in imploring and celebrating the coming of the less mysterious herds of buffalo. The wonderous fecundity of the fish early made it the symbol of life and the creative power. The Israelites often relapsed into the worship of the fish-gods of Phœnicia. In the early Christian Church the fish symbol for Christ, adoption of which was probably influenced by the traditional sentiment indicated, anteceded the acrostic of his name and titles in Greek, Ιησοῦς Χριστός Θεοῦ Υἱός Σωτήρ, presented by the letters of the Greek word ΙΧΘΥΣ, though the permanence of the symbol was doubtless enchanced by the literary coincidence.

The old doctrine of 'signatures,' so called, had its effect in the adoption of fish as spiritual food. It was cold, and the meat was generally white, thus coinciding with the symbolism of temperature and color to express purity.

It is fortunate that some rules in relation to repletion are no longer observed. One which was noticed among the Hurons and the Canadian Algonkins by the early French missionaries, and styled *le festin à manger tout*, consisted in the religious obligation, sometimes attended with loss of life, of the communicants to eat up every particle which was set before them. A festival, somewhat of the same nature, was called the 'glutton mass,' celebrated in England during if not after the reign of Henry IV. A less dangerous, because regulated, term of repletion was prevalent in India, according to a Brahman tradition, in which the invitees, before commencing the carouse, bound themselves around the abdomen with a band of straw; and their modified feat was, not to eat indefinitely until all had been devoured, but only until the straw bands should burst. There is no survival of this custom except in the exaggerated hospitality, generally rustic, in whch the host persists in petitions that the guests should continue to eat, without reference to their apparent wishes. Modern etiquette shows marked improvement in never suggesting either selection or quantity of provender.

The conclusion of our dinner raises again the vexed question concerning the retirement of the lady *convives* to leave the men alone. Of course, it is well understood that the object among the hard-drinking Englishmen of the last generation was to permit their sitting for the excessive consumption of wine without the disturbing restraint of the sex. The French, being less addicted to intoxication, and perhaps more professedly attached to the presence of the fair, did not admit this usage. It, however, is a partial survival of the ancient practice, still observed in most savage tribes, in which the women never eat in company with the men. A relic of this is found in the order of Bishop Grosseteste in 1450: "Streytly forbede ye that no wyfe [that is, woman] be at your mete." In this country, and indeed now in civilized Europe, there is less addiction to heavy drinking, with a greater desire for smoking after repletion: so a convenient compromise has been effected by which the gentlemen adjourn to a smoking-room, while the ladies segregate themselves for gossip.

It is well to have an agreement as to who is to take the lead in departure, by which the party is broken up. A difficulty of this kind occurred when Dom Pedro, Emperor of Brazil, was a few years ago invited to an entertainment at the White House in Washington. At a late hour, when some of the guests, becoming weary, were about to take their leave of the President's wife, she remonstrated, saying correctly that it was the etiquette for the crowned head to depart first, and all others must await his pleasure. Now, the Emperor had asked the question about our etiquette in this regard of an honest Senator, who was confused about the 'receiving party' being always composed of the persons of greatest dignity, and pronounced that Pedro must stay until all not of the household had departed. It was not till about 3 o'clock in the morning that the dead-lock was broken by the illness, real or pretended, of one of the worn-out ladies.

Another disease has been classed among the germ diseases. Dr. Arthur Nicolaier of Göttingen states it as his belief that tetanus, whether in man or beast, is the result of a micro-organism of the rod form, whose spores are widely scattered over the earth. This microbe favors the production of poisons in the system into which it is introduced, which act similarly to strychnine.

SCIENTIFIC NEWS IN WASHINGTON.

How the Washington Scientific Societies were founded; the Old Scientific Club; the Philosophical, Anthropological, Biological, Chemical, and Geographic Societies; the Cosmos Club; the Proposed Publication of Quarterlies. — Micmac Pictographs; Colonel Mallery's Investigations Last Year. — The New Naval Observatory Building to be erected at once.

The Washington Scientific Societies.

