. 8vo pamph.

SOCIETÉ IMPÈRIALE DES NATURALISTES DE MOSCOW. Bulletin, 1870. No. 2. 8vo pamph.

VEREINES ZUR BEFORDERUNG DES GARTENBAUES, IN BERLIN. Wochenschrift, Jahrg. xiii. Nos. 1-52. 1870.

VERMONT HISTORICAL SOCIETY. Collections, Vol. II. 1 vol. 8vo. 1871.

VERMONT STATE LIBRARY. General Statute of Vermont, 1862, 1 vol. 4to. Vermont, 1862. 1 vol. 4to. Vermont Legislative Documents, 1870-1. 1 vol. 8vo. House Journal, 1870. 1 vol. 8vo. Senate Journal, 1870. 1 vol. 8vo. Laws of Vermont, 1870. 1 vol. 8vo.

YALE COLLEGE LIBRARY. Report of the Sheffield Scientific School, 1870-71. 8vo pamph. New Haven, 1871. Yale Colllege in 1871. 8vo pamph.

PUBLISHERS. American Chemist. American Literary Gazette. American Naturalist. Canadian Naturalist. Christian World. Church Register. Fireside Favor-

ite. Francis's Catalogue. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Ipswich Advance. Land and Water. Lawrence American. Little Giant. Lynn Reporter. Medical and Surgical Reporter. Nation. Nature. Pavilion. Peabody Press. Quarritch's Catalogue. Sailor's Magazine and Seaman's Friend. Salem Observer. Silliman's Journal. Sotheran's Catalogue. Tilton's Journal of Horticulture.

The President mentioned the great loss which science and history have sustained in the destruction of the buildings of the Chicago Academy of Sciences and of the Chicago Historical Society with all their valuable collections and libraries, during the great fire on the eighth and ninth of this month, which had laid in ruins so large a portion of that great and beautiful city of the northwest. He alluded to his recent visit to these institutions and was impressed with the value of their collections, and with the liberality of the citizens of that city in providing such substantial buildings and generous endowments.

THE CHICAGO ACADEMY OF SCIENCES.

In 1856 the formation of a society for the promotion of the Natural Sciences was proposed, and in the following year the Chicago Academy of Natural Sciences was organized. A room was taken and a museum commenced, but owing to the financial crash that came upon the country, very little was done until the year 1859, when it was organized as a corporation under the title of the Chicago Academy of Sciences. In 1862 the lamented Kennicott returned from his three years' exploration in the Arctic regions, richly laden with specimens, a part of which were to become the property of the Academy. In the winter of 1863-4 advantage was taken of Prof. Agassiz' visit to Chicago to gain his opinion of the value of the collections secured by Mr. Kennicott. His endorsement of Mr. Kennicott's work, and his urging the importance of the forming a great museum in the Northwest was so strong an incentive that money was at once secured (a

large sum being given at an impromptu meeting, afterwards greatly increased by the efforts of Mr. Scammon) and the funds placed in the hands of trustees for the formation of a museum, of which Mr. Kennicott was appointed Director. In 1863 Mr. Kennicott, in order to add to the materials of the museum, accepted the appointment on the Russian American Telegraph Survey. From this ill-fated expedition he never returned. At this time the charge of the museum was given to Dr. Stimpson. On June 7, 1866, a large part of the collection of over forty thousand specimens, and all the plates for the first part of the "Transactions" were destroyed by fire. Soon afterwards the text of the same volume while in the hands of the printer met the same fate. The Academy however started forward with renewed vigor, and erected what in any ordinary fire would have been a fire proof building. Its collections and library were rapidly increased, until, at the date of the present calamity it had within its walls one of the, in many respects, most valuable collections in the country, including the larger part of the crustacea and other invertebrates belonging to the Government and Smithsonian collections, and the crustaceans dredged by Pourtales, which had been sent to the Academy for Dr. Stimpson to describe. The State collection of insects made by the late Mr. Walsh, had also been deposited at the Academy.

The Academy had published its first volume of "Transactions" and forty-eight pages of its "Proceedings." The second volume of "Transactions" was in a forward condition, and many pages stereotyped and several plates printed and stored at the Academy.

Mr. F. W. Putnam, after remarks on the great loss which science had met, and an account of his visit to the

Academy's rooms in August with a description of the character of the collections destroyed, read the following abstracts from letters which had been received: —

CHICAGO, Oct. 10, 1871.

"Among the other buildings involved, was the Chicago Academy of Sciences. It was considered fire-proof; but, in the fiery furnace, its iron shutters warped like pasteboard, and let in the devouring element, and a precious morsel it lapped up. There were the greater portion of the invertebrata collected by numerous explorers and in distant oceans, originally deposited in the Smithsonian Institution, but transferred here for especial study and description by Dr. Stimpson; the collection of mammals and birds made by Dr. Vaille, which cost him years of labor and travel; two skeletons of the mastodon; the collections of Kennicott in the Arctic region; of Stimpson on the Florida reefs and the Gulf Coast; the Cooper collection of shells, purchased by George Walker; an interesting series of implements in pottery and lava—the work of a prehistoric race — exhumed at San Jose, Mexico, presented by J. Y. Scammon; a large collection of minerals, rich in crystalline forms, which was secured through the exertions of Mr. E. S. Chesboro; an extensive suite of the coals and iron ores of the Northwest, and other objects of natural history. The Academy had become the resort for Scientific men desirous of studying not only the natural history of the Northwest, but of the whole country. Dr. Stimpson's MSS. relating to the invertebrates collected on the Japan Expedition, illustrated by numerous drawings — the labor of years, and ready for publication — were also consumed. But a short time ago Mr. J Gwyn Jeffreys spent several days in examining our collections in reference to deep sea dredgings. But all are gone. The patrons through whose munificence the Academy was built up have shared in the general calamity. Many of the specimens cannot be replaced; but when the Academy shall arise like a Phœnix from its ashes is a matter of doubt. The present is not a time for consultation while the embers are yet alive, and while the smoke is yet ascending." — J. W. FOSTER.

CHICAGO, Oct. 12.

"Please stop the sale of the books and papers in the agency. We have not a copy left of any of them. The Academy building and everything in it was utterly destroyed — not a scrap of paper or a specimen saved. My own books, collections, MSS. and drawings — twenty years' work all gone!" — WM. STIMPSON.

Mr. Putnam then offered the following resolutions,

which were seconded with remarks from Messrs. E. C. Bolles and E. S. Morse, the president and others, and unanimously passed :—

Resolved. That the Essex Institute tenders its sympathy to its sister society, the CHICAGO ACADEMY OF SCIENCES, in her second trial by fire, in which she has lost not only her buildings, but all her specimens, books and publications.

Resolved. That the Institute hereby promises to furnish such of its publications as the Chicago Academy of Sciences may desire, and to render such other assistance as possible in the efforts of the Academy to arise for a second time from the ashes.

The President stated that

THE CHICAGO HISTORICAL SOCIETY

Was organized in 1856 through the efficient efforts of Rev. William Barry, formerly of Lowell, Mass., and was chartered in 1857. It had accumulated a valuable library of more than fifteen thousand bound volumes, a large collection of pamphlets well arranged and catalogued, newspapers and other historic data and memorials, a large part of which is irrecoverable. It had a considerable collection of paintings, statuary, etc., also manuscripts and other materials to elucidate the early history of Chicago and of the late civil war.

The following may be specified, indicating the extent of the loss, which not only this society but the students of American History have sustained. The complete journals of the father of the late Major J. H. Kinzie, extending from 1802 (before the construction of Fort Dearborn) to 1826, containing nearly one thousand names of residents and visitors during the earliest period (now traditionary), of the local modern history of that city ; complete files of the public journal of Richmond, as preserved

by the official head of the Confederate States; and the memorable proclamation of President Lincoln, in the original draft, giving liberty to the enslaved.

By the liberality of the citizens of Chicago, who held in high estimation the influence and labors of this society, a building, supposed to be fire-proof, forty by fifty feet, and designed to be the right wing of the future main edifice, was erected a few years since at an expense of over $60,000, including the land, for the depository of its library and collections, and a fund was raised in addition thereto, yielding an annual revenue of more than one thousand dollars for their care and increase.

Mr. James Kimball proposed that a committee of three be appointed by the chair to draft resolutions of sympathy to be sent to the Chicago Historical Society.

The proposition was adopted and Messrs. James Kimball, E. C. Bolles and the Secretary were appointed for the purpose.

The committee retired, and after a short absence, reported the following resolution, which was unanimously adopted.

Whereas, the Essex Institute has learned with great regret that in the late disastrous fire at Chicago the building, library and collections of the Historical Society of that city were entirely destroyed, therefore:

Resolved. That the Essex Institute desires to assure the Chicago Historical Society of the profound sympathy and its earnest wish both to replace all the publications of the Institute which were in that library, and to afford all other aid which it may be in its power to give.

THE SALEM AND BOSTON STAGE COMPANY.

A communication from Mr. William H. Foster was read, containing his reminiscences of the days of stage coaches in Salem and of the Salem and Boston stage

company, during the period he was in the office of the company. The scenes and incidents at the stables on Union Street, and at the Old Sun Tavern then located on the site of the present Bowker Building on Essex Street, were very graphically described, alluding especially to the bustle, activity and stir attending the arrival and departure of the coaches, the great events of the day. Anecdotes and short notices of the drivers and other employès were interspersed, portraying vividly the characters of those who were attached to the establishment. These incidents occurred some forty-five or fifty years since, when the turnpikes and the stage coaches were in the ascendancy and had made great advance over the previous modes of travel, displacing to a considerable extent private conveyances and the little wayside inns. A few years elapsed and these in turn retreated before the advent of railroads, which have now connected the whole country with a network of iron bands and have contributed so much to the rapid transportation of passengers and merchandise. At that period this company was a great establishment, and not inferior to any other line in the United States, in the character of its agents and drivers, and in the superiority of its teams and coaches; and perhaps in advance of them, being the first to introduce the swing rack and foot board, as it was termed; and after these the splendid steel spring coaches. These coaches were mostly built under its own supervision, in its own shops, and by its own mechanics.

There were Stephen Daniels and Benjamin Bray, coach-body makers; Smith and Osgood Bradley, wheelwrights (Bradley is now a car builder); John McGlue and David Harding, and a half a score of others, blacksmiths; John Chipman, John Mackie and John Frye, saddlers and carriage trimmers; Joseph D. Saddler and Daniel C. Man-

ning, painters. The gigs and coaches got up by the company from 1821 (when it was incorporated) to 1834-5 and 6, were far superior in strength and finish to any in present use. William Manning, familiarly known as "Sir William," was the general superintendent, Henry Cross the agent at Boston, and Samuel Manning had the charge of the stable at the "Marlborough" in Boston, and afterwards fitted out the stages with Mr. Lancaster and ran the expresses to overtake the stages, etc.

