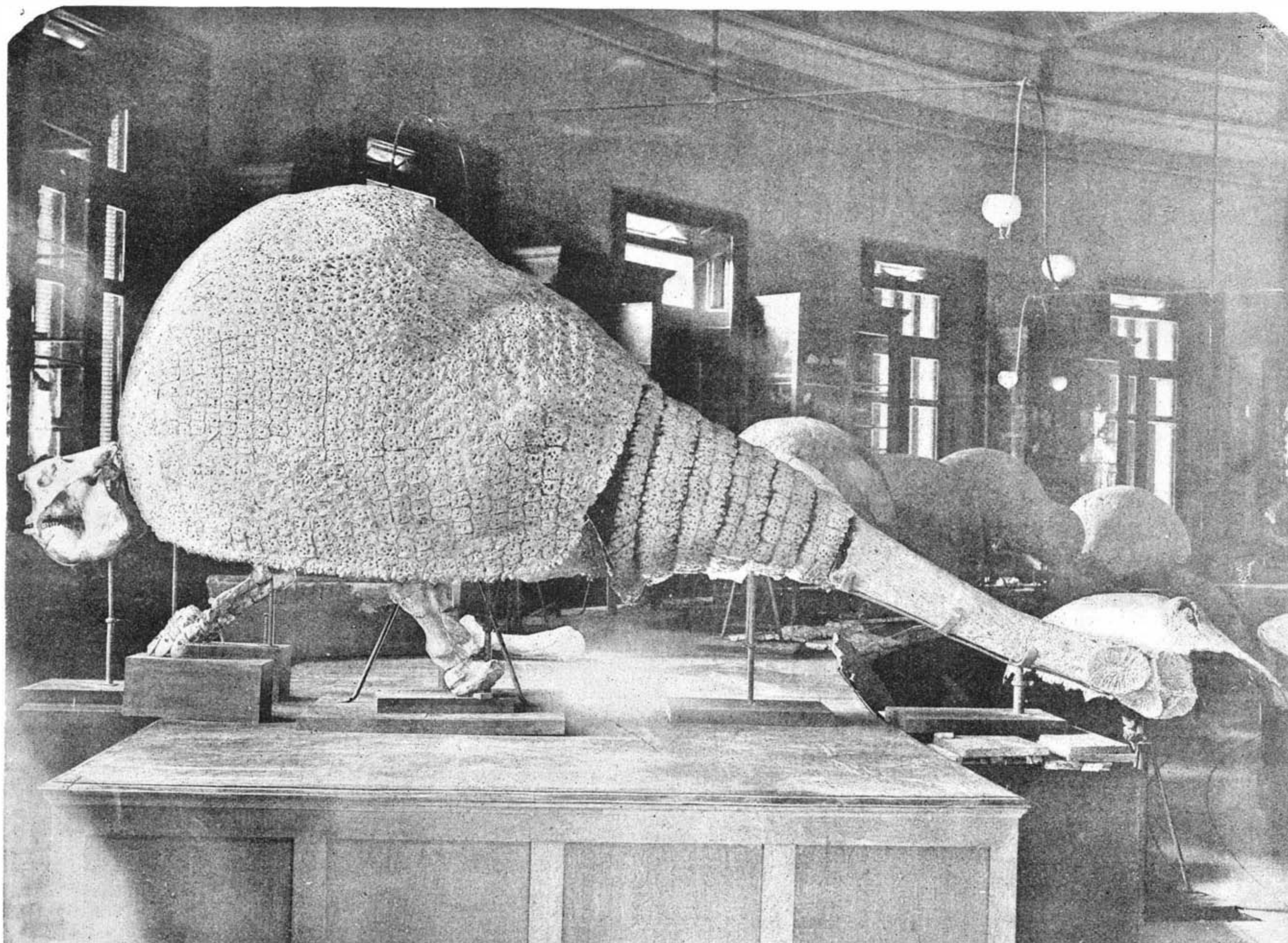
THE GLYPTODONT.

We are indebted to *Knowledge* for the following and for our engraving, which is from a photograph taken in the museum of La Plata. During life the animal was covered with a sparse coating of bristles, which came through the holes in the plates of the carapace, and seem to have been as thick as a porcupine's quill, while they were probably several inches in length. The oval, depressed, rough disks at the end of the tail carried, during the existence of this glyptodont, huge horns, probably very like those of an African rhinoceros. Just behind the extremity of the tail is seen the carapace of another glyptodont with a crater-like aperture over the region of the pelvis; while still further in the background are a long row of carapaces belonging to other genera of the group.

