LIGHT AND VISION--MORE ESPECIALLY HOW LIGHT IS CONVERTED INTO THOUGHT.

[Being one of the Cooper Union Lectures for the Advancement of Science and Art, delivered in the Great Hall of the Cooper Institute, in New York, on the 26th of February, 1870.]

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Light and Vision form too vast a subject for a single lecture. I shall, therefore, confine myself to the exposition of one question of paramount interest connected with it, namely, "*How is light converted into thought?*"

This problem is not new. On the contrary, it has a history dating back to the works of the earliest philosophers; while it still engages the untiring efforts of the greatest naturalists of the present day. Let us consider what were the course and practical results of this long series of investigations, engendered and kept alive by a question of apparently little practical importance.

As the origin of all ideas may be traced to impressions on the senses, the highest of them, sight, is consequently the most fruitful source of ideas, and its organ, the eye, the broadest channel for conveying impressions to the brain. All speculation on thought, therefore, had to take into consideration, above all, how an impression of light is transformed into an idea. This is the reason that, at all times, light and vision have concentrated the efforts of the greatest naturalists and philosophers. The opinions on vision entertained by the prominent thinkers of every century had so great an influence on the general opinions concerning all material and spiritual matters, that the history of the theory of sight constitutes a faithful mirror of the history of philosophy.

The perceptions of sight and hearing are distinguished from those of the other so-called lower senses, by the remarkable fact that, in the former, the objects perceived act from a distance on the organs of sense; while, when we feel, taste, smell something, the perceived object comes either in solid, liquid, or gaseous state, in contact with the terminal fibers of the sensitive, gustatory, and olfactory nerves. How is it possible for me to open my eyes, and instantly take in the sensation of a landscape of almost infinite extent, whilst not the smallest particle of it touches any organ of my body? I see a mountain far away. This is a commonplace observation, you say; but if I ask how this observation is at all possible, and how it is accomplished, you will, most likely, be just as much puzzled as the illustrious philosophers of antiquity, the medieval mystics, and the profound and learned scientists of modern civilization.

The old Greeks asked themselves, above all, this question: Does the mountain I see yonder come to me, or do I go to the mountain? Their opinions differed; some held to the one, some to the other, some to both at the same time. Democritus and his adherents supposed that a subtile substance, light dust, detached itself from objects, penetrated into our eyes, and was perceived by them.

Others believed that light dust emanated from our eyes, impinged upon the surface of objects, and caused a sensation of the latter by either returning to the eye, or remaining always in connection with it.

Plato started with the axiom that only homogeneous substances are capable of acting upon one another. Light dust must therefore, said he, not only be detached from the object, but also emanate from the eye. Both meeting midway between the object and the eye, cause, by their contact, visual sensations of light, color, and form.

The great philosophical mind of Aristotle refuted all these theories, and replaced them by another coming nearer to the truth. If a subtile light dust, argued he, detached itself from the object, it would require a certain time to travel to the eye. The perceptions of sight, however, are instantaneous. We open our lids, and at once the remotest objects would, were this hypothesis correct, be the more clearly seen, the nearer they are to the eye. But the truth is, we see them indistinctly when they are held close by. If, on the other hand, light emanated from the eye, the eye would, above all, see itself; and it being the origin and source of light, would also illuminate the darkness.

His theory was the following: Between the visual object and the eye there exists a subtile substance, capable of assuming different states. In the state of activity, it becomes transparent and excites the eye, as light; in the state of rest it becomes opaque, and produces in the eye the sensation of darkness. Both states, light and darkness, combined in different degrees, produce the variety of colors.