The coaches for Boston left at 7, 8, 9, 10, A. M, 1.30 and 5 P. M., and arrived from Boston at 11 A. M., 1, 5, 6, 7, 8, P. M. Any number of extras went over the road at all times both day and night. There was also a coach to and from Marblehead, driven by Thompson, and three times a week to Haverhill driven by D. Sanderson and afterwards by Pinkham.

The drivers were James Potter, left at 7 A. M., the first out in the morning; Woodbury Page at 8 A. M.; Charles Cross, afterwards Albert Knight, and then B. Savory at 9 A. M.; Moses Shaw at 10 A. M. on Monday, Wednesday and Friday, and Albert Knight, afterwards Jacob Winchester on Tuesday, Thursday and Saturday; Lot Peach at 1.30 P. M. The Major Shaw went out at 3 P. M., and this closed the outward or up trips to Boston for the day. Peter Ray afterwards drove this last route.

The first coach in from Boston was at 11 A. M., the one that left the afternoon previous at 3 o'clock; the Gloucester at 1 P. M., Potter at 5, Page at 6, Savory at 7 and Peach at 8 P. M.

There were many extra drivers, Wm. Winchester, Joshua Butman, Joseph Potter, Benjamin Leavitt and others. During the summer some of the regular and several of the extra drivers were away on journeys. There

were between fifty and sixty men on the pay roll of the company, all good and reliable.

To Potter was assigned the honor of driving Lafayette, on his visit here in August, 1824, and on this occasion had an open barouche and team of splendid horses, and drove him through to Newburyport. When Henry Clay made his visit in 1833, Page and his team of milk-whites were in attendance and took him over the road from the residence of Hon. Nathaniel Silsbee on Pleasant Street to the Tremont House, Boston, in sixty minutes. Joseph Smith, who had been in the livery business for many years was employed by the Committee of Reception during Gen. Jackson's visit in 1833, and used on the occasion an open barouche and had a team of four coal black horses.

Mr. Daniel C. Manning first entered the service of the company in 1823 as an office boy and carried round the letters and bundles on the arrival of the stages. For the small packages a horse and gig was always ready on the arrival of each coach, and here began the first express business of this county.

From here Daniel went into the company's paint shop, then in charge of Joseph D. Sadler, where he served a regular apprenticeship and became a first-class carriage painter, in which business he continued for some years, combining with it the letting of a few horses. The paint shop was then abandoned and he went very extensively into the livery business with Mr. Joseph Smith.

We see him driving, in that fearful storm on the 8th of February, 1870, Prince Arthur to the Peabody funeral, and for eight consecutive hours not leaving his box. Like Mr. Peabody, he started a poor boy, but by his untiring industry, and his natural resources, he is now rated among the self made capitalists. He also had the honor

of driving (or running), President Polk through the city, on the occasion of his visit here in 1847.

Before the incorporation of the Salem and Boston Stage Co., in 1821, a line of stages had been run by Mr. Richard Manning, and afterwards by his sons, William, Robert and Samuel, and in 1810 or 1811 the Mannings bought out the old Burrill line of stages. The Burrill stables were in the rear of Court (now Washington Street), and their office was in the rear of where Nourse's fruit store now stands.

In 1815 or 1816 a company was formed of the Messrs. Manning, Henry Cross and others. Holton Dale, who will be remembered by many as the greatest whip in the county, drove the first coach out at 7 o'clock A. M., and Willis, a large and splendid looking man, drove the first coach in from Boston, and afterwards Carpenter. Dale always had elegant horses; his team of sorrels were square docked, and always trimmed and combed to a hair; his coach in order, and run very still, as about every morning he went over it himself, and screwed up all the nuts. Those who were in college from, say 1810 to 1816 will remember Dale, as he claimed as a right the privilege of driving home the students at the vacations.

Instead of his coach he sometimes used an open basket carriage which would hold fifteen or eighteen — but as there was no convenience for baggage, that had to be sent by another team. With the light basket carriage he could spin off ten or twelve miles the hour, and land his passengers from Cambridge, say seventeen or eighteen miles, in an hour and thirty or forty minutes.

Once, about Christmas time, after he had started, there came up a furious snow storm, and by the time they reached Salem the basket was full of snow and students closely packed together.

But these reminiscences are so far extended that I will close. Many of the actors have paid the last debt of nature, and those who are left are getting to be among the old folks. The following list of employeès, so far as can be recalled, is annexed.

DRIVERS.

Holton Dale,
——— Willis,
——— Carpenter.
James Potter,
Woodbury Page,
Samuel Shaw,
Moses Shaw,
Albert Knight,
Jacob B. Winchester,
William Winchester,
Peter W. Ray,
Benjamin Savory,
Lot Peach,
Charles Cross,
William Cross,
Daniel Moore,
John Hathaway,
Alden Harris,
John Lane,
J. C. Trask,
James Trask,
Addison Center,
Charles Sargent,
John Miller,
Jonathan Cass,
Benjamin Thompson,
Charles Dearborn,
Thomas Adams,
Joshua Bateman,
Joseph Potter,
Daniel Sanderson,
Thomas Dodge,
Benjamin Leavitt,
Isaac Pinkham,
Peter Stevens,
Thomas Adams,
J. B. Wheelock,
Noah Knox.

SADDLERS.

Joseph H. Saddler,
John Chipman,
John Mackie,
John Frye.

BLACKSMITHS.

John McGlue,
David Harding,
Peter McDermott.

WHEELWRIGHTS.

James Smith,
Osgood Bradley.

CARRIAGE-BODY MAKERS.

Stephen Daniels,
Benjamin Bray.

PAINTERS.

Joseph D. Sadler,
Daniel C. Manning.

CLERKS.

Henry Cross,
D. M. Lancaster,
Daniel L. Procter,
William H. Foster.

The character and time of the meetings of the Institute were zealously discussed, most of the members present taking part. All were earnest to have the meetings prove more attractive to the public and to better meet the needs of the community. It was then

Voted, That the next meeting be held on the first Monday in November at 7½ o'clock, and that the matter of the arrangement and order for meetings for the coming winter be referred to the lecture committee, with instruction to report at the next meeting.

Adjourned.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 3. SALEM, MASS., NOVEMBER, 1871. NO. 11.

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

REGULAR MEETING, MONDAY, NOVEMBER 6, 1871.

THE President in the chair. Records read.

The SECRETARY read the following letter from Dr. William Stimpson, secretary of the Chicago Academy of Science, addressed to Vice President F. W. Putnam.

CHICAGO, Oct. 26, 1871.

I have just received your very kind letter of the 19th inst. Our postal delivery is deranged on account of the fire, in which the post-office did not escape. I have also received Packard's letter and that of the Secretary of the Institute. I am on the point of starting for the East, and have only time to write a line of thanks for them. When I get to Maryland I will answer them in full. We have held one meeting since the fire, and the copy of resolutions of the Essex Institute arrived in time for it. The Academy is going on, although we are obliged to commence at the very beginning again, but we are greatly encouraged by the offers of aid received from all sides.

With many thanks for your own kind offers I remain,

Very sincerely yours, WM. STIMPSON.

Letters were also read from the following:—

American Congregational Association, Oct. 21; Berlin Akklimatisations Verein, June 20; Brunn, Naturforschende Verein, May 31; Buffalo Historical Society, Oct. 27; Chemnitz, Naturwissenschaftliche Gesellschaft, June; Danzig, Naturforschende Gesellschaft, June 24; Freiburg, Naturforschende Gesellschaft, May 12; Kjobenhavn, K. Danske Videnskabernes Selskab, Sept. 14; Massachusetts Horticultural Society, Oct. 28; New England Historic-Genealogical Society, Oct. 28; New York Genealogical and Biographical Society, Oct. 20, 21; New York Historical Society, Oct. 28; New York Lyceum of Natural History, Oct. 30; Riga, Naturforschende, Verein, May 19-31; Wiesbaden, Nassauischen Vereins fur Naturkunde, May 1; Hanaford, P. A., New Haven, Oct. 25; Hough, F. B., Lowville, Oct. 25.

The LIBRARIAN reported the following additions: —

By Donation.

BOLLES, E. C. Catalogue of Officers and Students of Tufts College, 1871-72. Record of Lockwood's New Academy, Sept. 1871.

FOOTE CALEB. Files of several county papers for Aug., Sept., Oct. 1871.

GREBLE, EDWIN, of Philadelphia, Penn. Memoir of Lieut. Col. John T. Greble of U. S. Army. 1 vol. 4to. Phila. 1870. (Printed for private circulation.)

GREEN, S. A., of Boston. Miscellaneous pamphlets, 16.

HOLMES J. C., of Detroit, Mich. Constitution and By-laws of the Audubon Club in Detroit. 16mo pamph.

JOHNSON, THOMAS H. The Life of Joice Heth. 12mo pamph. New York. 1835.

LEE, JOHN C. Commercial Bulletin for Oct. 1871.

PHILLIPS, WILLARD P. Agriculture of Massachusetts, by C. L. Flint. 1 vol. 8vo. Boston. 1870-71. Reports on the Statistics of Labor. 1871. 1 vol. 8vo. Railroad Commissioners' Report, 1870. 1 vol. 8vo. Thirty-fourth Annual Report of the Board of Education. 1 vol. 8vo. Manual for the General Court, 1871. 1 vol. 12mo. Miscellaneous pamphlets, 4.

SMITH, Mrs. GEO. H. Martyrs, 2 vols. 4to. New York, 1794. History of American Missions, 1 vol. 8vo. Christian Spectator, 3 vols. 8vo. Essays on a Congress of Nations, 1 vol. 8vo. Missionary Herald, 1 vol. 8vo. Ely's Contrast, 1 vol. 8vo. Christian Researches, 1 vol. 12mo. Indian Wars, 1 vol. 12mo. Missionary Gazetteer, 1 vol. 12mo. Life of Whitefield, 1 vol. 12mo. Carpenter's Geography, 1 vol. 12mo. Life of Philip Henry, 1 vol. 12mo. Life of Coustos, 1 vol. 12mo. History of Andover, 1 vol. 12mo. The Assembly's Digest, 1 vol. 12mo. Anti-Slavery Manual, 1 vol. 16mo. Salem Directories, 1842, 1846, 1850, 1851, 1855, 1859. 6 vols. 12mo. Flavius Josephus, 1 vol. folio. Missionary Herald, 74 nos.

SPOONER, THOMAS, of Cincinnati, Ohio. Memorial of William Spooner, and of his descendants, 1637 to 1871. 1 vol. 8vo. (Private Edition.)

