

City and County Hall of Buffalo. Whether these fungi are associated with any human disease does not appear. If they will kill flies without harming humanity their multiplication is rather to be desired.

#### A NEW INDUSTRIAL SCHOOL OF ART IN NEW YORK.

The hopes expressed, at the recent dedication of the new building of the Metropolitan Museum, with regard to the future of the industrial art school in connection therewith, bid fair to be realized much sooner than was then anticipated. A liberal gentleman, whose name is withheld at his own request, has offered the trustees of the Museum the use of a piece of ground fronting 200 feet in First avenue, near Sixty-seventh street, and extending in the rear 130 feet, for three years free of rent. In addition, he proposed to erect upon it, at his own expense, a suitable building for such schools, with a frontage of 200 feet on the avenue and two wings running back to the end of the lot. Moreover, he agreed to support these schools for three years at his own expense—allowing them to be entirely under the supervision of the trustees of the Museum during this period. All this he proposed to do in order to demonstrate beyond peradventure the advantages and necessity of such schools. The trustees of the Museum naturally lost no time in accepting the generous proposition.

It is expected that the new building will be ready for the opening of the schools in the autumn of the present year. It will be of brick and stone, and will cost about \$10,000. In these schools will be regular day classes, and if occasion seems to demand it, night classes. It is intended that there shall be classes in drawing and designing, not only as applied to woodwork and iron, but a painting department will be opened, in which will be taught the principles of mixing colors, their chemical composition, and the effects of light and temperature upon them, the laws of harmonies and contrasts. Another department will be devoted to technical instruction in woodwork, and probably others in the working of iron and stone.

Diplomas and prizes will be given to the most successful competitors, and every effort will be made to advance and strengthen American industrial art.

#### Earthquake Shocks Superficial.

The superficial character of a Nevada earthquake was noticed some months ago. The Eureka (Nevada) *Leader* of April 17, relates another and similar experience. A miner at work in a mine on Prospect Mountain during the last shake at Secret Cañon says that while the tremor was plainly felt by his partners on the surface, he, at a depth of eighty feet, noticed nothing unusual.

The same miner says that through an experience of fifteen years underground he has observed one peculiar phenomenon, namely, that loose stones and bits of earth in mines are sure to fall between twelve and two o'clock at night. About this time it seems that everything begins to stir, and immediately after twelve, although the mine has been as still as the tomb before, the fall of little particles of rock and earth will be heard, and if there is a caving piece of ground in the mine it is sure to give way.

It would be interesting to know if other miners have ever observed this phenomenon.

#### A Recent Nickel Plating Decision.

Judge Blatchford, of the United States Circuit Court, has just rendered an important decision in the case of the United Nickel Company against Pendleton, which was a test suit with regard to the nickel plating patent. The case was argued some two months ago on a motion to attach for contempt, and the decision was awaited with much interest by the entire nickel plating trade. Judge Blatchford finds, as a matter of fact, that Pendleton was not using the double acetate solution, and denied the motion for contempt. There is much rejoicing among the nickel platers, who were bound to pay a royalty averaging about two cents a gallon per day, according to the capacity of the tank used for the solution, and this regardless of the quantity consumed, or of the fact that it might be empty. As these tanks in some large establishments equal 2,000 gallons, the tax was regarded as peculiarly onerous. Even for a 100 gallon tank \$2 a day or \$12 a week was a payment sometimes complained of as a grievous hardship. Unfortunately for this class, the great body of manufacturers are committed for another year, having taken out their licenses dating from the 1st of April, the delay in rendering the decision thus working in favor of the plaintiffs to this extent.—*World*.

#### A Fat Boiler Explodes.

A fat boiler in a soap factory in Detroit exploded May 2, fortunately without killing any one. The boiler was a cylindrical shell of quarter inch iron, twelve feet high, five feet in diameter, and surmounted by a conical top, in which was a man-hole capped as is usual in steam boilers. The boiler contained between 6,000 and 7,000 pounds of tallow, boiling under a steam pressure of 35 pounds. The top of the boiler was thrown up through the second floor and roof of the building, over a corner of a three story building, and fell about a hundred feet from where it started. A shower of grease covered an area from 100 to 300 feet wide and about 400 feet long. The boiler had been used six years, and had been corroded within by the fatty acids until it was no thicker than a silver five cent piece. A considerable portion of the factory was wrecked, but only one man was hurt, and he but slightly.

