

had no doubt this would appear arrogant. To common observation the distinction between the plant and the animal was believed to be sufficiently clear. Between an ox and an oak-tree there was an unmistakable difference. A cabbage and a swallow were not very easily confounded. This was quite true; but if the entire of what was known as the animal world were laid against whole of what was known as the vegetable kingdom it would be seen that there were no features belonging to the one which were not in some sense shared by the other. There were vegetables controlled by movements which in animals would be called instincts. They could intoxicate a plant as they could intoxicate a man or beast; they could paralyze it with pain or chloroform, and could kill it with an electric spark. There were some plants which depended for existence on the animals they entrapped, and to this they were endowed with a susceptibility more delicate than that of the human body, whilst they could distinguish between food which would nourish them and substances which would not. It was not too much to say that the extinction of insects would lead to the extermination of the most beautiful plants existing on the globe; while the extinction of these beautiful plants would, in like manner, be the ruin of the majority of insects.

THE ORIGIN OF BOG IRON ORE.

The roots of trees appear to have power to reduce the peroxide of iron, contained in sands with which they come in contact, to the soluble protoxide. When the water which dissolves this runs into low places, where branches, twigs and leaves of trees are slowly decaying, the protoxide becomes re-oxidized and is deposited in the interstices of the vegetable forms left by the decomposition of the woody fibre. Thus, parts of the trees are not petrified, but ferrified; the whole beds of iron ore consist of these roots of dead vegetation. Where the ferruginous waters do not encounter masses of decomposing wood, but merely lie at rest, as in swamps and ponds, the evaporation causes the ore to be deposited in lumps, from the size of a shot to 500 pounds weight. From the bottom of ponds these lumps can be raised with tongs, like oysters. In either form the large amount of vegetable matter which this ore contains makes the melted iron reduced from it exceedingly fluid, so that it runs into every nook and cranny of the casting mold, and reproduces it with sharp and precise outlines. When bog ores can be procured to mix with other iron ores, they produce a highly beneficial effect in the running of the furnace and quality of metal turned out; though, as a rule they will not yield 40% of metal. The pig metal obtained from them is so brittle that it breaks to pieces on being dropped on hard ground. Its weakness is in part due to its containing phosphorus, arsenic, etc. When taken from swamps, the workmen often throw into the cavities loose earth, leaves, bushes, etc., which, often within eight years, leave behind them fresh deposits of ore. The most noted places of supply for bog ore in this country are: Monmouth county, New Jersey. Piscataquis county, Maine and Snowhill, on the eastern shore of Maryland. In the early part of the century much was obtained from the ponds of Plymouth county, Mass., and from Egg Harbor, New Jersey.

WHY THE SKY APPEARS BLUE.

"Why is the sky blue?" is a question, says a recent number of the *Academy*, which has often been asked, but never satisfactorily answered. Helmholtz offered an explanation which depended on the reflection of solar light by the air particles in the atmosphere. These particles, being very minute, would reflect preferably the shortest waves of light, namely, blue waves, while they would allow the longer waves, corresponding to green and red light, to pass through them; just as a log of wood floating on the surface of still water would throw off the tiny wavelets caused by a falling drop in its neighborhood, while the same log in long ocean swells would be tossed to and fro without noticeably impeding the progress of the waves.

Dr. E. L. Nichols (in the *Philosophical Magazine*, for December) has pronounced another view, which has much to recommend it. According to Young and Helmholtz's theory of colour-impression there are in the eye three sets of nerve-termini, one set chiefly influenced by the red, another by the green, the third by the violet rays. The impression of color is the resultant of the intensities of these three effects. The impression upon these nerves is not directly proportional to the intensity of the ray, the different nerve-termini being subject to different laws. For very feeble rays the "violet" nerves are very sensitive, while the "green" and "red" nerves scarcely act at all. As the