WALKER, Francis, of London. Notes on Chalcidiæ, 12mo pamph. List of Hymenoptera, 12mo pamph. List of Coleoptera, 12mo pamph.

By Exchange.

AKKLIMATISATIONS VEREIN IN BERLIN. Zeitschrift für Acclimatisation, Yahrg VIII, 1870. Nos. 1-12. Yahrg IX, 1871, Nos. 1-5. 3 pamphs. 8vo.

BOSTON PUBLIC LIBRARY. Bulletin for Oct., 1871. 8vo pamph.

CROSSE ET FISCHER. Journal de Conchyliologie. Tome X, No. 4. 1870.

DET KONGELIGE NORSKE UNIVERSITET I CHRISTIANIA. Forhandlinger i Videnskabs Selskabet i Christiania, Aar, 1869, 1870, 8vo pamphs. Det Kongelige Norske Frederiks Universitets Aars beretning for Aaret 1869, 1870. 8vo pamphs. Index Scholarum, 4to pamph. Le Nèvè De Justidal et Ses Glaciers par C. de Sene. 4to pamph. Lymphekjertlernes Anatomi af G. Armaner Hansen, 4to pamph. Omeni Sommeran, 1869, foretagen entomologisk Reisse af H. Siebke. 8vo pamph. Magnetiske Underspgelser foretagen i 1868 af E. A. H. Sinding, 8vo pamph.

LITERARY AND HISTORICAL SOCIETY OF QUEBEC, Transactions of, 1870-71. New Series, Part VIII. Quebec, 1871. 8vo pamph.

NASSAUISCHEN VEREINS FUR NATURKUNDE OF WIESBADEN. Jahrbücher Jahrg XXIII, XXIV. 1 vol. 8vo. Wiesbaden. 1869-70.

NATURFORSCHENDE GESELLSCHAFT IN DANZIG. Schriften, Neue Folge, Band II. Heft 3, 4. Danzig. 1871.

NATURFORSCHENDE GESELLSCHAFT IN FREIBURG, BADEN. Berichte über die Verhandlungen. Bd. V, Heft 3, 4. 1871.

NATURFORSCHENDE VEREIN IN BRUNN. Verhandlungen, Band VIII, Heft 1-2. 2 pamphs. 8vo.

NATURFORSCHENDER VEREIN IN RIGA. Arbeiten, Heft, 3, 4. 1870-71.

NATURWISSENSCHAFTLICHEN GESELLSCHAFT IN CHEMNITZ. Dritter Bericht, 1868-70. 8vo pamph.

NEW ENGLAND HISTORIC-GENEALOGICAL SOCIETY. Register for Oct., 1871.

NEW YORK GENEALOGICAL AND BIOGRAPHICAL SOCIETY. Genealogical and Biographical Record. Vols. 1, 2. 1870-71.

PHYSIKALISCH-MEDICINISCHE GESELLSCHAFT IN WURZURB. Verhandlungen der Physikalisch Medicinische Gesellschaft in Würzurb, Herausgegeben von der Redactions. Commission der Gesellschaft, Neve Folge, Band II. Heft 1-2. 8vo.

SOCIETY VAUDAISE DES SCIENCES NATURELLES IN LAUSANNE. Bulletin, Vol. x. No. 63. 8vo. pamph.

PUBLISHERS. American Chemist. American Literary Gazette. American Naturalist. Christian World. Gardener's Monthly. Gloucester Telegraph. Hardwicke's Science Gossip. Haverhill Gazette. Historical Magazine. Land and Water. Lawrence American. Little Giant. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Pavilion. Peabody Press. Silliman's Journal. Quarritch's Catalogue. Salem Observer.

The following donations to the Historical Department were announced: —

S. A. CHEVER, of Melrose, Engraving of the Pickman House on Essex Street as it appeared in 1830.

T. J. DREER, of Philadelphia, Fourteen engraved portraits of eminent Americans.

THOMAS H. JOHNSON, Several engravings of Baptist ministers.

CHARLES OSGOOD, Picture of Capt. Billop's house at Bently, Staten Island.

Mr. F. W. PUTNAM exhibited a fine head of a male American Buffalo or Bison (*Bos Americanus*), which had recently been received from David Augustus Chever, Esq., of Denver City, Colorado, a donation to the museum; and offered some remarks upon its habits and range. The Buffalo formerly roamed over nearly the whole area of the United States; more recently it has been limited to the prairies between the Missouri and the Rocky Mountains, where it is seen in herds of several thousands, blackening the plains as far as the eye can view; with the advance of civilization, it will become yet more restricted, and finally it will retreat to the fastnesses of the mountains, where it may for some years linger.

Mr. F. W. PUTNAM occupied the greater part of the

evening with a lecture on the prehistoric inhabitants of this country, known under the general name of the "Mound Builders."

After stating the conclusions reached by Squier, Davis, Haven, Wilson, Lubbock, Whittlesey, Foster, Newberry, Jones and others, and his own views derived from a careful comparison of the facts that had been gradually ascertained, and calling attention to the different views that had been presented relating to the origin, course of migration, and decay of the mound building race; he called special attention to the large number of fortifications and fortified towns that had been discovered in various parts of the country, from New York and Pennsylvania west to the Wabash River and in the Mississippi Valley south to Tennessee; and gave an account of a recent examination he had made of an

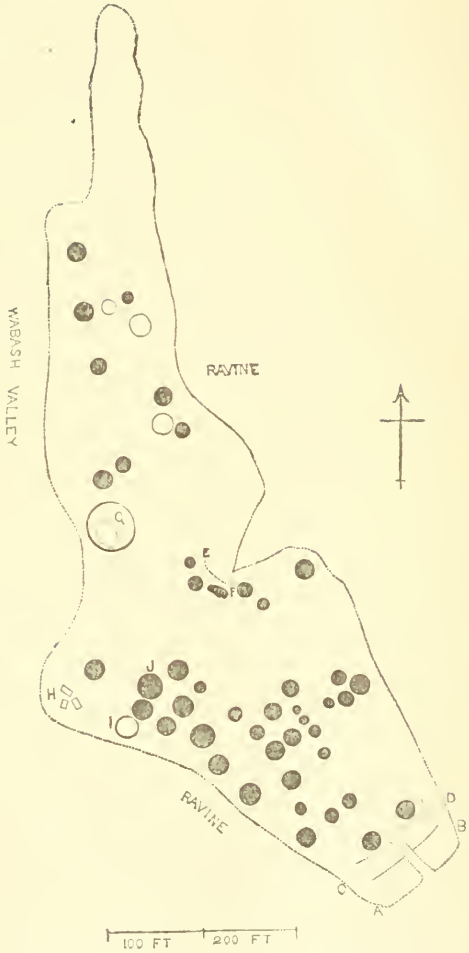
ANCIENT FORTIFICATION ON THE WABASH RIVER.

After the adjournment of the Indianapolis meeting of the American Association for the Advancement of Science in August last, it was his good fortune to be able to take advantage of the kind offer of Prof. Cox, State Geologist of Indiana, to make an examination of an ancient earth work at Merom, Sullivan Co., Ind., which had been christened "Fort Azatlan" by Mr. John Collett, Assistant of the Survey, and is so designated on the geological map of the County. Accompanied by Messrs. Cox, Collett, Cooke and Emerton, and provided with free passes over the Terre Haute and Indianapolis, and the Evansville and Crawfordsville Railroads, by the open-handed liberality of the officers of the roads; and cordially entertained and greatly assisted by T. Kearns, Esq., President Holmes, the Doctors Harper and other kind friends in Merom; he was able to make a partial examination of

the earth work, of which the following engraving, prepared from a large plan made by Mr. J. H. Emerton, from plottings taken with the assistance of Messrs. Kearns and Collett, gives the outline and general character.

The fort is situated on a plateau of loess, about one hundred and seventy feet in height above low water, on the east bank of the river. On the river side, the bank, which principally consists of an outcrop of sandstone, is very steep, and forms the western line of the fortification, while deep ravines add to its strength on the other sides; the weak points being strengthened by earth works. The general course of the work is from the north, where it is very narrow (not over 50 feet) owing to the formation of the plateau, south along the river bank about 725 ft. to its widest portion (at *H*) which is here about 375 ft. east and west. From this point it follows a deep ravine southerly about 460 ft. to the entrance end of the fort. The bank traversed by the entrance road is here much wider than at other portions, and along its outer wall, running eastward, are the remains of what was evidently once a deep ditch. The outer wall (*A*, *B*) is about 30 ft. wide and is now about 1 1-2 ft. high; a depressed portion of the bank, or walk way, then runs parallel with the outer wall, and the bank (*C*, *D*) is then continued for about 20 ft. further into the fort, but of slightly less height than the front. Through the centre of these banks there are the remains of a distinct roadway about 10 ft. in width.

From the northeastern corner of this wide wall the line continues northwesterly about 350 ft. along the eastern ravine to a point where there is a spring and the ravine makes an indenture of nearly 100 ft. to the southwest. The mouth of the indenture is about 75 ft. in width and the work is here strengthened by a double embankment (*E*, *F*). The natural line of the work follows this inden-



Fort Azatlan, on the Wabash River at Merom, Ind.

ture and then continues in about the same northerly course along the banks of the ravine, to the narrow portion of the plateau about 550 ft. to the starting point.

There is thus a continued line, in part natural and in part artificial, which if measured in all its little ins and outs would not be far from 2450 ft.

Besides the spring mentioned as in the indenture of the eastern ravine, there is another spring in the same ravine about 175 ft. to the north of the first, and a third in the southwestern ravine about 125 ft. to the west of the southwestern corner of the work.

Looking at all the natural advantages offered by this location it is the one spot of the region, for several miles along the river, that would be selected to-day for the erection of a fortification in the vicinity, with the addition of the possession of a small eminence to the north, which in these days of artillery would command this fort. Having this view in mind a careful examination was made of the eminence mentioned, to see if there had ever been an opposing or protective work there, but not the slightest indication of earth work fortification or of mounds of habitation was discovered. Though some five or six miles up the river on the Illinois side, at Hutsonville, a large group of some fifty-nine mounds of habitation were investigated, about which more will be said at another time.

The interior of this fortification contains much of interest and its history may yet be in part made out by a more extended examination than it was possible to make during the few days given to its exploration.

On crossing the outer wall a few low mounds are at once noticed, and all around are seen large circular depressions. At the southern portion of the fort these depressions, of which there are forty-five in all, are most numerous, thirty-seven of them being located south of a line

drawn from *E* on the northern side of the indenture of the eastern ravine to the projecting extreme western point of the fort at *H*.