The Aristotelian was the theory generally received, up to the time of Kepler, in 1604. This great naturalist applied the principle of an invention of Porta, viz., the well known camera obscura, to the explanation of the act of vision. He said the eye represents a natural camera obscura, having a system of transparent collective lenses (cornea, crystalline lens, aqueous and vitreous humors), walls blackened inwardly, and a receptive screen, the retina. When the eye like the photographer's camera, is turned toward an illuminated object, an image of the latter is cast upon the retina. Kepler reviving the theory of Democritus, explained vision as follows: Images, detached from the visual objects, enter the eye and place themselves upon the retina. There they are touched by the spirits of the optic nerves, which then communicate their impressions to the soul whose seat is in the brain. From the report of the optic nerve spirits, the soul draws a conclusion or passes judgment, and this constitutes the notion or idea we have of the object. In case the soul, while forming an idea of a thing, does not rely on the report of the spirits of the optic nerves alone, it sends the spirits of the sensative nerves into the ends of the fingers, ordering them to examine the same object by the touch. After the reception of their report, the soul forms a judgment on the statement of two witnesses, in order to guard itself against the fallacy of one sided impressions. Thus Kepler held the three periods which constitute the act of vision, definitely apart, though his manner of conception and interpretation appears, now-a-days, rather childish.

The first and second periods of vision, the physical condition of the formation of the visual images, and the physiological process of receiving and conducting the light impression to the brain, have been explained, thanks to the progress of science, in a surprising manner. But we must confess that our knowledge of the third period of vision, the psychial work of forming the idea, is still in its infancy. Kepler was able to explain the first period of vision by the physical laws of optics, but his century was not yet prepared to comprehend the second period of vision, the physiological sensation of light: he resorted to personifying, as the human mind is accustomed to do, whenever its knowledge is unripe. He needed the spirits of the nerves, which constituted, as it were, the emissaries of the head of the government—the soul. With regard to the latter, we also, the enlightened citizens of the nineteenth century, must resort to personifying no less than Kepler, one of the founders of modern astronomy. A real or scientific comprehension of the nature and faculties of the soul will not be possible until the anatomy and physiology of its seat, the brain, are satisfactorily understood. Our knowledge of the brain, however, and methods to inquire into its structure and functions, are like those of a boy, who, impelled by scientific proclivities, beat a watch to pieces with a hammer in order to learn what was contained within the little case. To former centuries the eye was a case as dark and incomprehensible as the brain still is to the present. Let us, therefore, proceed to consider how we have discovered the structure and functions of the eye.

Kepler supposed that the retina was the percipient membrane of the eye, because it corresponds to its focal plane, that is, to the point of union of rays coming from distant objects. This can be easily demonstrated by turning an eye, removed from an animal, toward a luminous object—for instance, a candle—a small image of which will be plainly visible upon the opposite point of the eyeball. This retinal image, however, showed one quality which gave rise to a good deal of discussion, from the time of its discovery to the present epoch—I mean the reversion of the retinal image. The same peculiarity obtains in images cast by any collective system. In the pictures of the camera obscura all the objects are inverted. When in the retinal images everything stands upside down, how then is it that we see objects in the natural upright position? This was the universal and puzzling question.

Berkeley, in 1709, was the first to give a reasonable explanation. He argued: The earliest conscious observations of a child are the movements of its own hands. If you watch a baby a few months old, you will notice the queer and manifold movements of its hands and fingers, while its yet unsteady gaze is directed on them, and every now and then the fingers are brought to the mouth. These are the studies of the little creature. The hands and fingers cast images on the retina, which it learns to comprehend. It calls in aid the senses of touch and taste, and by unvaried comparisons of the impressions which the same object makes on different senses, it learns to refer these impressions to the same object. In this way it acquires a notion of the different qualities of a thing. Some of these qualities can only be furnished by one sense; for instance, light, colors, taste. Others may be perceived by two and more senses; for instance, the position and size of objects. The hand brings itself and things within its grasp, in contact with the lips and other parts of the body. Their positions, size, warmth, consistency, and other qualities, are thus felt and recognized. At the same time the eye watches these movements, and, by numberless repetitions of these simultaneous observations, the mind learns to bring the impressions of the eye into harmony with the impressions received from the nerves of feeling. Constant habit establishes a law, and it is not astonishing to find such a law also in the sensations of the retinal nerves. Each nervous fiber receiving, at all times, the image of an object invariably from the same direction, cannot but refer an impression to a luminous object placed in the like direction. This law is so compulsory, that irritation of the retinal nerves by other causes—electricity, injuries, etc.—is always judged in the same way as referring to luminous objects, which would have cast their images on the parts of the retina excited by the electric current, the injury, etc. If you press quickly with your finger on the temporal side of your eye, you will perceive a luminous flash over the nose. In this way all the impressions of the retinal nerves are referred to objects without the eye, lying in the opposite part of the field of vision. Physiologists call this invariable mode of interpretation of retinal impressions by the mind, the law of projection of the retina. Being a law of nature, it admits no arbitrariness of judgment, no divergence of its meaning, no exception. If any part of the retina is excited by rays of light, pressure, or electricity, the mind always sees a luminous object in a definite direction, which is determined by a straight line drawn from the excited point of the retina through a point near the posterior pole of the crystalline lens, called the optical center, or the nodal point of the eye.