In this stupendous monster, which measured upward of eleven feet eight inches in a straight line, the carapace is characterized by its peculiar humpbacked form, while its margins lack the prominent knobs characterizing those of the preceding group. On closer examination it will be found that each of the component plates of the carapace, instead of being polygonal and marked by a rosette of lines, is rhomboidal and pierced by from two to five large circular holes. From the analogy of the living hairy armadillo—known in Argentina by the name of peludo, or hairy animal—it is quite evident that during life the holes in the plates of the carapace of the extinct monster, which, by the way, may be known as the "club-tailed glyptodont," or technically as *dædicurus*, must have formed the exits of large bristles, which were equal in diameter to a cock's quill, and were doubtless many inches in length. The whole body of the animal must, therefore, have resembled a gigantic porcupine. Still more extraordinary is the conformation of the huge tail, which had a length of about five feet. At its base this appendage was encircled by about half a dozen double bony rings, nearly as large at the base as the iron hoops in the middle of an ordinary beer barrel; their component plates being pierced by the aforesaid holes for bristles. The whole of the terminal half of the tail is formed by one continuous piece of hollow bone, which, if we exclude whales, is one of the most massive bony structures in the animal kingdom, and is almost as much as a man can lift. Starting at its base in the form of a nearly cylindrical tube, this sheath rapidly expands at the sides and becomes flattened on the upper and lower surfaces, until at the tip it finally assumes the form of a depressed flattened club, which would have formed a most efficient weapon for a giant. Along the sides of its extremity this club is marked by a number of oval depressed disks, showing a sculptured pattern of ridges and grooves radiating from the center, and some of them attaining a length of six or seven inches. From the structure of their sculpture it is quite evident that during life these disks must have formed the bases of huge horns projecting at right angles to the tail, which must thus have formed a veritable chevaux-de-frise. If, as is quite probable, these horns were as long as those of the common African rhinoceros, the tail of the dædicurus must have presented a most extraordinary appearance as it dragged on the ground behind its owner (for it is impossible to believe that any muscles could have raised such a stupendous structure). The use of these horny appendages is, however, hard indeed to divine, since the creature was amply protected by the underlying bone; and it is therefore probable that they must come under the category of ornamental appendages. Be this as it may, with its bristle-clad body and horned tail, the club-tailed glyptodont may well lay claim to the right of being the most extraordinary-looking creature that ever walked this earth during the whole duration of the tertiary period.



THE CLUB-TAILED GLYPTODONT. (About one-fifteenth the size of nature.)

Effect of Light.

Some remarkable effects of light have been observed by Mr. F. Elfving, and are described by him in the journal of a Finnish philosophical society. It is stated that if platinum or burnished steel is exposed for some time to direct sunlight, the sun creates in them a condition which, though otherwise imperceptible, manifests itself by the fact that the body has a powerful attraction for the hyphœ of a particular plant, *Phycomyces nitens*, well known to every plant physiologist. This power appears on the illuminated as well as on the opposte side of the body, and lasts for some hours.

The phenomenon is somewhat mysterious, but is not altogether without analogy. It is a well known fact that a number of non-luminous bodies, after being exposed to illumination, emit light in a manner commonly described as phosphorescence. Metals do not belong to the phosphorescing bodies; but in the case in point a kind of phosphorescence seems to occur, which is not visible to our eyes, yet takes effect upon the plant structure. The phenomenon might be designated dark phosphorescence, and the possibility of it was foreseen by E. Becquerel. The effect was produced by exposure to direct sunlight only, not to cloud light, and that it was due to light and not to heat is proved by check experiments, in which no similar result was produced by steel and platinum plates heated for hours to the same temperature. The ultra-violet rays of the sun have no particular share in causing the phenomenon, which is interesting as showing that mere exposure to light in some way alters the condition of certain metals without showing any sign to the eye.

British Soldiers Must Not Take Patents.