These depressions vary in width from ten to twenty-five or thirty feet, and are irregularly arranged, as shown by the accompanying engraving, where they are represented by the black circles. One of the six depressions opposite the indenture of the eastern ravine is oval in shape, and is the only one that is not nearly circular, the others varying but a foot or two in their diameters.

Two of these depressions were dug into and it was found that they were evidently once large pits that had gradually been filled by the hand of time with the accumulation of vegetable matter and soil that had been deposited by natural action alone. In some instances large trees are now growing in the pits and their many roots make digging difficult. A trench was dug across one pit (*J*) throwing out the soil carefully until the former bottom of the pit was reached at a depth of about five feet. On this bottom ashes and burnt clay gave evidence of an ancient fire, and at a few feet on one side several pieces of pottery, a few bones of animals, and one stone arrowhead were found. A spot had evidently been struck where food had been cooked and eaten, and though there was not time to open other pits there is no doubt but that they would tell a similar story, and the legitimate conclusion to be drawn from the facts is that these pits were the *houses* of the inhabitants or defenders of the fort, who were probably further protected from the elements, and the arrows of assailants, by a roof of logs and bark or boughs. The great number of the pits would show that they were for a definite and general purpose and their irregular arrangement would indicate that they were not laid out with the sole idea of acting as places of defence, though those near

the walls of the fort might answer as covers from which to fire on an opposing force beyond the walls, and the six pits near the eastern indenture, in front of three of which there are traces of two small earth walls, and the two commanding the entrance of the fort, would strengthen this view of the use of those near the embankment.

In many of the ancient fortifications that have been described by Mr. Squier and others, pits have been noticed, but they have been only very few in number and have been considered as places for the storage of food and water. The great number in this small earthwork, with the finding that one at least was used for the purpose of cooking and eating food, is evidence that they were for some other purpose here, though some of the smaller ones may have answered for storehouses.

The five small mounds were situated in various parts of the enclosure. The largest (*G*) was nearly fifty feet in diameter and was probably originally not over ten feet in height. It had been very nearly dug away in places, but about one-fifth of the lower portion had not been disturbed. From this was exhumed one nearly perfect human skeleton and parts of several others that had been left by former excavators. This mound also contained several bones of animals, principally of deer, bear, opossum and turtles; fragments of pottery, one arrowhead, a few flint chips, and a number of thick shells of unios, two of which had been bored near the hinge. This mound has yielded a number of human bones to the industry of Dr. H. Frank Harper who has furnished a description of them which will be included in an article to appear in the *Naturalist*.

The second mound (*I*) which was partly opened, was some twenty-five feet in diameter and a few feet in height, though probably once much higher. In this a number of bones of deer and other animals were found, several

pieces of pottery, a number of shells and a few human bones. The other three mounds, one of which is not over ten or twelve feet in diameter and situated the furthest to the north, were not examined internally.

The position of all the mounds, within the enclosure, which are indicated by the white circles on the cut, is such as to suggest that they were used as observatories, and it may yet be questioned if the human and other remains found in them were placed there by the occupants of the fort, or are to be considered under the head of *intrusive* burials by a later race. Perhaps a further study of the bones may settle the point. That two races have buried their dead within the enclosure is made probable by the finding of an entirely different class of burials at the extreme western point of the fortification, indicated on the engraving by the three quadrangular figures at *H*. At this point Dr. Harper, the year previous, had discovered three stone graves, in which he found portions of the skeletons of two adults and one child. These graves, the stones of one being still in place, were found to be made by placing thin slabs of stone on end, forming the sides and ends, the tops being covered by other slabs, making a rough stone coffin in which the bodies had been placed. There was no indication of any mound having been erected, and they were placed slightly on the slope of the bank. This kind of burial is so distinct from that of the burials in the mound, that it is possible that the acts may be referred to two distinct races who have occupied the territory successively, though they may prove to be of the same time and simply indicate a special mode adopted for a distinctive purpose.

The short time given to the examination of this interesting work left many important points unsettled, and since his return the relics discovered have not been looked at.

At a future meeting Mr. Putnam trusted to be able to give a more decisive opinion on several points, after a careful study of the specimens shall have told their story so far as it can be read from old bones and broken pottery.

QUARTERLY MEETING, WEDNESDAY, NOVEMBER 8, 1871.

President in the chair. Records read.

Rev. E. C. Bolles was added to the Lecture Committee, and Mr. G. D. Phippen to the Publication Committee.

S. W. Arrington, of Salem, was elected a member.

REGULAR MEETING, MONDAY, NOVEMBER 20, 1871.

The President in the chair. Records read.

The SECRETARY announced the following correspondence :—

From Philadelphia Library Company, Nov. 11; Keene Natural History Society, Nov. 10; J. H. Emerton, Providence, R. I., Nov. 13; James P. Franks, Salem, Nov. 7; B. Perley Poore, Indian Hill Farm, Nov. 11; S. Salisbury, Worcester, Nov. 13.

The LIBRARIAN reported the following additions :—

By Donation.

BUSWELL, E. W., of Boston. Miscellaneous pamphlets, 20.

COGSWELL, WM. Report on the Statistics of Labor in Mass. 1871. 1 vol. 8vo. Marine Insurance Report. 1870, 1871. 2 vols. 8vo. Report on the Statistics of Labor in 1871. 2 vols. 8vo. Ceremonials at the Unveiling of the Statue of Gov. John A. Andrew. Feb. 14, 1871. 10 copies. Massachusetts State Documents for 1870, 1871. Report of the Commissioners on Inland Fisheries. Jan., 1871. 8vo pamph. Miscellaneous pamphlets, 7.

DORCHESTER, D. Catalogue of Officers and Students of Middlebury College, 1871-72. Catalogue of Officers and Students of Tufts College, 1870-71.

FRANKS, J. P. History of Pennsylvania Volunteers, by S. P. Bates. 4 vols. 8vo.

GILLAN, JOHN. British Shipmasters' Guide. 1 vol. 8vo. Bowditch Navigator. 1 vol. 8vo. Blunt's Coast Pilot. 1 vol. 8vo. Miscellaneous pamphlets, 14.

KIMBALL JAMES. Salem Directories, 1866, 1869. 2 vols. 8vo. Report on Prisons and Prison Discipline. 8vo pamph. Report of the School Committee of Salem, Jan., 1868.

MORSE, E. S. Remarks on the Adaptive Coloration of Mollusca by donor. 8vo pamph. Remarks on the Relations of Anomia, by donor. 8vo pamph.

PALFRAY, C. W. Miscellaneous pamphlets, 9.

POORE, B. PERLEY, Washington, D. C. Syracuse Directory, 1857. 1 vol. 8vo. N. E. Mercantile Directory, 1849. 1 vol. 8vo. Gazetteer of the St. Joseph Valley. 1 vol. 8vo. Cincinnati in 1851. 1 vol. 8vo. Boston Directory, 1847-8. 1 vol. 8vo. Washington and Georgetown Directory for 1860. 1 vol. 8vo. Affleck's Calendar and Annals for 1851. 1 vol. 12mo. National Calendar and Annals of U. S., 1831, 1832, 1833. 3 vols. 12mo. Register of Officers and Agents in U. S., 1820. 1 vol. 12mo. Newburyport Directories, 1851, 1852. 2 vols. 12mo. Boston Almanac. 1850. 1 vol. 16mo. Almanacs, 75. Congressional Directories, 19 nos. Navy Register, 4 nos. Army Register, 4 nos. Miscellaneous pamphlets, 7.

WALKER, FRANCIS L., of London. Notes on Chalcidiæ. Parts III, IV. 2 pamphs. 8vo.

WASHINGTONIAN HOME. Report for 1871. 8vo pamph.

By Exchange.

BIBLIOTHÈQUE UNIVERSELLE ET REVUE SUISSE. Archives des Sciences physiques et naturelles. Nos. 164, 165. 8vo pamph. Genève, 1871.

MARYLAND HISTORICAL SOCIETY. The First Steamboat Voyage on the Western Waters. By J. H. B. Latrobe. 8vo pamph.

PROVIDENCE ATHENÆUM. Report of the Directors of, Sept. 25, 1871. 8vo pamph.

SOMERSETSHIRE ARCHÆOLOGICAL AND NATURAL HISTORY SOCIETY IN TAUNTON, ENGLAND. Proceedings of, 1870. 8vo pamph.

PUBLISHERS. American Literary Gazette. American Naturalist. Gloucester Telegraph. Haverhill Gazette. Ipswich Advance. Lawrence American. Little Giant. Lynn Reporter. Lynn Transcript. Our Dumb Animals. Nation. Nature. Peabody Press. Salem Observer.

The following donations to the Historical Department were reported.

BOLLES, E. C. Plan of Chicago, showing the burnt district.

GILLAN, JOHN. Miscellaneous Charts, 30.

TRASK, W. B., of Dorchester. View of the Trask House, Boston St., taken October, 1871. Miscellaneous Charts, 8.

LITTLE AUK.

The PRESIDENT mentioned that among the recent additions to the museum were several specimens of the Little Auk (*Mergulus alle*) which were found at Middleton, Hamilton, Salem and other places, driven inland by the gale of the Wednesday preceding; this storm was considered the most severe, and the tide the highest, of any since April, 1851. Some of the above specimens were exhausted by buffeting weather and fatigue, so that they

were easily taken by the hand. We learn by the newspapers that specimens of this bird were found at Lowell, Dracut, Lawrence, Haverhill, Gloucester, Rockport, Sudbury, Concord and many other localities. This little bird known to the mariners as the "Greenland Dove," from its quaint resemblance to that family of birds, is a dweller in the Arctic Circle, seldom proceeding far from those desolate and glacial regions except when accidentally driven by severe storms. Occasionally, specimens are found on the coast in the wintry season. It may be considered a rare occurrence to observe them in such numbers and extending over so large a territory.

Mr. A. C. Goodell, Jr., gave a sketch of the progress of legislation, through the period between the arrival of the charter of the province of Massachusetts Bay, in 1692, and the adoption of the Constitution in 1780.

After briefly alluding to the colonial charter, and the laws and jurisprudence of the colony, and recalling the prominent political events of that period as described by Mr. Upham in his address to the Institute at the meeting of April 5, 1869, he proceeded to show that a great change, both in laws and manners, took place here shortly after the new charter went into operation. Then fashions in dress began to be copied from the French; music began to be cultivated; domestic comforts and luxuries were increased; assemblies for secular purposes and amusements were more open and frequent; the barriers of rank were broken; the current secular literature of England began to receive general attention; newspapers appeared, and the printing press was put to more general use. The public mind began to lose something of the absorbing interest it had formerly manifested in theological speculations, and was turned to the consideration of the problems of

trade, the right of liberty of conscience, freedom of speech and of thought, and improvements in agriculture, the mechanic arts and architecture: so that, in short, the issues which had excited the warmest controversies, and had drawn general attention in colonial times, were nearly forgotten in the new and more practical differences respecting matters of social and political economy, culminating finally in the one great issue of independence of the British Crown.