In ordinary vision the outward world is portrayed as a miniature panoramic picture on the retina, every point of which is referred by the mind to the corresponding point of the landscape spread out before the eye according to the law of projection. The mind has not the least cognizance of the way on which the light, exciting the retinal fibers, traveled. If a prism, or any other optical contrivance, be interposed between the luminous body and the retina, whereby the rays are deflected from their original straight lines, the mind knowing of no other code while judging the retinal images than the law of projection, sees the object in a wrong position. If the vitreous humor, lying before the retina, is not pure, but has some opaque spots in its tissue, they cast a shadow on the retina, which is mistaken for a dark object outside the eye, a floating mote, etc., according to its shape. Numerous errors are committed by relying solely on the impressions of one sense. They are called illusions, and many of them amuse or frighten people according to their nature.

If we recapitulate this chapter on the reversion of luminous object and retinal image, and the interpretation of the latter according to the law of projection, we arrive at the following summary:

The mind is in intercourse with the outward world by means of a pictorial language, photographed upon the retina. It has learned, in early youth, by habit and the co-operation of other senses than that of sight, to read this pictorial language according to a certain law, that of the projection of the retina, by which every point of the miniature panorama on the retina is referred to an object point, lying on the opposite side in the real landscape.

This sentence expresses in brief the opinion entertained by the most advanced natural philosophers of the present time regarding the art of vision. It gives a general idea, a rough outline of our subject, how light is converted into thought. But were I to stop here, I should have treated it very unsatisfactorily, leaving it immersed in a sea of obscurities. To dispel these we must advance farther into the temple of science.

The sun, the central body of our planetary system, is a glowing mass, surrounded by an atmosphere of glowing vapors. Light and heat emanate from it to create and sustain all animal and vegetable life on our little planet.

According to modern science, both light and heat are not real, physical particles, or molecules, detached from the incandescent body and propelled through space with almost inconceivable velocity, but they are a mode of motion, transmitted from one particle to another. The single particle makes but an exceedingly small movement, always like a pendulum swinging to and fro about its point of rest, but imparts its motion to the neighboring particle almost instantaneously. Thus the original impulse given by the glowing body to the nearest molecules, is transmitted to an infinite number of others with incalculable speed, and this transmission is called the propagation of light. Its velocity is approximately 200,000 miles in a second. The particles which are excited by the glowing substance to perform these vibratory movements, are supposed to be of the utmost subtilty, and to fill not only all space, celestial and terrestrial, but to pervade all bodies. They are called luminiferous or light ether. Their rarer or denser accumulation in different substances has a remarkable influence on the course of light. Through substances of equal density, light travels with the same speed, and the transmission of the vibratory motion from particle to particle is perfected in a straight line. This transmission is nothing else than what we call a ray of light—a sunbeam, if it comes from the sun. But any glowing body emits rays which travel through space in straight lines as long as their course is in the same medium. As soon, however, as the density of the substances changes, the rays of light are deflected from their original course.