A few years ago the Scientific Club was the only organization of that character in Washington. It met fortnightly at the houses of its members, listened to the reading of papers, and closed with a collation. It had many very interesting meetings, at which important papers were read; but the zeal of its members was not as great as its organizers had hoped for. The reason for this seemed to be, that, nearly all the scientific men in Washington being specialists, they were greatly interested only in those lines of inquiry in which they were themselves engaged, and in such others as were directly or remotely related to them. But the papers at any given meeting of the Scientific Club might interest only a very few of those who were present. There was no way to fit the subjects to the audience, or *vice versa*, where both were so diversified. It was therefore thought best to have specialized societies instead of one general one, and a beginning was made by the organization of the Philosophical Society. It met fortnightly, as the Scientific Club had done, but in a hall instead of at a private residence, and the collation was omitted. The meetings were well attended, the entire time was occupied with valuable and interesting papers, and the zeal of the members grew instead of diminishing. The Philosophical Society in due time carried the idea of specialization a step farther, and organized a mathematical section, at whose meetings papers upon pure and the more abstruse mathematics and its applications were presented instead of in the meetings of the full society. There is no lack of material for the fortnightly meetings of this section, or of interest on the part of its members.

The next of the Washington scientific societies to be organized was the Anthropological. The almost exhaustless amount of valuable archæological remains that were being discovered and collected for preservation, the successful work of the Bureau of Ethnology, and the labor of classifying, arranging, and discussing the collections, caused the employment of a great number of scientific men in different branches of Anthropology, and they formed a society for the discussion of these topics. It has been as successful as its less specialized predecessor, the Philosophical Society. There is never any lack of interest, or any difficulty in securing sufficient papers to fill up in their reading the full two hours that the society is in session on every alternate Wednesday evening during the season.

For like reasons, and attended with an equal measure of success, the Biological Society, the Chemical Society, and the Geographic Society have been organized. The last-named, although the youngest, already has more than two hundred members, and all of its meetings during the past season have been successful ones. Mr. Gardiner G. Hubbard is the president of it.

When the Philosophical Society was formed, the social element, which had been one of the attractive features of the old Washington Scientific Club, disappeared. The meetings being held in a hall instead of in private residences, and the entire time of the meetings being occupied with the reading of papers, the members found that they had very little opportunity to become acquainted with each other; and so, in order that the social advantages might not be lost, the Cosmos Club was formed. It began in a modest way, taking rooms in an upper story of the Corcoran Building, and furnishing them comfortably and tastefully, but not expensively. There were reading, writing, smoking, billiard, and card rooms; the first supplied with the leading daily and weekly papers of this country, and with the principal magazines and periodical scientific publications of the United States and Europe. The initiation fees and annual dues were moderate, and the Cosmos Club flourished from the beginning. It is now established in its own house in one of the most central and beautiful locations in Washington, and is the resort of the scientific men in Washington. Once a month, during the winter, a loan exhibition of paintings, objects illustrating

some branch of science, fine scientific instruments, curios or bric-a-brac, is prepared in the club-house. Some of those of the past season have been exceedingly interesting and instructive. The privileges of the club are extended to all scientific and literary men from a distance who visit Washington; and one meets there during the season, besides the members, scores of people one likes to know.

Two or three years ago the Cosmos Club extended its house by adding a fine assembly-hall, and in this the several scientific societies hold their meetings without expense for rent, etc. Although this hall communicates directly with the club apartments, and, when not occupied by one of the societies, is used as a reading-room, it has an independent entrance from the street.

The Washington scientific societies have, until the past season, published nothing but their proceedings, including the briefest abstracts of the papers presented; but last fall the Anthropological Society began the issue of a quarterly, in which have appeared some of the most important papers read before the society, printed in full. The Biological and Chemical Societies have concluded to begin similar publications next season, and the others will probably follow their examples at an early date. The entire scientific community in Washington has been interested in the abstracts of the more important papers read in the meetings of these societies, that have appeared in *Science* during the past few months.

The three older societies established two years ago the free courses of popular scientific lectures that are given in the auditorium of the National Museum on Saturday afternoons during the winter and spring. They have been successful and thronged from the beginning, and were noticed editorially in *Science* recently.