Whoever supposes that the idea of American independence, and the steps for securing that end were first devised by the patriots of the revolutionary period, makes a great mistake. The steps towards independence were many, and can be traced throughout our provincial history back into colonial times; but, during the existence of the Province charter they were firmly and openly made long before most of the heroes of the Revolution were born.

The organization of the legislature under the Province charter, which now consisted of two distinct bodies instead of one general assembly, as formerly, led, naturally, to the adoption of our present legislative system:—the governor having the power by that instrument to negative any bill which had passed the house and council in concurrence.

The rights and functions of these several branches, under the charter, were fruitful topics of discussion in the assembly and among the people, and many important points of our present constitutional law were developed by these discussions, which led, also, to the elucidation of and familiarity with parliamentary law and practice.

Some of these points were then explained, including the controversy respecting the right of the governor to negative the choice of a speaker of the House, and the

right of the House to adjourn itself without the governor's consent—which led to the explanatory charter of 1726—and the right of the legislature to fix the amount and the time of payment of the governor's salary, which the assembly succeeded in maintaining against the long-continued efforts of the Board of Trade and the Privy Council.

The interference of the Home government in the affairs of the province was next explained. By the terms of the charter all acts were to be sent to England for the Royal approval or disallowance, and under this provision the Home government claimed and exercised a power which, in the course of time, became intolerable to the people of the Province. Many suggestions and decisions of the Board of Trade and of the Privy Council were, nevertheless, wise; and to their interference we are indebted for much of the toleration that characterizes the later laws and manners of provincial times, as well as the defeat of some disastrous financial schemes, the checking of bigotry and superstitious tendencies, the rejection of some narrow and injurious commercial theories, and something of personal liberty.

The laws of the province being thus submitted to the Crown for rejection or approval received the attention of the best minds in England. As expounders of our constitutional rights under the charter, and as critics and guides of the legislation and political economy of this little community, such names as Lord Chancellor Somers, the father of the British Constitution, Locke, the philosopher, Joseph Addison, the English Atticus, and Matthew Prior, the poet, appear in the list with Lords Raymond, Hardwicke, Talbot and Mansfield, and the many other eminent lawyers, statesmen and scholars who supported the throne as its ministers of state for the eighty

years or more before the Revolution: so that this province was well prepared not only to be the cradle of Independence, but to act as the guide and tutor of the young Federal Republic, called into existence by the force of its example, and nurtured by its care.

It is true that the witchcraft folly, one of the darkest events in our history, occurred after the provincial government was established; but this happened so soon after the old charter had been superseded, the actors in it having come to prominence under the old order of things, and being so wedded to the traditions of the past, that the whole delusion may with propriety be considered as the last terrible death-gasp of ancient superstition. One year later, and the repetition of such a tragedy had become impossible, and before that generation had passed away we find the people in church and legislature seeking to retrieve the injury done to the innocent victims of that mental epidemic.

A contrast was also drawn between the intolerance of the colonial government and the immunity from religious tyranny which the province charter guaranteed; but which was not fully secured until after a severe struggle. The efforts of the Quakers to bring about toleration were then described, beginning with the resistance of the towns of Dartmouth and Tiverton to taxation for the support of another sect, and ending with the acts passed during Belcher's term, and suggested by him, for which the Friends were grateful. The address concluded with a rapid sketch of the events which ended in the Revolution.

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 3. SALEM, MASS., DECEMBER, 1871. No. 12.

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

REGULAR MEETING, MONDAY, DECEMBER 4, 1871.

President in the chair.

Records of preceding meeting read.

The Secretary read the following extract of a letter from Col. J. W. Foster, President of the Chicago Academy of Sciences.

November 15, 1871.

Our Academy meeting on Tuesday was well attended, and an earnest feeling was expressed by all to work more faithfully in the days of our adversity than in those of our prosperity. Mr. Walker on behalf of the Trustees made an informal statement as to our pecuniary condition. We have about $60.000 to enable us to rebuild. He expressed a strong hope that the Academy would be able to secure a donation of an entire block near the lake shore whereon to erect a new building, and that before the expiration of two years, though he did not speak positively, the members might reassemble under their own roof. The action of the Essex Institute was prompt and generous, and was gratefully appreciated by us all.

Very truly, J. W. Foster.

The Secretary also announced the following correspondence :—

From Joshua Coit, Salem, Nov. 25; D. Dorchester, Salem, Dec. 1; J. C. Holmes, Detroit, Mich., Nov. 28; S. C. Jackson, Boston, Nov. 23, 25, Dec. 1; William Stimpson, Ilchester, Howard Co., Md., Nov. 13.

The LIBRARIAN reported the following additions:—

By Donation.

AUSTIN, COL. F. Characters of some new Hepatiæ, 8vo pamph.

BOLLES, E. C. Catalogue of Officers and Students of Trinity College for 1871-72. Miscellaneous pamphlets, 9.

CLOGSTON, WM., of Springfield, Mass. Rochester Directories for 1857, '59, 1863-4, 1864-5, 1866-67, 1867-68. 6 vols. 8vo. Wheeling Directory, 1868-9. 1 vol. 8vo. Directory of South Norwalk for 1871. 1 vol. 8vo. Oswego and Fulton Directory, 1862-3. 1 vol. 8vo. Oswego County Directory, 1869-70. 1 vol. 8vo. Zanesville Directory, 1860. 1 vol. 8vo. Northern New York Business Directory, 1867-8. 1 vol. 8vo. Xenia City and Greene Co. Directory, 1870-1. 1 vol. 8vo. Ohio State Register, 1857. 1 vol. 8vo. Springfield, Ohio, Directory, 1868-9. 1 vol. 8vo. Columbus Directory, 1870-1. 1 vol. 8vo. Oneida County Directory, 1862-3. 1 vol. 12mo. Auburn Directory, 1863-4. 1 vol. 8vo. Utica City Directory, 1865-66. 1 vol. 12mo. Genesee Directory, 1869-70. 1 vol. 8vo. Chillicothe Directory, 1869-70. 1 vol. 8vo. Schenectady Directory, 1868-9. 1 vol. 8vo. Buffalo City Directory, 1869. 1 vol. 8vo. Columbus Directory, 1863-4. 1 vol. 12mo. Manchester Directories, 1846, 1848, 1852, 1856. 4 vols. 16mo. Nashua Directory, 1857-8. 1 vol. 16mo. Massachusetts State Directory, 1850-1. 1 vol. 16mo. Treble Almanac of Dublin, 1829. 1 vol. 12mo. Directory of Akron, Alliance, Cuyahoga Falls, Middlebury, etc., 1870-1, 1 vol. 8vo. Sermon preached in West Springfield, Mass., June 25, 1871, by Rev. S. E. Vermilye, D. D. 8vo pamph.

GREEN, S. A., of Boston. Catalogue of Monson Academy. 1871-2. 8vo pamph. Miscellaneous pamphlets, 13.

LEE, JOHN C. Commercial Bulletin for Nov. 1871.

NEAL, THEODORE A., of Boston. Boston Board of Trade, 1856, 1857, 1859, 1860, 1862, 1863, 1864. 7 vols. 8vo. Land Office Report for 1867. 1 vol. 8vo. Commercial Agency Register, 1868. 1 vol. 4to. Rules and Orders of the Senate. 1 vol. 8vo. Guide Books, 4. Almanacs, 3. Miscellaneous pamphlets, 27.

SMITH, CHARLES C. Services in memory of Rev. E. S. Gannett, D. D., Aug. 30, 1871. 8vo pamph.

WALLIS, MRS. JAMES A. Manuscript Journals kept by the late Asa Lamson, 11 vols. Interleaved Almanacs, 12.

By Exchange.

YALE COLLEGE LIBRARY. Catalogue of the Officers and Students in Yale College for 1871-72. 8vo pamph.

PUBLISHERS. Christian World. Gloucester Telegraph. Haverhill Gazette. Land and Water. Lawrence American. Little Giant. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Sailor's Magazine and Seaman's Friend. Shoe and Leather Journal. Silliman's Journal. Sotheran's Catalogue.

The following donations to the Historical Department were announced:—

KIMBALL, WILLIAM. View of Essex street from opposite the Market House to Washington street, painted by Joseph Cloutman about 1831.

SHEPARD, M. W. Two portraits in crayon of David Ropes and his wife of Salem. David Ropes, son of Benjamin and Hannah (Moses) Ropes, bapt. Apr. 14, 1739; variously styled "cooper," "trader," "gentleman," "innkeeper" and "merchant;" married, Oct. 9, 1760, Priscilla, dau. of Jonathan and Elizabeth (Sanders)

Webb; died Dec. 20, 1793. The widow long survived him, preserving in her last years a force of character and amiability which made her the object of constant and grateful attentions from a large circle of relations. She died Oct. 5, 1831, aged 91 years. (See Hist. Coll. of Essex Institute, vol. III, p. 125, and vol. VII, p. 162.)

Rev. E. S. Atwood occupied the hour of the meeting with an interesting and instructive communication on the "Beginnings and Growth of Language." It contained much curious and entertaining information and many valuable thoughts, and was listened to with great pleasure by a large audience.

Regular Meeting, Monday, December 18, 1871.

The President in the chair.

Records of preceding meeting read.

The Secretary read the following letter from the Secretary of the Chicago Academy of Sciences:—

Ilchester, Howard Co., Md., Dec. 4, 1871.

Dear Sir — The Chicago Academy of Sciences will hold a meeting on the 12th inst., at which time the Resolutions of the Essex Institute, communicated in your esteemed favor of the 17th of October, will be acted upon and the result reported to you by the recording secretary.

Allow me to add my personal thanks for the kind sympathy with us in our great misfortune, which the Institute has expressed through you, as well as for the offer of your publications to replace those lost.

Any of these publications which you can conveniently spare will be gratefully received. They may be sent to the care of Geo. C. Walker Esq., corner of Peck Court and Michigan Avenue, Chicago.

Very sincerely yours, Wm. Stimpson.

The following correspondence was also announced:—

From Albany Institute, Dec. 14; Bonn, Naturhistorische Verein, July 5; Bordeaux, Société Linnéene, July 12; Buffalo Historical Society, Dec. 8; Chicago Academy of Sciences, Dec. 4; Emden, Naturforschende Gesellschaft Sept. 22; Geological Survey of India, June 1; London Society of Antiquaries, Aug. 14; Luneburg, Naturwissenschaftliche Verein, Aug. 17; München, K. B., Akademie der Wissenschaften, Sept. 30; New York Historical Society, Dec. 4; New York Lyceum of Natural History, Dec. 4; Strasburg Library, Appeal for the Restoration

of, Nov.; Würzburg, Physicalisch-medicinische Gesellschaft, Aug. 11; H. M. Alden, New York, Dec, 6; Frank S. Sleeper, Galesburg, Mich., Dec. 7; E. M. Stone, Providence, R. I., Dec. 8.