The British commander-in-chief, with the approval of the secretary for war, has lately issued the following regulation with regard to patents for inventions:

"All officers or subordinates holding staff appointments or employed in any administrative, instructional, manufacturing or experimental department under the war office are to understand that one of the conditions subject to which they hold such appointment or employment is that they shall not take out a patent or seek for provisional protection for an invention without first obtaining the approval of the secretary of state for war, by application through their respective commanding officers or heads of their departments. Each application must contain a general description of the invention for which protection is desired. Permission to patent will not be granted as a matter of course, but each application will be dealt with accord ing to the circumstances of the case. Should permission be granted, it will be subject to the following conditions, from which there shall be no appeal by the patentee, either to the treasury under section 27 of the patents act, 1883, or otherwise. (*a*) That if it be at any time desired by the secretary of state, the patent shall be absolutely assigned to him upon such terms as, after full consideration of all the circumstances of the case, he may decide upon. (*b*) The invention may be used by or for Her Majesty's service, and that terms of payment, if any, for such use, shall be decided by the secretary of state. (*c*) In settling terms, either for assignment or use, regard will be had by the secretary of state to any facilities in originating, working out and perfecting the invention which the inventor may have enjoyed by reason of his official position; and all payments will be subject to the approval of the treasury."

In the United States any person in government employ, soldier or sailor, is free to take a patent for any invention he may make.

Curiosity of Plant Life.

It has been long known, and considered very curious, that the two lobes of the leaves of the Dionæa—the Venus flytrap—will close over and capture an insect that alights on the leaf, and more recent study shows that the plant really eats the insect it captures. But little is yet known of the nature of the mechanism by which it is enabled to do such marvelous work. Dr. J. M. Macfarlane has recently discovered that leaf blades will not respond to a single touch. No matter how severe a single stimulus may be, the blades will not close. There must be a second stimulus before an attempt at closing is made. But even here the stimuli must have an interlude. If the two stimuli follow closely, no response follows. Dr. Macfarlane finds that there must be a period of nearly a minute, fifty or sixty seconds, between the two. There is, however, some variation under different temperatures. The effect of the first touch or stimulus will be retained for some four minutes. The second excitation, if made after that, stands as an original motion, as a parliamentarian might say. Those who are fond of speculating on the "motives" of plants will see in this a wonderful provision of nature, more wonderful possibly than anything that has yet been brought out in connection with plant life. Knowing now, as we do, that the leaf closes on the insect for the purpose of eating it, there should be some way of discovering whether that which alights on the leaf's surface is eatable or not. It has no eyes to see with, so it cannot tell whether it is a piece of wood, stone, or other inorganic material that is tempting it, as a living creature could. Such material falls, and remains still on the leaf. But an insect struggles, and by this struggle the plant receives intelligence that it is a living thing. Here also may be seen the advantage of a brief interlude between the stimuli; a piece of gravel might rebound—might make two stimuli close after one another. An insect would wait a short time to collect its senses, and formulate some plan of escape. It is very clear that this ability to discern between the animate and inanimate saves the plant from a great amount of useless labor. The discovery of Dr. Macfarlane is probably the most wonderful of all wonderful things that have been discovered in the behavior of plants. Mr. William Canby had already discovered that if a leaf had been "fooled" into closing over a piece or inorganic matter, it soon opened and let it out again. Dr. Macfarlane finds that when it catches an insect, it remains closed over it for twelve or fifteen hours—long enough to consume it. It takes eight or ten hours after an insect is caught before the acid—which in Drosera Mr. Darwin found analogous with pepsin, the leading destructive element in the gastric juice—flowed evenly over the whole surface of the leaf. The leaf surface is subject to stimuli equally with the hair.—*The Independent.*

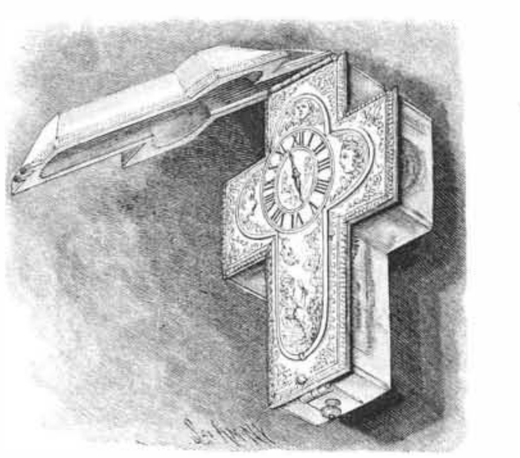


Fig. 3.—CRYSTAL CASE WATCH MADE BY JEAN ROUSSEAU, ABOUT 1675.

