Light and Colored Glass.

At the last meeting of the British Association for the advancement of Science, R. Hunt, Esq presented the following interesting statistics in relation to various experiments with colored glass :—

" On the colored glass employed in glazing the new Palm house in the Royal Botanic Garden at Kew. It has been found that plants growing in stove houses often suffer from the scorching rays of the solar rays, and great expense is frequently incurred in fixing blinds to cut off this destructive calorific influence. From the enormous size of the new Palm house at Kew, it would be almost impracticable to adopt any system of shades which would be effective—this building being 363 feet in length, 100 feet wide, and 63 feet high. It was, therefore, thought desirable to ascertain if it would be possible to cut off these scorching rays by the use of a tinted glass, which should not be objectionable in its appearance, and the question was submitted to Mr. Hunt. The object was to select a glass that should not permit those heat rays which are most active in scorching the leaves of plants to permeate it. By a series of experiments made with the colored juices of the palms themselves, it was ascertained that the rays which destroyed their color, belonged to a class situated at that end of the prismatic spectrum which exhibited the utmost calorific power, and just beyond the limits of the visible red ray. A great number of specimens of glass variously manufactured were submitted to examination, and it was at length ascertained that glass tinted green appeared likely to effect the object desired most readily. Some of the green glasses which were examined obstructed nearly all the heat rays—but this was not desired —and from their dark color these were objectionable, as stopping the passage of a considerable quantity of light, which was essential to the healthful growth of the plants. Many specimens were manufactured purposely for the experiments by Messrs. Chance of Birmingham, according to given directions, and it is mainly due to the interest taken by these gentlemen that the desideratum has been arrived at. Every sample of glass was submitted to three distinct set of experiments —1st. To ascertain, by measuring off the colored rays of the spectrum, its transparency to luminous influence. 2. To ascertain the amount of obstruction offered to the passage of the chemical rays. 3. To measure the amount of heat radiation which permeated each specimen The chemical changes were tried upon chloride of silver, and on paper stained with the green coloring matter of the leaves of the palms themselves.

The calorific influence was ascertained by a method employed by Sir John Herschell in his experiments on solar radiation. Tissue paper stretched on a frame was smoked on one side by holding it over a smoky flame and then while the spectrum was thrown upon it the other surface was washed with strong sulphuric ether. By the evaporation of the ether the points of calorific action were most easily obtained, as these dried off in well-defined circles long before the other parts presented any appearance of dryness. By these means it was not difficult, with care, to ascertain exactly the condition of the glass, as to its transparancy to light, heat, and chemical agency. The glass thus chosen is of a very pale yellow-green color, the color being given by oxide of copper, and is so transparent that scarcely any light is intercepted. In examining the spectral rays through it, it is found that the yellow is slightly diminished in intensity, and that the extent of the red ray is affected in a small degree, the lower edge of the red ray being cut off by it. It does not appear to act in any way upon the chemical principle, as spectral impressions obtained upon chloride of silver are the same in extent and character as those procured by the action of the rays which have passed ordinary white glass. The glass has, however, a very remarkable action upon the non-luminous heat rays, the least refrangible calorific rays. It prevents the permeation of all that class of heat rays which exists below and in the point fixed by Sir William Herschell, Sir H. Englefield and Sir J. Herschell, as the point of maximum caloric action. As it is to this class of rays that the scorching influence is due, there is every reason to conclude that the use of this glass will be effective in protecting the plants, and at the same time, as it is unobjectionable in point of color, and transparent to that principle which is necessary to the developement of those parts of the plant which depend upon external chemical excitation, it is only partially so to the heat rays, and it is opaque to those only which are most injurious. The absence of the oxide of manganese, commonly employed in all sheet glass is insisted on, it having been found that into glass, which manganese enters the composition of, will, after exposure for some time to intense sun-light, assume a pinky hue, and any tint of this character would completely destroy the peculiar properties for which this glass is chosen. Melloni, in his investigationson radiant heat, discovered that a peculiar green glass, manufactured in Italy, ob structed nearly all the calorific rays ; we may therefore conclude that the glass chosen is of a similar character to that employed by the Italian philosopher. The tint of color is not very different from that of the old crown glass, and many practical men state that they find their plants flourish much better under this kind of glass, than under the white sheet glass which is now so commonly employed.

Southern Metals.