#### THE NATIONAL ACADEMY OF SCIENCE.

##### GLEANINGS FROM PAPERS READ.

Mention was made last week of the more important proceedings of the meeting of the National Academy of Science, April 20-23. In his paper on the sea urchins of the Challenger Expedition, Prof. Agassiz said that the new species taken belonged to a fauna not known along our shores, but limited to the slope of the continental plateau, at depths ranging from 100 to 2,900 fathoms, and called by him the Continental and Oceanic Districts. From these districts the Challenger had collected forty-nine new species, and the Coast Survey and other expeditions about thirty-five. These were all in addition to the two hundred species known in 1874. Only two new shore species were found by the Challenger. The most interesting of recent discoveries in the sea urchin line are of two new families of this group, which represent more or less ancient fossil types of Paleozoic and Cretaceous times, types previously supposed not to exist in recent seas.

The marine districts into which the sea bottom is divided in indicating the bathymetrical limits of sea urchins were given as follows: The littoral, down to 100 or 150 fathoms; the continental, from 50 to 600 fathoms; and the oceanic, from 500 to 2,900. The continental sea urchins date back to the Tertiary, and the oceanic to the time of the chalk, of which they are very characteristic. All of the species collected by the Challenger had previously been collected by the Coast Survey in 1867 and later years.

Professor Packard's study of the internal structure of the brain of king crabs (*Limulus*), commonly known as horse-foot crabs, led him to divide the histological elements into three kinds: 1. Large ganglion cells, filled densely with granules, and with a well defined nucleus similarly filled, and with a granular nucleolus. These cells terminate in large fibers, which subdivide. 2. Nerve fibers; these, like the large-sized ganglion cells from which they originate, are stained tawny brown with osmic acid. These fibers are coarse, their granular contents homogeneous. 3. Numerous very small nerve fibers, arising from very small nucleated cells. 4. Rounded masses inclosed in a network of fibers. In staining they resemble the *marksubstanz* of Diehl and the *punctsubstanz* of Leydig, but here the resemblance ends, as these balls are apparently composed of very minute nucleated cells and fine fibers arising from them. The general topography of the brain of *Limulus* is on a simple plan compared with that of *Decapodous crustacea* and insects. The brain is mostly composed of large irregular rounded masses or balls of granules, with a thick fungoid or ruffle-like periphery, formed by a layer of secondary smaller, rounded, granular masses. The lower half of, or two-thirds of, the entire brain is filled with these fungoid masses. In the upper third of the brain, whence the nerves originate, the larger ganglionic cells and the nerve fibers appear and preserve a definite topographical relation to the entire brain. The asymmetry of the brain is remarkable. Histologically, judging by his specimens of the brain of the lobster, the brain of *Limulus* agrees with that of other arthropods in having similar large ganglion cells. The smaller ganglion cells, so abundant in the brains of insects and crustacea, are wanting in *Limulus*. There are in *Limulus* no *ballen substanz* masses homologous with those of the other arthropods. Topographically the internal structure of the brain of *Limulus* is constructed on a wholly different type from that of any other arthropodous type known; so much so that it seems useless to attempt to homologize the different regions in the two types of brain. The plan is simple in *Limulus*; much more complicated in arthropods, especially in the brain of the crayfish, as from the decapodous brain there arises two pairs of antennal nerves besides the optic pair, and in external form the two types of brain are entirely unlike.

In his communication on the brains of extinct animals, Prof. Marsh reaffirmed his discoveries touching the law of brain growth, viz.: 1. All tertiary mammals had small brains. 2. There was a gradual increase in the size of the brain during this period. 3. This increase was mainly confined to the cerebral hemispheres, or higher portion of the brain. 4. In some groups the convolutions of the brain have gradually become more complicated. 5. In some the cerebellum and olfactory lobes have even diminished in size. 6. There is some evidence that the same general law of brain growth holds good for birds and reptiles from the cretaceous to the present time.

A series of observations on the *Odontornithes*, or birds with teeth, from the cretaceous was first presented, and the skull and brain of the extinct *Hesperornis* were compared with those of the Loon (*Colymbus*), and the former was found to have a brain of less than one-third the size of the latter, and much more reptilian in form and proportion. The brain in two *Dinosaurians* (*Morosaurus* and *Stegosaurus*) was next compared with that of the crocodile. *Stegosaurus* was found to have a brain very much smaller than the crocodile, and other Dinosaurs agreed essentially in the same feature. It was also shown that of ancient animals those with small brains and large bodies were especially those that became extinct, those with large brains being more likely to survive.