When we accompany a ray of light as it proceeds from the sun, we have first to travel through an immense space, filled only with ether. The sunbeam passes through it in a straight line, until it reaches the atmosphere of the earth, which, being a denser medium, deflects it somewhat from its original course. After having traversed the atmosphere, it illuminates the landscape around our dwelling-place, and, reflected from the objects enters our eye, where, after various refractions, it ends in the retina.

[To be concluded next week.]

EXPERIMENTS ON THE HEAD OF A GUILLOTINED PATIENT.

At the time Troppmann was beheaded, a medical man in Paris, Dr. Pinel, made the startling announcement in one of the political journals, that death by the guillotine was the most cruel of all, as, through the suddenness of the process, life remained in the head of the criminal at least one hour after the execution. This statement was supported by physiological notions peculiar to the author; but, notwithstanding their heterodoxy, they might have been brought forward without any blame attaching to M. Pinel, had not he adopted the curious proceeding of publishing his note in a political journal instead of a professional one. At all events, the note produced the desired effect. The public mind was deeply moved, and a host of extraordinary histories went the round of the journals. Such sensational stories as Heindrich, the executioner, being bitten by the head of a *guillotiné*; of several heads, fallen into the same basket, having bitten each other, etc., were quoted from journal to journal, and struck with horror the good people of Paris.

Some of the medical journals entered a protest against M. Pinel's extraordinary physiological ideas, and the nonsensical stories to which they had given rise. Among others, M. Desprez, surgeon to the Lock Hospital, took the trouble to show the falsity of all this anti-physiological stuff. But MM. Evrard and Beaumetz, both medical men at Beauvais, have done more. They determined to make experiments on the head of a *guillotiné*, and the occasion was afforded them soon after the death of Troppmann, by the execution of a parricide at Beauvais. The results of these experiments were communicated in March last to the Medico-legal Society of Paris, and they are really well worth being noticed.

The head of the culprit was delivered to them five minutes after the execution, and was subjected to various processes which are most curious, and imply no small courage on the part of the investigators. First, MM. Evrard and Beaumetz tell us that the head was placed on a table covered with compresses, so as to show the amount of blood which would be obtained. The face was then bloodless, of a pale and uniform hue; the lower jaw had fallen and the mouth was gaping. The features which were immovable, bore an expression of stupor, but not of pain. The eyes were open, fixed, looking straight before them; the pupils were dilated; the cornea had already commenced to lose its luster and transparency. Some sawdust still stuck here and there to the face, but there was no vestige of any either on the inner surface of the lips or on the tongue. This is an important fact.

The opening of the ear was then carefully cleansed, and the experimenters applying their lips as closely as possible to the orifice, called out three times in a loud voice the name of the criminal. Not a feature moved; there was no muscular movement, either of the eyes or on the face. A piece of charpie, saturated with ammonia, was next placed under the nostrils; there was no contraction of the alæ nor of the face. The conjunctiva of each eye was deeply and several times successively cauterized with nitrate of silver; the light of a candle was brought within two centimeters distance of the cornea, and yet no contraction was observed either in the eyelids, eyeball, or the pupils.

Electricity was then resorted to as a more powerful means of excitement of the nervous system. One of Legendre's electric piles, with a current of moderate intensity, determined vivid contractions in such of the muscles of the face as were directly subjected to its influence. But was this evidence, say the investigators, of a feeling of pain expressed by the physiognomy? Certainly not: and this for two reasons; first, because, whilst the experiment affected the left side of the face, the muscles of the right side retained their expression of stupor, even when the opposite side was the most convulsed; next, because the electrized parts themselves resumed their cadaveric impassibility as soon as the electric current ceased to animate them.