The LIBRARIAN reported the following additions to the library :—

By Donation.

ALLEN, STEPHEN M. Standish Monument. Exercises at the Consecration at Duxbury, Aug. 17, 1871. 8vo pamph.

CHAPMAN, GEORGE R. Annual Report of the A. B. C. F. M., presented at the meeting in Salem, Oct. 3-6, 1871.

PREELE GEO. H., of Charlestown, Mass. Notes of Early Ship-building in Massachusetts. 8vo pamph.

SCHAUFUSS L., of Dresden. Miscellaneous Catalogues, 12.

By Exchange.

ARCHIV FÜR ANTHROPOLOGIE IN BRAUNSCHWEIG. Heft. Iv, Band Iv.

BOTANISK TIDSSKRIFT IN KJÖBENHAVN TIDSSKRIFT. Vol. iv, Tredje Heft, 1870.

CROSSE ET FISCHER. Journal de Conchyliologie. Tome I. Nos. 1-2-3. Paris, 1871.

ENTOMOLOGISCHE ZEITUNG IN STETTIN. Herausgegeben von dem entomologischen Vereine zu Stettin. Jahrg. 31. Nos. 1-2, 1870. 1 vol., 8vo. Stettin, 1870.

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REALE ACCADEMIA DELLE SCIENZE IN BOLOGNA. Rendiconto, Anno Accademico. 1869-70, 1870-71. 2 pamphlets, 12mo. Universal ta dei mezzi di previdenza, defesa, e sabrezza per le Calamità degli Incendia. Opera Premiata in Concorso dalla Accademia delle Scienze dell' Instituto di Bologna. Scritter da Francesco del Giudice. Bologna, 1818. Royal 8vo. Della Instituzione de Pompieri per grandi città e terre minori di qualunque stato; Libri Tre, né quali si tratta delle regole generali per fondare Compagnie di Soccoritori contro gl' incendi; si compendiano, esaminano e paragonano tra laro molti regolamenti oggi in vigore in Europa; e si propone una nuova forma di Statuto per quelli de essere dorunque

adatto. Opera Premiata in Concorso dalla Accademia delle Scienza dell' Instituto di Bologna e scritter dal Cavaliere Francesco del Giudice. Bologna, 1852. Royal 8vo.

SOCIETA REALE DI NAPOLI; ACCADEMIA DELLE SCIENZE FISICHE E MATEMATICHE. Atti dell' Accademia delle Scienze Fisiche e Matematiche. Vols. III, IV. Napoli, 1856-68-69. 4to pamph. Renediconto, Anno VI, VII, VIII, 1867-8-9. 4to pamph.

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VERMONT HISTORICAL SOCIETY. Vindication of Vol. I of the Collections from the "Attacks of the N. Y. Historical Magazine" by Hiland Hall. 8vo pamph. Montpelier, 1871.

ZOOLOGISCHE GESELLSCHAFT FRANKFURT A. M. Zoologische Garten. XII Jahrg. Nos. 1-6. Jan-June, 1871. 6 pamphlets, 8vo.

PUBLISHERS. American Literary Gazette. Gardener's Monthly. Gloucester Telegraph. Haverhill Gazette. Lawrence American. Little Giant. Lynn Reporter. Lynn Transcript. Medical and Surgical Reporter. Nation. Nature. Peabody Press. Shoe and Leather Journal. The Academy.

The following donations to cabinets were reported.

A. B. C. F. M. Papers relating to N. A. Indian affairs formerly belonging to Mr. John Pickering of Salem. Signatures of the members of the Board attending the meeting held in Salem, Oct., 1871.

BOLLES, E. C. A picture of Brooklyn Orphan Asylum.

CONSTANT, C., of Smyrna. No. I. Moule antique trouvé sur la route entre Smyrna et Boudja. No. II. Tête cassée statuette antique trouvée dans l' ile de Rhodes. No. III. Lampe on porte-lumiére antique trouva dans l' ile de Rhodes. No. IV. Petit vase ou urne cineraira trouvi dans l' ile de Rhodes.

NICHOLS, W. F., Cypress from Smyrna. Myrobalon from India. Unleavened Bread of the Armenians from Smyrna. Oak for tanning from Smyrna. A piece of Mosaic work from Pompeii. A piece of Lava from Smyrna. Views of Interno Cappella Palatina Palermo, Chiostro Morreale, Messina dai Cappriccini.

RAYMOND, B. C., of Beverly. Pincers used by Major John Conant of Beverly, who flourished about one hundred years ago. He made the fisherman's heavy boots.

Mr. F. W. PUTNAM gave an account of the Mammoth Cave and its inhabitants, with special reference to the fishes of the cave and of other subterranean waters.* He called attention to the varied conditions under which fishes exist, and especially to the structure and position of the eye in different representatives of the class. He then compared the blind fishes of the Mammoth Cave with those of the Cuban Caves and with the blind catfishes

* Mr. Putnam's remarks will be given in detail in the *American Naturalist* for January, 1872, and will be illustrated by plates on which the various species of the family including the blindfishes of the Mammoth Cave will be represented.

belonging to different families, and described the species making up the family of Heteropygii, which contains the two species of blind fishes of the Mammoth Cave and two other species that have eyes. Giving a statement of the various theories relating to the non-development of eyes in the blind fishes of the cave, he asked why is it necessary to assume that because fishes are living in streams where there is little or no light, that it is the cause of the non-development of the eye and the development of other parts and organs? If this be the cause, how is it that the Chologaster from the well in Tennessee, or the "mud-fish" of the Mammoth Cave are found with eyes? Why should not the same cause make them blind if it made the Amblyopsis and Typhlichthys blind? Is not the fact, pointed out by Prof. Wyman, that the optic lobes are as well developed in Amblyopsis as in allied fishes with perfect eyes, and, I may add, as well developed as those of *Chologaster cornutus*, an argument in favor of the theory that the fishes were always blind and that they have not become so from the circumstances under which they exist? If the latter were the case and the fishes have become blind from the want of use of the eyes, why are not the optic lobes also atrophied, as is known to be the case when other animals lose their sight? I know that many will answer at once that Amblyopsis and Typhlichthys have gone on further in the development and retardation of the characters best adapting them to their subterranean life, and that Chologaster is a very interesting transitionary form between the open water Cyprinodontes and the subterranean blindfishes. But is not this assumption answered by the fact that Chologaster has every character necessary to place it in the same family with Amblyopsis and Typhlichthys, while it is as distinctly and widely removed from the Cyprinodontes as are the two blind genera mentioned?

After reviewing the characters of the allied forms, he concluded his remarks as follows :—

From this brief comparison of some of the prominent characters of the genera of the Heteropygii with the Cyprinodontes, their acknowledged nearest allies, we can only trace what could be regarded as a transition, or an acceleration, or a retardation, of development, in simply those very characters, of eyes and ventral fins, that are in themselves of the smallest importance in the structure (permanence of character considered) of a fish, and, as if to show that they were of no importance in this connection, we find in the same cave, blind fishes with ventrals and without; and in the same subterranean stream, a blindfish and another species of the family with well developed eyes.

If it is by acceleration and retardation of characters that the Heteropygii have been developed from the Cyprinodontes, we have indeed a most startling and sudden change of the nervous system. In all fishes the fifth pair of nerves send branches to the various parts of the head, but in the blindfishes these branches are developed in a most wonderful manner, while their subdivisions take new courses and are brought *through* the skin, and their free ends become protected by fleshy papillæ, so as to answer, by their delicate sense of touch, for the absence of sight. At the same time the principle of retardation must have been at work and checked the development of the optic nerve and the eye, while acceleration has caused other portions of the head to grow and cover over the retarded eye.

Now, if this was the mode by which blindness was brought about and tactile sense substituted, why is it that we still have *Chologaster Agassizii* in the same waters, living under the same conditions, but with no signs of any such change in its senses of sight and touch? It may be

said that the Chologaster did not change because it probably had a chance to swim in open waters and therefore the eyes were of use and did not become atrophied. We can only answer, that if the Chologaster had a chance for open water, so did the Typhlichthys and yet that is blind.

If the Heteropygii have been developed from Cyprinodontes, how can we account for the whole intestinal canal becoming so singularly modified, and what is there in the difference of food or of life that would bring about the change in the intestine, stomach and pyloric appendages, existing between Chologaster and Typhlichthys in the same waters? To assume, that under the same conditions, one fish will change in all these parts and another remain intact, by the blind action of uncontrolled natural laws, is, to me, an assumption at variation with facts as I understand them.

Looking at the case from the standpoint which the facts force me to take, it seems to me far more in accordance with the laws of nature, as I interpret them, to go back to the time when the region now occupied by the subterranean streams, was a salt and brackish water estuary, inhabited by marine forms, including the brackish water forms of the Cyprinodontes and their allies (but not descendants) the Heteropygii. The families and genera having the characters they now exhibit, but most likely more numerously represented than now, as many probably became exterminated as the salt waters of the basin gradually became brackish and more limited, as the bottom of this basin was gradually elevated, and finally, as the waters became confined to still narrower limits and changed from salt to brackish and from brackish to fresh, only such species would continue as could survive the change, and they were of the minnow type represented by the Hetero-

pygii, and perhaps some other genera of brackish water forms that have not yet been discovered.

In support of this hypothesis we have one species of the family, *Chologaster cornutus*, now living in the ditches of the rice fields of South Carolina, under very similar conditions to those under which others of the family may have lived in long preceding geological times; and to prove that the development of the family was not brought about by the subterranean conditions under which some of the species now live, we have the one with eyes living with the one without, and the South Carolina species to show that a subterranean life is not essential to the development of the singular characters which the family possess.

That a salt or brackish water fish would be most likely to be the kind that would continue to exist in the subterranean streams, is probable from the fact that in all limestone formations caves are quite common, and would in most instances be occupied first with salt water and then brackish, and finally with fresh water so thoroughly impregnated with lime as to render it probable that brackish water species might easily adapt themselves to the change, while a pure fresh water species might not relish the solution of lime any more than the solution of salt, and we know how few fishes there are that can live for even an hour on being changed from fresh to salt, or salt to fresh, water. We have also the case of the Cuban blindfishes belonging to genera with their nearest representative in the family a marine form, and with the whole family of cods and their allies, to which group they belong, essentially marine. Further than this the catfish from the subterranean stream in Pennsylvania belongs to a family having many marine and brackish water representatives.