In his paper on the Taconic system in geology, discovered by Eaton and maintained by Emmons, Prof. T. Sterry Hunt reviewed the evidence of a great and widespread series of rocks, pre-Cambrian in age, and occupying the position assigned by Emmons to the Lower Taconic or Taconian system, which, according to him, extends continuously along

the Appalachian Valley from Vermont to Alabama, and more or less occupies large areas to the southwest of the Blue Ridge, from Virginia to Georgia, constituting in South Carolina the Itacolumite series of Lieber. Within the vast area occupied by these rocks in the great valley have been found a few small areas of fossiliferous strata, belonging chiefly to the Ordovician or Lower Cambrian series, but the characters of the great mass of these rocks are such as to lead to the conclusion that they constitute, as maintained by Emmons, a more ancient series. To the Lower Taconian rocks belong the peculiar magnetic iron ores found at Reading, Cornwall, and Dillsburg, Penn., which have been by some geologists regarded as Mesozoic, but were by Rogers assigned to the base of the Paleozoic. To this same series belong the limestones of the great valley, which occur in clays derived from the subaerial decay of the rocks. These, in their unchanged condition, contain beds and masses both of siderite and pyrites, and the alteration of these *in situ* has given rise to the limonites. In the formation of this from the siderite, or iron carbonate, it was pointed out by the speaker that there is a contraction of volume equal to about 20 per cent, to which is due the cellular character of the limonites and the frequent occurrence in them of Geodes. These older rocks are not without traces of organic life, having yielded in the Appalachian Valley the original *Scolithes* and related markings, besides obscure *Brachiopods*; and in Ontario, besides similar *Scolithes*-like markings, a form apparently identical with the more ancient gneisses. We may hope to find in the Taconian series a fauna which shall help to fill the wide interval that now divides the Eozoic rocks from the Lower Cambrian.

Describing the experiments lately made at the Allegheny Observatory in the measurement of radiant heat, Prof. Langley told of an improved thermo-electric apparatus due a product of the American iron industry. The experiments on a great variety of substances had thus far shown that iron in extreme thinness (cut into strips about one-third of a millimeter wide and 1-500 of a millimeter thick) was the best. The speaker exhibited specimens of iron rolled in the Pittsburgh mills, which were so surprisingly thin that from 10,000 to 12,000 sheets laid on each other equaled only one inch in thickness. From these was produced an instrument which had almost the promptness of action toward radiant heat which the eye has toward light, and which possessed a greater sensitiveness than any thermopile, and the speaker hoped it might prove useful to other workers in the same line of research as himself.

In discussing the absolute brightness of the solar corona, Prof. Harkness, of the United States Naval Observatory, said that as the sun's limb is approached the intensity of the coronal light increases with such enormous rapidity that its total illuminating power is mainly derived from regions within two or three minutes of the solar disk. Hence, if the intrinsic brightness of the corona is even approximately constant, the darkness during totality should be much greater in long eclipses than in short ones; and in a brief totality the streamers may possibly be obliterated by the intensity of the inner corona. Methods were explained and formulæ given by means of which the observations of Prof. Pickering on the total eclipse of 1870, and the observations of Prof. Langley on the eclipse of July, 1878, were utilized and rendered comparable, and the conclusions finally reached respecting the amount and distribution of light in the corona of July 29, 1878, were summarized as follows:

1. The total light of the corona was 0.072 that of a standard candle at one foot distance; or 3.8 times that of the full moon; or 0.0000069 that of the sun.
2. The photographs show that the coronal light varied inversely as the square of the distance from the sun's limb.

#### Church Towers.

The towers of Cologne Cathedral are now the highest in the world, the height they have attained being 5 feet higher than the tower of St. Nicholas's Church in Hamburg, which has hitherto been the highest edifice. Ultimately they will be 51 feet 10 inches higher. The *Cologne Gazette* gives the following as the heights of the chief high buildings in the world: Towers of Cologne Cathedral, 524 feet 11 inches from the pavement of the cloisters, or 515 feet 1 inch from the floor of the church; tower of St. Nicholas, at Hamburg, 473 feet 1 inch; cupola of St. Peter's, Rome, 469 feet 2 inches; cathedral spire at Strasburg, 465 feet 11 inches; Pyramid of Cheops, 449 feet 5 inches; tower of St. Stephen's, Vienna, 443 feet 10 inches; tower of St. Martin's, Landshut, 434 feet 8 inches; cathedral spire at Freiburg, 410 feet 1 inch; cathedral of Antwerp, 404 feet 10 inches; cathedral of Florence, 390 feet 5 inches; St. Paul's, London, 365 feet 1 inch; ridge tiles of Cologne Cathedral, 360 feet 3 inches; cathedral tower at Magdeburg, 339 feet 11 inches; tower of the new Votive Church at Vienna, 314 feet 11 inches; tower of the Rath-haus at Berlin, 288 feet 8 inches; towers of Notre Dame, at Paris, 232 feet 11 inches.

#### An Invention Wanted.

A correspondent, writing from Colorado, says there is much need in those parts of a portable steam drill for prospecting purposes. It should be so constructed that it could be packed on a mule or carried in parts by two men. Its weight should not exceed 150 pounds, and it should not cost over \$200. The machine should be capable of drilling granite to a depth of 50 feet, making a bore three-eighths to three-fourths inch in diameter. Our correspondent is confident that a large market would be found for such a drill in Colorado for gold and silver prospecting.