The integuments of the cranium were then incised from the nape of the neck to the root of the nose; the bones of the skull were uncovered down to the zygomatic arches. In performing these incisions, say the investigators, many nerves were cut, of which the section would have been most painful; the muscles of the neck and temple were still alive, since they retracted energetically under the knife; notwithstanding, no contraction of the face, no reflex action was observed. At that time three-quarters of an hour had not yet elapsed since the execution. The skull was then sawn through, and the brain removed; the muscles of the face and those of the jaws continued to obey the electric current, as when the brain was unimpared. The integuments had then begun to get cold, and yet, with an intense electric current, the same muscular contractions were obtained half an hour after the extraction of the brain. Nobody will say that the brain still continued to act and think, though the muscles still responded to electric excitation. Beyond doubt the brain was as lifeless during the first part of the experiment as during the second. Indeed, at the very moment of the execution, through the sudden interruption of circulation, and consequent syncope, the brain was quite as unable to feel as to express its sensations.

This view MM. Evrard and Beaumetz base on the condition of the brain and its envelopes when examined. There was no fluid in the large arachnoid cavity; the vessels of the pia mater were almost bloodless, and filled with aëriform fluid; the lateral cavernous sinuses were absolutely bloodless. The ventricles contained scarcely a teaspoonful of fluid, and in no situation was the brain injected. These facts entirely overthrow what has been advocated by some with regard to the persistence of the cephalo-spinal liquid, and of cerebral nutrition.

The thoracic viscera were also examined. The heart was found to be enormous, and was seen to beat under the pericardium; the lungs shrunken, and of a blackish hue. There was an enormous dilatation of the right auricle, and the ventricle of the same side was also dilated and tense. The left auricle was remarkably small, hard, and retracted. The right auricle and ventricle were filled, not with blood, but with an airy fluid. Pressure reduced their volume to three-fourths of their apparent size. Whilst the contraction of the auricles persisted, those of the ventricles became less frequent. A quarter of an hour after, the auricle and ventricle were once more swollen and distended, and it seemed that air, solicited by the contraction of the auricle, came from the vena cava (which was bloodless and dilated), as well as from the brachiocephalic venous trunks. An hour and a half after the execution, the contractions of the right auricle were still perceptible, though rare and weak; the right ventricle was then wrinkled, shrunken, and could not contract in the least.

The results of these experiments are in entire accordance with those which had already been obtained in 1803 by the Medical Association of Mayence, which had been led to investigate the subject by the same motives as had actuated MM. Evrard and Beaumetz. The experiments then made, such as calling out the names of the criminals in the respective heads, were much the same as those which I have just related.

The falling of the lower jaw, which takes place instantaneously, serves to explain (to a certain extent), according to MM. Evrard and Beaumetz, all the extraordinary stories of the heads biting each other which have recently been propagated as coming from Sanson and other executioners. The fact would be a mere coincidence, due to the position of the various heads in the basket. Besides, the experimenters assert that Heindrich, the present executioner, has positively assured them that he has never noticed this fact, nor indeed, any sign whatever of persistent life in the heads of *guillotinés*.—*Lancet.*

A TRIP OVER THE CENTRAL PACIFIC RAILROAD.

A contributor to the *American Churchman* thus graphically describes a trip over the Central Pacific Railroad:

The real difficulty in the way of engineering, in connecting the two oceans, occurs on the western side. It is all plain sailing on the eastern, till the road descends by a steep grade and through a pair of long tunnels into the Salt Lake Basin by Weber and Echo Cañons. The level plains of Nebraska, and the high table land of the Laramie Plains, by which the road ascends and crosses the Rocky Mountains, at an altitude of 8,000 feet, offered no difficulty to the engineer. The trouble on the Union Pacific was from the Indians—the warlike Sioux and Cheyennes—and from the fact of the great distance from supplies and material. But on the western side, the engineering problem was the great one from the start.

Immediately after leaving Sacramento the ascent begins, and the problem was to ascend the Sierra Nevada range to a hight of 7,000 feet within a distance of 80 miles.

There was no getting round the thing. The mountains stood there barring the way eastward. They would not get out of the way for a railroad, and the "passes," by which travelers in the old time surmounted the obstacle, are all from 5,000 to 8,000 feet at their hight above the sea level.