Thus I think that we have as good reasons for the belief in the immutability and early origin of the family of Het-

eropygii, as we have for their mutability and late development, and to one of my, perhaps, too deeply rooted ideas, a far more satisfactory theory: for, with our present knowledge, it is but theory on either side.

The following synopsis gives a summary of the characters of the family, genera and species.

HETEROPYGII Tellkampf, Müller's Arch. f. Anat., p. 392, 1844; and New York Journal of Medicine, v, p. 84, 1845.

Hypsæidæ Storer, Synopsis N. A. Fish, p. 435, 1846.

Brain of ordinary development in all its parts, similar to that of Cyprinodontes and of about the same proportions. Cerebral lobes larger than the nearly round optic lobes. Cerebellum overlapping the posterior third of the optic lobes. Medulla oblongata broad, with well defined right and left sides. (On comparing the brains of the three genera the only difference noticed was that in Chologaster the cerebellum was not quite as large proportionally, but more elongated and not quite as wide as in the other genera, while the optic lobes of this genus with well developed eyes were no larger than in a Typhlichthys of the same size.)

Skeleton not studied. Günther gives the vertebræ as thirteen abdominal and nineteen or twenty caudal. The bones of the head are thin and mostly flattened as in the Cyprinodontes. Occiput slightly convex.

Body compressed posteriorly. Head and anterior portion of body depressed, giving the form of a broad, flat head, with a compressed tail.

Branchiostegal rays six in number and but slightly covered by opercular bones; opercular opening large.

Fins. Dorsal and anal nearly opposite and posterior to centre of body. All the fins except the ventrals well developed, with central rays longest and first rays simple. Pectorals close to the head, about in the middle of the sides. (Ventrals present in Amblyopsis, absent in Typhlichthys and Chologaster.)

Mouth opening upwards, with lower jaw slightly projecting. Margin of the upper jaw formed by the intermaxillaries. Maxillaries placed behind the intermaxillaries, with lower third broad and below the intermaxillaries. Several rows of fine teeth on the intermaxillaries and lower jaw. (Teeth on palatines in Amblyopsis and Typhlichthys, none on these bones in adults of Chologaster.)

Scales. None on the head. Body closely covered with small, partially imbedded cycloid scales, irregularly arranged.

Lateral line absent.

Nostrils double. Anterior tubular and standing out from the end of the snout.

Stomach well defined, cœcal.

Pyloric appendages present.

Intestine with two turns.

Anus situated under the throat and forward of the pectorals.

Ovary single. (Placed by the side of the stomach in Amblyopsis and Typhlichthys and behind it in Chologaster.)

Viviparous. (Amblyopsis.)

Testes paired. (Amblyopsis.)

Air bladder with pneumatic duct. (Amblyopsis.)

Liver with the left lobe very large and partially enclosing the stomach.

Amblyopsis DeKay, Fishes of New York, p. 187, 1842.

Eyes rudimentary and imbedded under the skin.

Head with numerous transverse and longitudinal rows of sensitive papillæ provided with nerve branches, many of the nerve branches terminating as free filaments outside the papillæ. Small granulations on the spaces between the papillary ridges. Canals under the skin.

Teeth minute, curved, and arranged in rows on the intermaxillary, inferior maxillary and palatine bones.

Body with a prominent papilla just over the opercular opening, at the base of a small papillary ridge similar to those on the head. Papillary ridges on sides of body of same character as those on the head, and arranged at nearly equal distances from opercular opening to base of caudal fin.

Pyloric appendages, one on each side.

Ovary situated on the right side of the stomach.

Fins. Ventrals small and placed near the anal fin. Dorsal, 9. Anal, 9. Pectoral, 11. Ventral, 4. Caudal, 24.

Amblyopsis spelæus DeKay. Large Blindfish.

Craige, Proed. Acad. Nat. Sci. Philad., i, p. 175, 1842. DeKay, Fishes N. Y., p. 187, 1842. Wyman, Amer. Jour. Sci., xlv, p. 94, 1843; Ann. Mag. Nat. Hist., xii, p. 298., 1843. Thompson, Ann. Mag. Nat. Hist., xiii, p. 111, 1844. Tellkampf, Müller's Arch. f. Anat., p. 392, 1844; N. Y. Jour. Medicine, v, p. 84, with plate, giving three figs. of the fish; position of internal organs; brain; stomach; air bladder; scale (profile view gives the fish *without* ventral fins, but ventral view shows them), 1845. Storer, Synopsis N. A. Fish, p. 435, 1846. Owen, Lect. Comp. Anat. Fishes, pp.

175, 202 (fig. of brain), 1846. WYMAN, Procd. Boston Soc. Nat. Hist., iii, p. 349, 1850. "DALTON, N. Y. Medical Times. ii, p. 354, 18—." AGASSIZ, Amer. Jour. Sci. xi. p.128, 1851. WYMAN, Procd. Boston Soc. Nat. Hist., iv, p. 395 (1853), 1854; v. p. 18, 1854; Amer. Jour. Sci., xvii, p. 259, 1854 (with figs. of brain, eye, and otolite). GIRARD, Proc. Nat. Sci. Philad., p. 63, 1859. POEY, Mem. de Cuba, ii, p. 101, Pls. 9, 11 (outlines of fish and of brain), 1858. WOOD, Ill. Nat. Hist., iii, p. 314, figure, 1862. TENNEY, Nat. Hist., p. 344, figure, 1865. GÜNTHER, Cat. Fish Brit. Museum, vii, p. 2, 1868. COPE, Ann. Mag. Nat. Hist., viii, p. 368, 1871. PUTNAM, Amer. Nat., vi, p. 6 et seq., with figs., Jan., 1872. WYMAN, Mss. notes and drawings in Putnam, Amer. Nat., vi, p. 16 et seq., 1872. PUTNAM, Amer. Nat., vi. p. 116. Feb., 1872 (additional note on the young).

PLATE 1 (American Naturalist, Vol. vi. Jan., 1872). FIG. 1. Brain, nerves and organ of hearing of *Amblyopsis spelæus*: enlarged; *a*, olfactory lobes and nerves; *b*, cerebral lobes; *c*, optic lobes; *d*, cerebellum; *e*, organ of hearing, showing the semicircular canals, with the otolite represented in place by the dotted lines; *f*, medulla oblongata; *g*, optic nerves and eye specks. FIG. 2. Otolite, enlarged. FIG. 3. Eye, magnified (natural size one-sixteenth of an inch in length); *a*, optic nerve; *b*, sclerotic membrane; *c*, layer of colorless cells; *d*, layer of pigment cells (iris?); *e*, lens. FIG. 4. Lens, enlarged and showing the cells. FIG. 5. Eye, enlarged, showing the muscular bands, *a*, *a*, *a*, *a*; *b*, the lens pressed out of place; *c*, the optic nerve. FIG. 6. Top of head, showing canals under the skin, natural size. The two black dots and lines indicate the eyes and optic nerves in position. FIG. 7. Top of head, showing the arrangement of the ridges of papillæ, nat. size. FIG. 8. One of the ridges of papillæ from the head, magnified. FIG. 9. Three of the papillæ from the ridge, still more magnified, showing the cup-shaped summit and projecting filament. Fig. 10. A portion of the ridge magnified, and treated with acid, to show the arrangement of the nervous plexus supplying the papillæ with nervous filaments from a branch (*a*) of the fifth pair. FIG. 11. Epithelial cells from the head. FIG. 12. Epithelial cells from the body.

PLATE 2. FIG. 1. Natural size; 1*a*, stomach and pyloric appendages, twice nat. size; 1*b*, scale, magnified (nat. size represented by the small outline on the left over the figure); 1*c*, abdominal cavity, showing position of stomach and single ovary, nat. size.

Head more than half as wide as it is long. Length of head, from tip of jaw to end of operculum, contained nearly twice in length of body from operculum to base of caudal fin.

Dorsal and anal fins of equal size, rounded, anal commences under third ray of dorsal.

Pectorals pointed, reaching to commencement of dorsal.

Ventrals pointed, nearly reaching to commencement of anal.

Caudal broad, long and pointed, membrane, enclosing simple rays above and below, continuing slightly on the tail.

Scales small, longer than broad, with quadrangular centre and from 8 to 12 concentric lines, which are broken and reduced in number anteriorly and crossed by numerous radiating furrows posteriorly.*

Colorless, or nearly so, with transparent fins.

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* The scales described were in every instance taken from the 2d or 3d row under the dorsal fin.

Measurements. Largest specimen, 4·5 inches total length. Smallest specimen, 1·9 total length.

Geographical distribution. Subterranean streams in Kentucky and Indiana.

Specimens examined:—

PROF. WYMAN'S COLLECTION.

7 specimens. Half grown and adults. Mammoth Cave.

MUSEUM OF COMPARATIVE ZOOLOGY.

7 specimens. No. 778. Half grown and ♂ ♀ adults. Mammoth Cave.

1 specimen. No.—. Two-thirds grown. Cave near Lost River, Orange Co., Ind.

BOSTON SOCIETY OF NATURAL HISTORY.

2 specimens. No. 810. Half grown. Mammoth Cave.

PEABODY ACADEMY OF SCIENCE.

1 specimen. No. 520. Adult ♀. Mammoth Cave. Presented to Essex Institute in 1851 by N. Silsbee.

Other specimens. Dr. Günther mentions six specimens and a skeleton in the British Museum. Mr. Thompson, an adult and newly born young in the collection of the Natural History Society of Belfast. Dr. Steindachner has recently sent an adult and eight young to the Vienna Museum. The first specimen of which we have any record was presented to the Academy of Natural Sciences of Philadelphia; the second is the one described by DeKay and then in the Lyceum of Natural History of New York. Prof. Cope obtained three specimens from the waters of Wyandotte Cave in Indiana. Dr. Tellkampf had several specimens from the Mammoth Cave, and it is probable that specimens exist in nearly all the principal museums and in many private collections, as about all that have been caught in the Mammoth Cave for years have been sold by the guides to visitors.

Habits. But little is known of the habits of the large blindfish. Dr. Tellkampf states that they are solitary; on the slightest motion of the water they dart off a short distance, and that they are mostly found near stones or rocks on the bottom, and seldom come to the surface of the water. Prof. Cope states that if they are not alarmed they come to the surface to feed, swim in full sight, and can then be easily captured if perfect silence is preserved. He also thinks that they are principally surface feeders.

In the stomachs of several that I have opened the only remains found were those of Crayfish. In one specimen, opened by Dr. Wyman, a small fish with well developed eyes was found in the stomach. (See Amer. Nat., vi, p. 13, Pl. 1, fig. 13.)