The coming decade is to be the seed-time of science in Washington. The material for study comes pouring into the scientific bureaus like a flood, more rapidly than it can be handled. Congress is disposed to be liberal in granting money for this work, having confidence that it is wisely and economically done. In certain branches there is far better and more abundant material for study than elsewhere in the country, — as good, indeed, as there is in the world, — and the Washington scientific societies promise to do their full share in giving to the world some knowledge of our scientific treasures and what they teach.

Micmac Pictographs.

In introducing the narrative of his investigations in Nova Scotia, and afterwards in Maine, last year, Col. Garrick Mallery, of the Bureau of Ethnology, says that he does so with the more satisfaction because he is alone in that field. No one before him has examined or discussed the pictographs of the Micmacs or Abaki, or indeed published any allusion to them, except in some incidental and unappreciative manner.

"The Micmacs," he says, "were an important tribe, occupying all of Nova Scotia, Cape Breton Island, Prince Edward's Island, the northern part of New Brunswick and the adjacent part of the Province of Quebec, and ranging over a great part of Newfoundland. . . . In 1611 the Micmacs were estimated at 3,000 to 3,500. In 1760 they were reported at nearly 3,000, but had lately been much wasted by sickness. In 1766 they were again placed at 3,500; in 1880 they were officially reported at 3,892; and in 1884 they numbered 4,037. Of these, 2,197 were in Nova Scotia, 933 in New Brunswick, 615 in Quebec, and 292 on Prince Edward's Island."

After quoting from the writings of missionaries and others references to the picture-writings of the Micmacs, and giving accounts of several attempts to reduce these to a system, and even to print books in them, Colonel Mallery continues: "So far, my examination of the Micmac hieroglyphs shows that the best mode of interpreting the aboriginal characters involved in them is by the sign-language. This does not now prevail as a matter of general use among the Micmacs; but stories and traces of it survive, and the gestures of other members of the Algonkin family can be applied. Quite a number of the Micmacs remember the use of marks or devices on birch-bark in their common details of life, such as notices of departure, and warning of danger.

"My search for petroglyphs, or rock-carvings, in the land of the Micmacs, or, as the railroad-guides now call it in honor of Longfellow, the land of Evangeline, was unsuccessful, except in one notable instance. Nevertheless I am confident, from ascertained traditions, that there are more to be found. Much of the territory is yet unexplored, and the inhabitants are wholly neglectful of such subjects. The nearest neighbor, a middle-aged farmer who has lived all his life at the same spot, about three miles from the unique and probably most important pictured rocks to be described, had but a vague knowledge of them, and had some trouble in piloting me through them. These rocks are on the margin of a lake which is almost on the boundary-line between Annapolis and Queen's Counties.

"The proper literation of the name of the lake called 'Cegemacaga' in More's 'History of Queen's County, N.S.,' according to Dr. Silas Rand's work, 'First Reading-Book in Micmac Language, comprising Indian Names of Places,' is 'Kejimkoojik,' translated as 'swelled parts,' doubtless referring to the expansion of the Liverpool River, which forms the lake.

"The Fairy Rocks, as distinct from others, are three in number, on the east side of Kejemkoojik Lake, on the south of the entrance of Fairy Lake, the northernmost of the three rocks being immediately at the entrance. The westernmost and central one of the rocks, saving a small surface, at high water, and at the highest water, are entirely submerged.

"Three other rocks are about two miles south of the above, at Piel's Point (a corruption of 'Pierre's Point'), opposite an island called Glode's or Gload Island, probably named from a well-known Micmac family. These are virtually a continuation of the same formation, with a depression between them. All of these rocks are of schistose slate, Silurian formation, and with so gentle a dip that their magnitude varies greatly in accordance with the height of the water. On Aug. 27, 1887, when, according to the reports of the residents, water was at one foot above the average summer level, the unsubmerged portion of the central rock then surrounded by water was an irregular oval, the dimensions of which were forty-seven by sixty feet. The highest points of the Fairy Rocks at that date were not more than three, and few were more than two, feet above the surface of the water. The inclination near the surface is so small that a falling of the water of one foot would probably double the size of that extent of the surface which by its smoothness and softness was fit to be marked upon by scratching. The inclination at Pierre's Point is steeper, but still allows a great variation of exposed surface in the manner mentioned.