It was, indeed, the common talk in California that it was impossible to carry a railroad up the western face of the Sierra. Even good engineers considered the undertaking preposterous.

It is easy enough to mount it from the east, for the high table land of the "great desert" comes up to its eastern side from 4,000 to 5,000 feet. In fact, the Sierra Nevada is the western face of an embankment—the embankment being half a continent—and this, the guttered and storm-washed front of it towards the Pacific.

The point was to get up this rocky face to the table land it bounded, and to do that in a very short space, for the continent breaks off short and comes down sheer.

But California energy, using 10,000 patient Chinamen, solved the problem, and took the track up and over, along the mountain side, through deep and long tunnels, across rifted chasms in the rocks, over headlong torrents and by the dizzy edges of abysses thousands of feet down, and "around Cape Horn."

But even when the work was done, the snow avalanche, or the earth slide from the mountain round whose side, half up, the iron path winds twisting upward, might sweep the work away, or overwhelm the track, and make it useless for weeks or months.

There was a remedy also for this in the skill and determination of the men who did this work. They just roofed in their road for fifty miles!

They took the giant stems of the pines and braced them against the mountain side, framing them and interlacing them beam with beam. They sloped the roof sustained by massive timbers, and stayed by braces laid into the rock, and covered with heavy plank, up against the precipice, so that descending earth or snow would be shot clean over the safely housed track into the pine tops below; and so they run their trains in security under cover, and have conquered the snow in its own domain.

There is one drawback. These "snow sheds" shut out forty odd miles of the most magnificent scenery on the whole trip—notably Donner Lake, and the deep valley inclosing it, which lies straight down below the passing trains.

It was up this slope I traveled yesterday afternoon and evening. It takes two locomotives to persuade the trains to ascend. I found a place just after leaving Sacramento, on the foremost, and had a mountain ride, which I think must be unequaled considering the mountains and the horse.

First there was the Sacramento valley—oak opening all, which, to most of your readers needs no description. Only the oaks are a species not seen in Michigan or Wisconsin. California is rich in oaks, and these, scattered about as thickly as apple trees in an old orchard, are the live oak, small-leaved evergreen.

Then came the "foot hills" and a gradual change in the wood growth. The Manzanilla wood, with its shining stem and dark green glistening leaf, mingled with the oaks and the buckeye, which, in California, is a many stemmed bush, springing from a common root hung heavy with its pear-shaped fruit, filling up the space beneath the taller oaks and the nut pines.

Finally, we came into the realm of the *coniferæ*, and the tall stems sprang up smooth, branchless, and tapering, rearing their green coronals to the sky.

We are going up the mountains! In a valley on one hand lay a mining village—the most beautiful villages in the State are these mining villages now. Down the mountain side, on the other, ran the water, led in sluices like a mill race, around a point here and a bend there, and across a gorge yonder—the water to be used, under the mighty power its descent gives it, to tear the hill side down and wash the rocks to pieces in "hydraulic mining"—mining, that is, which consists in discharging a stream of water, with a head of a few hundred feet, full in the face of a hill side till it is knocked into bits!—bits which contain gold, of course, or are supposed to.

But these too are left, as we go clanking on through pitch-dark tunnels, and over trestle works that look like spiders' webs, and along the maze of dingy precipices; the engine, coughing and straining in the tug up the steepest grade yet ventured by any engineer.

The day died out before we reached the summit, but died into a cloudless moonlight so brilliant, so silvery white in the flood of light it poured across land and sky, that one sent no regrets after the sunset.

Moonlight in the mountains, and such a moonlight is something to be remembered for life. I lost all sense of the poor, every-day world, forgot so vulgar a thing as a railway car, even the clank of the engine seemed to come softened as from far away; and I was sailing over pine-clad mountains, silvery white, in an air of balm and fragrance, and, in fact, I think was about half asleep when my friend, the engineer, plucked my sleeve—we were doubling Cape Horn!