Fig. 6.—NURNBERG EGG, MADE ABOUT 1550.

NOTABLE AND CURIOUS WATCHES.

The display of watches in the Swiss section at the World's Columbian Exposition formed the most conspicuous part of the exhibit of that country, and consisted largely of watches of high grade movements in cases set with precious stones or ornamented with enamel and other high class work. There was also an interesting exhibit showing the progress made in horology. The exhibit of Patek, Philippe & Company, of Geneva, was especially rich in historic watches, of which the following formed part.

Fig. 1 shows the first known watch. The outer case, which contains the movement, is represented as open, so that the dial can be seen. The peculiar key used to wind the watch is shown at the side. This watch was made in 1074 by Hassan Emin. Nothing further is known of the watch, or who Hassan Emin was, or where he lived. That he was a most excellent watch-maker is shown by the remarkable quality of the work in the movement. The case is of bronze, worn and indented by age, and is cracked in places, one crack near the hinge being shown in the illustration.

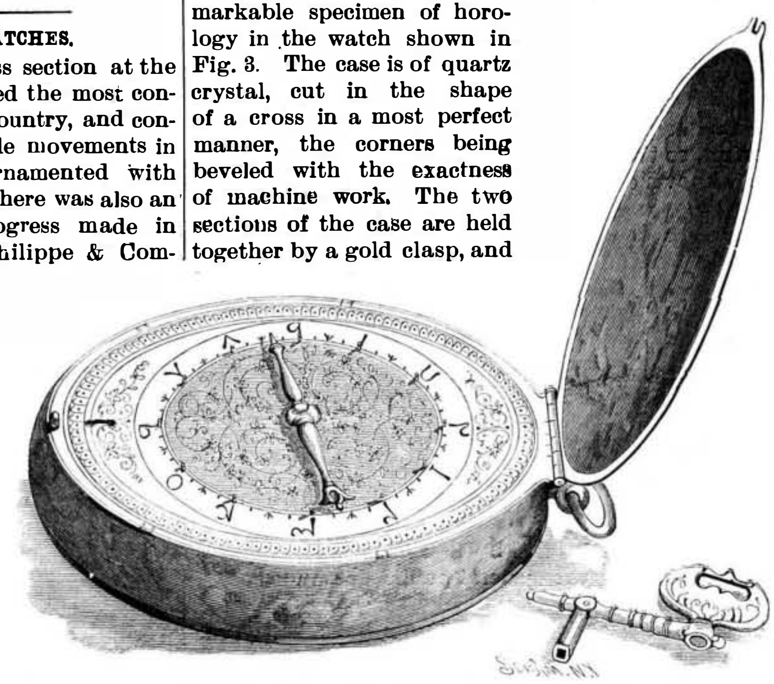


Fig. 1.—WATCH MADE BY HASSAN EMIN, IN 1074.

It is evident the outside of the case was originally ornamented in elaborate Arabic designs, but this ornamentation is nearly all worn off, and the fire gilt which covered the case has disappeared, except in the depressions, where it is still bright. The figures on the dial are also in Arabic. There is one hand, and this is heavy, giving the watch much the appearance of an inexpensive compass. In the back of the case is a hole through which the key is passed to wind the watch, and the key, as seen in the illustration, is of the crank style so extensively used not many years ago in winding the old-fashioned weight clocks. The movement can be taken out of the case, and, when examined under a glass, is found to be in a fine state of preservation. The wheels are engraved in Arabic designs and the whole movement is of brass, protected by a very fine quality of fire gilding. No gold was used in the watch proper, and there is no silver further than the plate on the back of the movement, which is elaborately engraved with Arabic designs. The movement has a fusee and string, without any other timing device than a pin fastened to the bridge, and on which the balance bars beat. The face is elaborately engraved and the movement is complete, so that the watch runs when wound up.

Fig. 2 illustrates one of the first striking watches ever made. This specimen bears the name of Quare, of London. It is a curious and rather rough piece of mechanism, which is now incomplete. There is no date on the watch, but it is supposed to have been made about the year 1600. The outer case is made in open work design, so that the sounds from the striking device may be emitted. The numerals on the dial are like those used at present. The dial is of silver, and, like all watches of early date, there is only one hand. The movement appears to have been practically the same as that used to-day; but the incompleteness of the mechanism makes it impossible to describe it fully.