"Mr. George Creed of South Rawden, who, I believe, is the only intelligent man in the peninsula who ever visited Fairy Rocks before me, did so in July, 1881, and accompanied me last year. His attention was entirely directed to the northernmost one, which was then much more exposed above the water than in September, 1887, and much of the inscribed portion seen by him in 1881 was under water in 1887. That the parts of the rocks adjoining those exposed are inscribed, is evident, as the inscriptions were seen in 1881 by Mr. Creed through the water, and again through a water-glass in 1887. His recollection of the inscribed dates seen in 1881 is that a number were of the last century, and some with French names attached were earlier than 1700, the worn appearance of which justified the correctness of the date. A number of markings were noticed by him which are not found in the parts now exposed, notably among which were fishes and whales. There were also wigwams and native animals, evidently of more ancient marking than the etchings of horses, ships, houses, and other European objects which are more frequent on the constantly exposed surface. A noticeable point was that the large surface where the rock was smooth was completely marked over, no space of three inches square being unmarked; and over nearly all the surface there were two, and in many cases three, sets of markings, above one another, recognizable by their differing distinctness. It also seemed that the second or third marking was placed upon localities where the earlier markings have been nearly smoothed out or obliterated: therefore the antiquity of the earliest must be considerable. With pains and skill the earliest markings can be traced, and these are outlines from which intrinsic evidence is obtained that they were Indian; whereas the later and more sharply marked outlines are obviously made by civilized men or boys, the latest being mere initials or full names of persons, with dates attached.

"I saw dates on the part exposed from 1800 to the current year, the number of last year being much the greatest over the favorable surfaces for marking; and, when these were found, the double or treble use in some instances was noticed.

"After having actually gotten on to the rocks, and discovered what they were and how to distinguish and copy them, it appeared, that with the exception of a very few characters recently dug or chipped out by lumbermen or visitors, almost always initials, the only interesting or ancient portions were scratchings, which could be made by any sharp instrument on soft and polished slate. The rocks were great drawing-slates, affording a temptation to any idly disposed person to scratch. Happening to have with me an Indian stone arrow which had been picked up in the neighborhood, I used that upon the surface, and it would make as good scratches as any upon the rocks, except the very latest, which were evidently cut with metal knives by the whites. The time in which I was actually at work in taking copies was very short, only parts of two days; and then a violent storm arose, which continued for several days, during which time it was impossible not only to see the faint scratchings which were of interest, but even to move over the rocks, as they were rendered as slippery as glass by the moisture; and then I was forced to leave for Washington.

"The mode in which I took the copies was by running over and through their outlines with a blue aniline pencil, and then pressing a wetted sheet of linen or paper upon them, so that the impression was taken as by print. Purposely, in order to experiment upon a successful mode of getting the copies, I made my first work upon those that were of least apparent interest, *experimentum in corpore vili*, so that I should not by my operations spoil those which were of more importance. The main object which I had in the examination of the inscriptions was to ascertain whether there were upon these rocks any of the more simple and more probably aboriginal characters that are found in the hieroglyphs of Kauder. In the short time that I was at work I discovered certainly two of the characters what were in Kauder's work. Both of these are similar to, but not identical with, symbols of the Roman Catholic Church.

"It still remains undetermined whether those particular characters were imitated by Indians during the last two hundred years from religious symbols collected by Kauder, or whether those religious symbols had been adapted from some characters which had previously been in use. A more extensive examination and study of the characters on the rocks, of which probably there are thousands that I did not copy, or indeed carefully examine, would be necessary before it could be determined to verify my hypothesis that the scratching of symbols on these rocks would be explanatory of the Micmac printed hieroglyphs.

"On one point the peculiar multiplication of the characters affords an index to antiquity beyond what is generally possible. The existence of two or three different sets of markings, all visible, and of different degrees of distinctness, is in itself important; but, in addition to that, it is frequently the case that the second and third in the order of time have associated with them dates, from which the relative antiquity of the faintest and dateless can be to some extent estimated. The third and most recent class of dates are English names, and are associated with the forms of English letters; the second class are French names, and in some cases have French designs.