The Delta (Geo.) Eagle, says :—"We learn that six hundred tons of copper ore are shortly to be shipped from here to Boston —It is found in great abundance and of the richest quality in Polk county, Tenn., and Cherokee county, N. C. where a company of Germans are engaged in working the mines. We have seen several of the links of ore at the Depot, which seem to be most the pure metal itself, The wagons are to commence hauling it next week."

We understand that this ore extends from that point in beds of various sizes and through a wide portion of Murray County. Operations are about to be commenced in Gilmer county by a former resident of Augusta, Geo. on a lot having a large supply of valuable ore of the same kind.

This ore also contains a considerable portion of silver which of itself will repay the labor of excavation. Every day is bringing to light new evidences of the great mineral resources of the Cherokee counties, which require only the application of capital and enterprise to render them prolific of wealth to the South.

" We saw," says the Fayetteville (N C.) Observer, " last week, some bars of lead, part of a quantity brought here for sale from the Washington Silver mine in Davidson county, by Roswell A. King, Esq. We learned from Mr. King, that the company has lately commenced the process of separating the lead from the silver ore, and that they will probably obtain about 25 tons per annum, for most of which there will be a market in the western part of our state. Heretofore, the lead and silver ore have been shipped withou separation to the North. Now a great saving of expense is effected by preparing the lead at the mine."

An Austrian Palace.

Prince Liechenstein's residence at Vienna is a specimen of the immense cost of some of the Austrian palaces. A correspondent of the Newark Advertiser gives the following account of it.

" For a couple of hours I wandered through apartments filled with the most costly and luxurious furniture—reminding one of the fairy palaces described in the Arabian Nights. Mirrors covering the whole side of a room, chandeliers of rock crystal and gold, floors of polished wood laid in curious mosaic, statuary of Carrara marble, bronzes of rare workmanship, the walls covered with rich silk and gold brocade, ceiling of immense height painted in fresco and arabesque, staircases, halls, and columns of polished marble and gypsum, mosaic tables, &c. In a word, the interior decorations of this superb palace cost 8,000,000 florins, or 4,000,000 dollars—it far exceeds any two of the hundreds I have seen, and is superior to that of the Emperor's in splendor. Its princely inhabitant has an income of upwards of $1,000,000 yearly, and is the owner of ninety-nine estates and palaces. No subject of Austria can possess more than that number.

Tires of Railways.

The following remarks have been communicated by a correspondent of the Railroad Record .—" It was given in evidence, at an inquest recently held to decide upon the fatal results of an accident which occurred on the Great Western Railroad, that the fracture of the steel tire of the driving-wheels of some of their locomotives was by no means an unusual occurrence, and that even those tires sometimes snapped when the engines were not running. The dreadful effects of the accident in question make it evident that nothing should be omitted by which risk might be mitigated; and to this end, among probably, many better suggestions, I beg to offer the following both as respects the cause and its removal. Those steel tires are dovetailed into the iron wheel and being let in hot it appears to be assumed that the sledge hammers of the forgers will cause the two metals —steel and iron—to become properly welded together. Now, this, Sir, I venture to dispute; on the contrary; I am convinced nothing like a real cementation of the two metals will be affected. If this assumption be correct, it necessarily follows that the iron felloes of the wheel will be surrounded by a distinct steel hoop. Now, the transverse section and body of hoop is very small, compared with that of the felloes, or iron rim of the wheel, consequently, under the enormous pressure of a Great Western Locomotive, the steel hoop will have a tendency to roll out longitudinally more than the iron rim of the wheel; and so rolling out or stretching, it must either fracture the felloes, or the iron rim itself, it is let into its dove-tailed bed very tight; or it must become somewhat larger in diameter than the felloes of the wheel. If this latter be the result, we know that the wheel and the steel tire cannot, without a jerking back of the tire, make the same number of revolutions in any given distance. A tire so enlarged on an iron wheel, will, when the wheel is in revolution with a heavy load upon it, be rolled down tight into its bed at all points behind that of its contact with the rail; and, at all points before that, it will be thrown partly up and forward out of its bed, by so much as it is larger in diameter than the felloes of the wheel. But when, from any cause—such as an increase of speed, or at some portion of its bed where the steel rim fits tighter—this kind of slipping of the large outer rim on the smaller inner one, can no longer be maintained, the outer, that is the steel rim, must snap, and its fractured pieces frequently fly off with great force. But it is stated that these tires sometimes snap when the engine is not in motion. Here the laws of expansion and cantraction, probably come into action. Supposing a steel tire not to have been rolled out, as previously assumed in running, then, when the engine comes to a rest the wheel will bring into the atmosphere the extra amount of heat it has acquired during its rapid journey, and though the contractive forces of iron and steel are, in like conditions, nearly the same, yet, the tire being the outside will cool the faster, and contract at first more than the body of the wheel; and hence it may be likely enough to snap, when the hardness of the steel is considered. The converse of this even might account for the converse of these tires when running, without supposing there were any rolling out of the metal under the enormous load of the engine, with all its hammering on the rails. Now, if the cementation of the steel and the iron felloes of the wheel were perfect, the risk and apprehension of all such accidents would be obviated, and this occasions me to mention, that I some time back observed that a patent had been taken out by a Sheffield gentleman—I think of the name of Sanderson— for welding a steel plate of sufficient thickness on an iron bloom, and then rolling into bars. In fact it seemed to me that this was a plan for plating iron with steel, precisely on a similar method with that of plating copper with steel, as long practised in the well known sheffield ware. I have not been in the way of learning whether this patent has been successfully worked out, but it appears to me it migh be well worth the while of any railway company using steel tires to inquire."