Coming down to a later period, we have a remarkable specimen of horology in the watch shown in Fig. 3. The case is of quartz crystal, cut in the shape of a cross in a most perfect manner, the corners being beveled with the exactness of machine work. The two sections of the case are held together by a gold clasp, and the inside is hollowed out of the crystal to admit of placing the movement. The case opens and turns on a hinge at the top and the movement is reached by lifting it out of the cavity in which it fits. The movement is made in the irregular shape of a cross and is of the fusee and chain design, without hairspring or other timing device. All the gold work is elaborately engraved. The shape of the watch shows the ecclesiastical tone of the age in which it was made and the motive of the engraving is in keeping with this same spirit. The watch is in excellent running order. It has much historic interest, as it was made by Jean Rousseau, greatgrandfather of the famous philosopher. It was made somewhere about 1675, and is especially mentioned in the inventory of the property of its maker. This watch has been on exhibition in Geneva for a great many years, and the face of the crystal has been somewhat scratched by constant dusting, but the back remains finely polished.

Napoleon's watch, shown in Fig. 4, is scarcely a century old; it is in a fine state of preservation. It was made in Paris, and has the modern bridge verge escapement and is in excellent running order. The engine turning on the back of the case is quite sharp, and is peculiar in that it starts on an eccentric from near the bottom, instead of from the center. The movement is in the shape of a Grecian urn, and the dial is on the face of the urn. The watch is owned in this country. An interesting bit of history attached to this watch is that when Napoleon was campaigning in Holland, and was out driving, the horses became frightened and were about to dash into a river, when a man sprang at their heads and stopped them. Napoleon offered the man money, and, when this was declined, political position. The man also declined this. Taking this watch from his pocket, Napoleon gave it to him, telling him to keep it to remember the circumstance by.

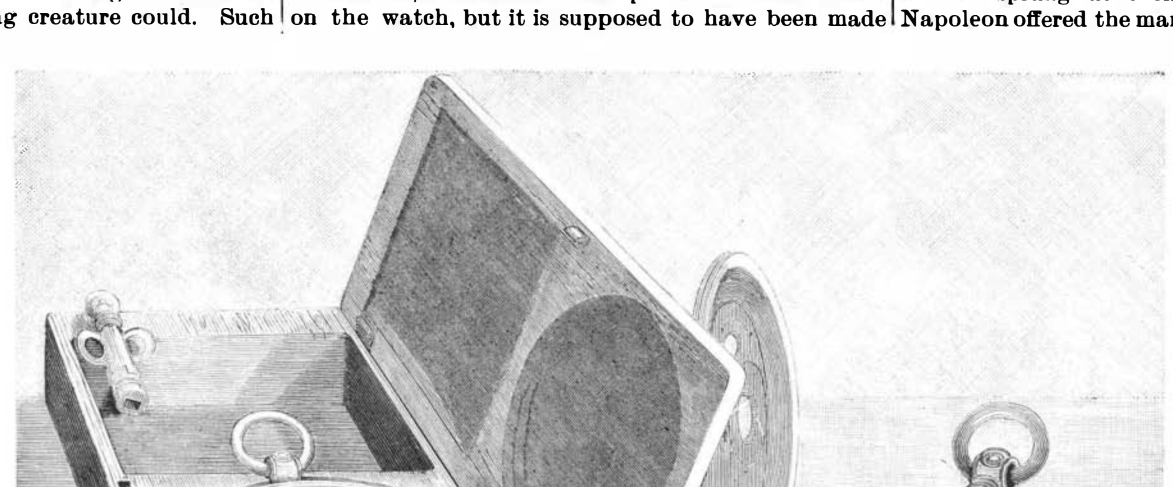


Fig. 5.—WATCH MADE ENTIRELY OF WOOD AND IVORY.

Fig. 5 shows what can be accomplished by a combination of ingenuity, skill, and persistency. It is a watch made almost wholly of wood, by a watchmaker who was convicted of some crime and sent to Siberia by the Russian government. The convict made this watch to while away his time, and was pardoned because of his work. The only tool that he had to work with was a penknife. Irregularity in the work can only be discerned by examining it with a glass. Nevertheless, it is remarkably accurate, and the watch runs and keeps fair time. The wood used was boxwood. The numerals on the face are small pieces of