The eggs are well developed in September, and the young are born about the middle to last of October. The young when born are half an inch or less in length, and are *without* external eyes. (See Amer. Nat., Feb., 1872. The young there mentioned may possibly be those of Typhlichthys.)

Typhlichthys Girard, Proed. Acad. Nat. Sci. Philad., p. 63, 1859.

Eyes rudimentary and imbedded under the skin.

Head. The same arrangement of rows of sensitive papillæ as in Amblyopsis, and the spaces between the papillæ with granulations as in that genus. (The subcutaneous canals probably exist, but have not yet been made out.)

Teeth, as in Amblyopsis, on the maxillaries and palatines.

Body with papilla over opercular opening, and with the papillary ridges on the sides as in Amblyopsis.

Pyloric appendages one on each side as in Amblyopsis, but of slightly different proportion and shape. (Stomach not so pointed behind as in Amblyopsis.)

Ovary situated on right side of stomach, as in Amblyopsis. (Eggs fewer in number and proportionately larger than in Amblyopsis.)

Fins. Ventrals *absent.* Dorsal, 7 or 8; Anal, 7 or 8; Pectoral, 12; Caudal 24. (This formula is given after counting several specimens. Girard gives, D. 7; A. 8; P. 11; C. 23.)

It will be noticed that the only characters separating this genus from Amblyopsis are the *absence of ventral fins*, the shape of the stomach and pyloric appendages, and larger eggs in less number.

Typhlichthys subterraneus Girard. Small Blindfish.

Girard, Proed. Acad. Nat. Sci. Philad., p. 63, 1859. Günther, Cat. Fish Brit. Museum, vii. p. 2, 1868 (as a syn. of Amblyopsis). Putnam, Amer. Nat., vi. p. 20 et seq., with figs., Jan., 1872.

Plate 2 (Amer. Nat., Vol. vi., Jan., 1872). Fig. 3, slightly more than natural size; 3*a*, stomach and pyloric appendages, twice nat. size; 3*b*, scale, magnified (nat. size represented by small outline over the figure).

Proportions and general appearance, want of color, arrangement of papillary ridges, position and shape of fins as in Amblyopsis spelæus, with the exception that, owing to the jaws being more obtusely rounded, the head is slightly blunter and broader forward.

Membrane of caudal quite prominent and extending forwards to posterior base of dorsal and anal fins.

Scales broader than long. Large quadrangular centre with from 6 to 8 concentric lines reduced in number and broken up on anterior margin. Posterior portion with numerous radiating furrows.

Measurements. Largest specimen, 1·85 inches in total length. Smallest specimen, 1·45 inches in total length.

Geographical distribution. Subterranean streams in Kentucky, Tennessee and Alabama.

Specimens examined: —

MUSEUM OF COMPARATIVE ZOOLOGY.

7 specimens. No. 780. ♂ ♀. Adults. Mammoth Cave. Collected and presented by Alpheus Hyatt, Sept., 1859.

1 specimen. No. 781. Moulton, Alabama. Presented by Thomas Peters.

1 specimen. No. 782. Lebanon, Tennessee. Presented by J. M. Safford.

Other specimens. Dr. Girard described the species from a specimen in the Smithsonian Institution, taken from a well near Bowling Green, Ky. Dr. Günther mentions a specimen, in the British Museum, from the Mammoth Cave.

Habits. Nothing is known concerning the habits of this fish. It is evidently much rarer at the Mammoth Cave than the large species, to judge from the small number in collections. The fact that Mr. Hyatt obtained seven specimens when he was at the cave in September and did not get any of the other species, may indicate some peculiar location in the waters of the cave where it is more abundant than in other places. The eggs were fully developed in these specimens, but no embryos could be detected. The fish is probably viviparous, and very likely gives birth to its young in October.

Chologaster AGASSIZ, Amer. Jour. Sci., xvi, p. 135, 1853.

Eyes in normal position and well developed.

Head with small granulations on the surface of the skin. (No papillary ridges.)

Teeth minute, curved and arranged in rows on the intermaxillary and inferior maxillary bones. None on the palatines in the adults (Of the four specimens examined, the two larger (*C. cornutus*) are without palatine teeth, while the single specimen of *C. Agassizii*, which is evidently a young fish, has a few minute teeth on the palatine bones. In the smallest specimen of *C. cornutus* the mouth is abnormal, the intermaxillaries being reduced to a small central portion and there are consequently no teeth in the upper jaw, but the minute teeth on the palatines are present.*)

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* I believe this is one of those interesting cases where one set of organs, or one portion of the animal structure, takes the place of another which from accident is wanting, and that in all probability these palatine teeth, that under normal conditions would be cast off as the fish attained maturity, would have continued to exist in this specimen and answer all the purposes of the intermaxillary teeth. But that in this accidental continuance of these palatine teeth, from the mere mechanical use forced upon them, we have the first stages of the development of a distinct genus, to be characterized by permanent teeth on the palatines, and reduced upper jaw bones, as many of the developmental school would argue, I do not think will bear the test of facts observed.

A not uncommon malformation of fishes consists in the entire or partial absence of the maxillary or intermaxillary bones. I have specially noticed this among our

(*Body* without opercular papilla and papillary ridges on the sides.)

Pyloric appendages two on each side. Stomach rounded and turned slightly on the side.

Ovary situated principally behind the stomach.

Fins. Ventrals *absent.* Dorsal, 8 or 9. Anal, 8 or 9. Pectoral, 12. Caudal, 28.

This genus principally differs from Amblyopsis and Typhlichthys by the presence of eyes, the absence of papillary ridges on the head and body, by having two pyloric appendages on each side instead of one, and by the posterior position of the ovary. It agrees with Typhlichthys in the absence of the ventrals, and the young further agree by the presence of palatine teeth.

Chologaster cornutus Agassiz.

Agassiz, Amer. Jour. Sci., xvi, p. 135, 1853. Girard, Procd. Acad. Nat. Sci. Philad., p. 63, 1859. Günther, Cat. Fish. Brit. Museum, vii, p. 2, 1868. Putnam, Amer. Nat., vi, p. 21 et seq., with figs. Jan., 1872.

Plate 2 (Amer. Nat., Vol. vi, Jan., 1872). Fig. 2. Natural size. 2*a*, stomach and pyloric appendages, twice nat. size. 2*b*, scale magnified (nat. size represented by small outline over the left of the fig). 2*c*, abdominal cavity showing stomach and single ovary behind the stomach, twice nat. size.

Head more than half as wide as it is long. Length of head, from tip of under jaw to end of operculum contained twice in length of body from operculum, to caudal fin. Width between the eyes equal to distance from eye to tip of under jaw.

Eyes of moderate size, situated just back and over the end of the maxillaries.

Dorsal and anal fins of nearly equal size, slightly rounded. Anal with slightly longer rays and commences under fourth ray of dorsal.

Pectoral fins pointed, reaching to line of commencement of dorsal.

Caudal fin pointed, about equal in length to the head. Membrane above and below extending but slightly on the tail.

Scales very small and deeply imbedded in the skin. Circular with small smooth space forward of the centre. From 15 to 20 concentric rings, cut by a few short radiating furrows on anterior, and longer and more numerous ones on posterior margin.

Intestine is a little longer than in an Amblyopsis of the same size.

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common fresh water trout (Salmo) and marine conner or sea perch (Ctenolabrus) but there have never been recorded allied genera with these characters, while the malformed specimens are hardly numerous enough to give support to the theory that such malformations are hereditary, and it is probable that each case was caused by the non-development of the parts from special cause during embryonic life, or by accident to the individual.

The two pyloric appendages on the left side are close together and broader than the two on the right side, which are wider apart, longer and more slender than the others.

Color. Yellowish brown, much darker above, lighter on sides, and light yellow on under part and sides of head, belly and under part of tail. Three longitudinal very dark brown lines on each side: the upper commencing near the middle of top of head and following along the back to base of caudal fin; the middle one commencing at the nostril and passing through the eye to upper portion of operculum, thence about in the centre of side to about the centre of base of caudal fin; the lower commences under the pectoral fin and follows the ventral curve of the body to the base of caudal fin. All three lines are darkest and broadest forward, and terminate as a series of nearly confluent dots on the tail. Central rays of the caudal dark brown, outer rays uncolored. Dorsal, anal and pectorals not colored.

Measurements. The three specimens are respectively 1·5, 2, and 2·3 inches in total length.

Geographical distribution. South Carolina.

Specimens examined:—

MUSEUM OF COMPARATIVE ZOOLOGY.

3 specimens. No. 776. Rice Ditches at Waccamaw, S. C. Presented by P. C. J. Weston, 1853. (Orig. of Agassiz.)

Habits. Nothing is known concerning the habits of this species, the only specimens observed being the three mentioned. From the fact of its having a single ovary containing a small number (about 60) of large eggs it is probable that it is viviparous.

Chologaster Agassizii PUTNAM.

PUTNAM, Amer. Nat., vi, p. 22 et seq., with figs. Jan., 1872.

PLATE 1 (Amer. Nat., Vol. vi, Jan., 1872). FIG. 4. Natural size; 4*a*, stomach and pyloric appendages, twice nat. size; 4*b*, scale magnified (nat. size shown by minute dot over left of the figure).

Head more than half as wide as it is long. Its length is contained three times in the length of the body from the operculum to the base of caudal fin.

Eyes proportionately large and placed over ends of maxillaries.

Dorsal and anal fins broken, but probably of about equal size. Anal fin commences about under fourth ray of dorsal.

Pectoral fins pointed and reaching about half way to the dorsal.

Caudal fin pointed, not quite as long as the head.

Scales very minute, longer than wide, with 4 or 5 concentric

lines round a granulated centre. A few radiating furrows cut the concentric lines on the posterior margin.

Pyloric appendages and stomach about the same as in *C. cornutus*.

Color. Uniform light brown, without markings except that the base of the caudal fin is rather darker than rest of fish. Fins uncolored.

Measurements. Total length, 1·4 inches.

Geographical distribution. Subterranean streams in Tennessee.

Specimen examined:—

MUSEUM OF COMPARATIVE ZOOLOGY.

1 specimen. No. 777. From a well in Lebanon, Tenn. Presented by J. M. Safford. Jan., 1851.

This species principally differs from *C. cornutus* by having a longer body and smaller head, by having the eyes proportionately larger, and by its coloration. Nothing is known of its habits except the fact of its subterranean life. The scales of the single specimen known indicate a young fish, and it is probably not over half grown.

The four species given in this synopsis are all of the family as yet known, but that others will be discovered and the range of the present known species extended is very probable. The ditches and small streams of the lowlands of our southern coast will undoubtedly be found to be the home of numerous individuals, and perhaps of new species and genera, while the subterranean streams of the central portion of our country most likely contain other species.