light increases in intensity the "red" and "green" nerves increase in activity, while the "violet" nerves become tired and dazzled. For rays of dazzling brilliancy the "red" nerves are in their most sensitive condition. Thus, of the simple colors, as the brightness increases, red and green change to yellow, blue becomes white. Daylight at ordinary intensities affects the three sets of nerve-termini equally; the resultant impression is whiteness. Now daylight is simply the light of the sun weakened by manifold diffuse reflections. The direct rays of the sun, as we let them fall upon any colorless object, appear also a white light; but on attempting at noon on a clear day to gaze into the sun's face the impression is of blinding yellow. It is not that the direct rays differ in composition from diffuse daylight, but that the "violet" nerves cannot transmit the action of such strong light. The moon, with enormously less illuminating power than the sun, seems bright, and is far brighter than the open sky. In passing from the intensity of the moon's rays to those reaching us from a corresponding bit of the open sky, we may, perhaps, take a step as great as that between the brightness of the sun and moon. In general, white light will appear bluer and bluer as its intensity diminishes, and this law will apply to the skies; as the light they reflect becomes fainter and fainter they will increase in blueness, even though the light by the process of reflection suffer no change in composition.

DESTRUCTION OF THE PYRAMIDS.—A correspondent of the *Egyptian Gazette* writes: "I have just returned from a most interesting series of excursions to the Pyramids. They were made from a dahabiah, and included visits to the great pyramids of Gheezeh, at Sakkarah, to Dashoor, and to Maydoon. I regret to say that in several places we observed the hand of the destroyer at work. Not only was this the case at a remote place like Dashoor, but, so to speak, under M. Mariette's very nose. Some four or five large stones, immediately under the entrance, have been removed from the Great Pyramid; and, incredible as it may seem, I was informed, on what seemed to me trustworthy authority, that this wanton act had been committed by order of the Khedive, the stone being required for the buildings of the new mosque which so greatly overshadows the beautiful mosque of Sultan Hassan. Few people would be sorry to see the hideous new building pulled down, but that the pyramid should be further destroyed to build it is one of the most singular examples of the 'revenge of time' I ever heard. It is well known that, beautiful as is the mosque of Sultan Hassan, we have it at the sacrifice of the Great Pyramid, which was pulled down to build it. That the Great Pyramid should, after the lapse of more than five centuries, be once more put under contribution, and that for the purpose of building a mosque which already, when only half-finished, hides and dwarfs its older neighbour in a way almost destructive of the pleasure of looking at it, is, indeed, a noteworthy example of the vicissitudes of fate and the irony of history. When the Government itself sets an example of this kind, we are not surprised that it is promptly followed by meaner folk. At Dashoor, a place seldom visited by the tourists, and where consequently the marauder thought himself safe, three camels were during our stay being loaded with the square white limestones of the casing of the larger pyramid. Few of these stones remain. The upper part of the pyramid has long been stripped. But, in spite of the remonstrances of our party, and the threat, promptly carried out, of a complaint to the Government by letter, these few relics were being ruthlessly pulled away, every removal of a stone insuring the destruction of two or three of its neighbours. The adjoining pyramid, which is so conspicuous from Helouan, and so remarkable from being built in two different slopes, had till lately its casing nearly complete. This casing is of the greatest importance, for the alteration of the angle will almost disappear when it has been removed; and I regret to say, though I did not actually see the work in progress, there can be no doubt that here also the destroyer has been recently busy. Stones, loosened from the top of the building, have been rolled down the side, tearing and smashing the smooth surface. Three or four large stones have also been removed from below the entrance, which is now inaccessible without a ladder. It is in little-known places like Dashoor that such destruction as I describe is most easy to perpetrate and most difficult to prevent. But there cannot be much difficulty in watching the Great Pyramid of Gheezeh."

NEW REMEDY FOR BURNS.—An iron foundry man recommends as "a never-failing speedy remedy" for burns and scalds powdered pine wood charcoal.