Round the jutting mountain wall, so called from its bold advance into the valley, and its precipitous face, the road winds like a ribbon. No human foot had ever trodden this hight, as far as man may judge, till the first "hand" was lowered down to lash himself to a tree and begin, with pick and spade and crow, to cut a shelf along the dizzy hight! Not even an Indian trail had ever passed where the long train was passing now. The foot-sure savage had never ventured here. Three thousand feet sheer down lay the valley, in the moonlight like a lake, the mist slowly rising and swaying, silvered by the descending light. The feathery tops of the rock-anchored pines rose out of the mist far below. Across the valley the other mountain face frowned darkly, shaggy with bristling pines from base to summit.

That was one side.

On the other rose the almost perpendicular wall of the mountain, round which we were rushing on a shelf cut into the rock wide enough for the rails, of course—what need of anything more, when they are treble-spiked, and the rolling stock of the best, and the engineer the safest man to be found?

If we went off? If a broken rail should be ahead, if a rock should have rolled down beyond the curve yonder? Well, I suspect it would not make much difference, in that case, whether one was on the engine or in a car yonder. It would amount to the same thing, I think, when we all reached the valley together.

But there has never been an accident, and it is just such places as this that are most carefully guarded, and where all prudence and forethought and skill are engaged to be active.

I do not know that I have been able to give you half an idea of the magnitude of this undertaking, which has annihilated these weary desert spaces, and brought East and West together. If I have said much about it, it is because, after all, looking at it as I have, it seems to me the railroad across the continent, the double iron bands that tie Omaha and Sacramento each together, over the mountains, across vast deserts where human life finds nothing to sustain it, through the territories of tribes, too, a few years ago a terror to the whole border—it seems to me the railroad is really the most wonderful thing one sees, after all.

New Attractions for the Central Park.

The New York Historical Society is about to give the most gratifying proof of being alive to the interests of art and of the public improvement. According to the *Evening Post* it proposes to establish in the Central Park a Museum of History, Antiquities, and Art.

By an act of the legislature of the state of New York, the Central Park Commissioners are authorized to set apart, and appropriate to the Historical Society such portion of the grounds lying near the Fifth avenue, between Eighty-first and Eighty-fourth streets, as may be required for the erection of suitable buildings for this museum.

The plan contemplates the removal of the rich treasures of the society from the building in the Second avenue, which has long been too small for their proper disposition and display, to a new and larger building in the Park, where, under proper restrictions, they shall be readily accessible to the public.

In the department of history the collections of manuscripts, maps, charts, newspapers, coins, and medals, will make a most conspicuous and interesting feature.

In the department of antiquities the Abbott collection of Egyptian memorials, the Nineveh sculptures presented by Mr. James Lenox, and the numerous relics of the aborigines of the American continent, will attract great attention. These valuable curiosities have long remained packed in the society's present buildings, for want of space to open them for exhibition.

The department of art is that which will prove the most popular with the visitors in general, and this will contain, at the very beginning, the well-known collection of the New York Gallery of the Fine Arts, the Bryan collection, and the Audubon collection, constituting the nucleus of a gallery which, in time, we may confidently hope will be worthy of the city, and of the beautiful pleasure ground in which it will be placed.

The New York Historical Society, in taking this step, has entitled itself to the hearty suppport of this community and to the thanks of the lovers of art throughout the United States.

GLASS FOR WINDOWS.—A window glazed with ground glass is almost always unsatisfactory. The vitrified surface being removed, the smoke and dust discolor it, and make it difficult to be kept clean. White enamelled glass, having a semi-opaque figure upon a transparent ground, is more satisfactory. If the windows of a dining-room were filled with clear light pink glass, the effect of the room would always be pleasant and comfortable. The greatest care should be taken to avoid introducing dark colors.

THE first bar of tin ever made in the United States has been presented to the Secretary of the California Pioneers. It is eight inches long, four inches wide and two inches thick. The bar is appropriately inscribed.