Cork.

Many persons see cork used daily without knowing whence came those useful materials. Corks are cut from large slabs of the cork tree, a species of oak which grows wild in the countries south of Europe. The tree is stripped of its bark at about 15 years old, but before stripping it off, the tree is not cut down as in the case of the oak. It is taken while the tree is growing and the operation may be repeated every eighth or ninth year—the quality of the bark continuing each time to improve as the age of the tree increases. When the bark is taken off, it is singed in the flames of a strong fire, and after being soaked for a considerable time in water, it is placed under heavy weights in order to render it straight. Its extreme lightness, the ease with which it can be compressed, and its elasticity, are properties so peculiar to this substance, that no efficient substitute for it has been discovered. The valuable properties of cork were known to the Greeks and Romans, who employed it for all the purposes for which it is used at present, with the exception of stopples, the ancients most used cement for stopping the mouths of bottles or vessels. The Egyptians are said to have made coffins of cork, which being spread on the inside with a resinous substance preserved dead bodies from decay. In modern times, cork was not generally used for stopples to bottles till about the close of the 17th century, wax being used till then for that purpose. The cork imported into Great Britain is brought principally from Italy, Spain and Portugal. The quantity annually consumed is upwards of 500 tons.

Pingree's Comet.

Pingree's comet is just now about to make its appearance for the third recorded time, to the inhabitants of the earth. On the occasion of its former visits, it carried terror and dismay to the minds of kings and princes In 1264 it was considered as a messenger charged with the execution of sentence of death upon Pope Urban IV.

At its next return, the Emperor Charles V, of Germany and Spain, wrote of it, "*His ergo indiceis me mea fata vocant.*" It is said that he resigned his crown to prepare for the dreaded summons.

It has now been gone for another period of near three hundred years, and is soon to come back provided with an " arming" which will be as significant to the astronomer of what it has encountered in the depths of space, as is of the depths of the ocean, the sand to the mariner, which adheres to his lead.

But so far from its expected appearance, in 1848, being cause of dread and alarm to powers and potentates, its coming is looked for even by the multitude, with a degree of eager interest, and will be hailed with pleasure and delight in many lands.

From a mysterious stranger, bringing tidings of a dreadful, potent and awful calamity to a terror-stricken world, astronomy, by its progress, has changed in the minds of men the character of comets ; they have been made obedient to law, subservient, instructive and useful to man, in his upward and onward progress. They teach important truths, and assist to reveal the secrets of nature.—*Lieut. M. F. Maury.*

Apologue.

Near a dew-drop there fell a tear upon a tomb, whither a beautiful female repaired every morning to weep for her lover. As the sun's golden disk rose higher in heaven, his rays fell on the tear and dew drop, but glanced with a double brilliancy on the pearl shook from the tresses of Aurora. The liquid jewel, proud of its lustre, addressed its neighbor—" How darest thou appear thus solitary and lustreless?" The modest tear made no answer; but the zephyr that just then wantoned near them, paused in its flight, brushed down with its wings the glittering dew-drop, and folding the humole tear of affection in its embrace, carried it up to heaven.

A fisherman in Baltimore lately fished up sixty dollars worth of jewelry. Good fishing that.