"There is an interesting story on this subject which was communicated to me from Louis Labrador, whose great-grandfather, old Ledore, according to his account, piloted a body of French Acadians, who, at the time of the expulsion in 1756, were not shipped off with the majority. They escaped the English, and travelled from the valley of Annapolis to Shelbourne, at the extreme south-east of the peninsula, and were on their way from May to October. During that passage they halted for a considerable time to recruit in this beautiful valley along the Kejimkoojik Lake, the very spot where these markings appear, and which was on the ancient Indian trail. It is exceedingly probable that the French would have been attracted to scratch on these fascinating smooth slate surfaces whether or not they had observed previous markings, but it seems evident that they did scratch over such previous markings. Therefore the latter antedated the middle of the eighteenth century.

"One of the printed impressions taken in the manner before mentioned is of a bat between an armed brig and troops or Indians on land, which might have been one of the several naval expeditions against the Acadians; as, for instance, that of Argall in 1614, or Cromwell's of 1654, and which was etched as of historical interest by the French wanderers at the time mentioned. The rig of the vessel has not been used for at least a century, and the 'top' where men are shooting at those on shore reminds of the old sea-fights under the Stuarts. The artist has drawn his brig down to the keel without reference to the displacement of water or to perspective, and afterwards superposed the shore-line and its defenders.

"The other impressions, copied on linen, and presented to show the character of the work on the rocks, but by no means its intrinsic value, are a peculiarly drawn star appearing many times in Kauder's book, though five-pointed instead of seven, — a dragon-fly with some fainter characters. A grotesque group — probably a French caricature — is two eels, and two birds perhaps intended for herons.

"Other impressions taken by me on paper, and mounted on cardboard, show a small star of the same character as before given, but five-pointed, some faint designs resembling those of Kauder but not identical, an animal supposed to be a bear, an aboriginal head and bust, a very artistic moose, and a cluster of three trees differentiated at their roots, and conjectured, by comparison with a Passamaquoddy inscription, to signify the first, second, and third chiefs of the tribe.

"In connection with the scratchings on the soft and polished surface of the rock, which seems to invite them, the thought occurs that the art of picturing, and subsequently of writing, is in all parts of the world determined by the ready and convenient material; as, for instance, the papyrus of the Egyptian, and parchments in other parts of the ancient world; the hides of deer or buffalo among the hunting tribes of this country. But the most tempting and convenient of all material appears to have been the birch-bark, which is found generally through the whole of the northern Algonkin region. This can be used in two entirely distinct modes, — one in which outlines are drawn by any hard-pointed substance on the inner side of the bark when it is soft, and which remains indelibly when dry; the other made by scraping on the rougher outer surface, thus producing a difference in color."

The New Naval Observatory.

The contract for the erection of the new Naval Observatory buildings, on Georgetown Heights, near Washington, has been awarded by the secretary of the navy for $307,811. This contract does not cover the piers or the domes, which are to be built by experts under the direct supervision of the observatory officers. There are to be nine buildings in all, including the main building; the great equatorial building, where the great telescope will be mounted; the clock-room, where the observatory clock will be set up and the naval chronometers kept and corrected; two buildings for observers' rooms; the east and west transit buildings; and a boiler-house. The material used will be Tuckahoe marble. Work is to be begun immediately, and the buildings are to be completed within eighteen months.

ELECTRICAL SCIENCE.

Electric Launches.

MR. RECKENZAUN, of the Electric Accumulator Company, has fitted up a small launch, to be run by an electro-motor supplied with electricity from secondary batteries. The launch has no features of especial novelty, excepting the fact that it is the first boat propelled by stored electricity that has been used in this country. A full charge of the battery will take her about eighty miles; and she can be more easily controlled than an ordinary launch, besides being noiseless, and free from heat and dirt. In speed, weight, and the distance she can go, she compares favorably with steam-launches of the same size, while in point of comfort she would far surpass them. There is a field for these boats at present on men-of-war for general use, or for torpedo-boats, for which last purpose their noiselessness makes them especially valuable. They could