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THE PENNSYLVANIA AEROLITE.

The people of Southwestern Pennsylvania were startled on the 26th of September, by the occurrence of a very unusual phenomenon; an immense aerolite had descended upon them. At first the impression prevailed that the district had been visited by an earthquake or that a terrible explosion of natural gas had taken place, while others decided that a pretty large set of boilers had burst, or that a gigantic blast had thrown down a large mass of rock from some neighboring quarry. Loud detonations were heard throughout that entire section, the explosions apparently following a straight line across the country, and causing not a little consternation among the people.

The meteor seems to have passed from the northeast to the southwest, and the noise of its passage, which was variously described as resembling the rattling of heavy artillery over a solid roadbed or as a mighty peal of thunder, was heard over a large area of country in the neighborhood of Pittsburg and to the south. A number of witnesses describe it as an immense mass of fire, fully as large as the largest barns—and Pennsylvania barns, it will be remembered, are noted for their size. A powerful flame of deep red color, which tapered off into a darker tail, seemed attached to the mass. This, however, is stated to have disappeared as the meteor came nearer, and the color of the mass changed to a bluish white, which was maintained as long as it remained in sight.

A mail carrier on horseback and a farmer who was plowing at the time both describe their animals as being so terrified that they remained perfectly motionless, and could not be persuaded to stir for several minutes after the fiery visitor had disappeared. It finally struck the earth on the farm of Mr. Buckland, in Jefferson Township, Washington County, near the West Virginia line. The stone broke into three pieces, and became partly buried. The color is gray, with streaks of red running over it; possibly from the formation of sesquioxide of iron. The form is irregular, and the dimensions, if correctly reported, are without precedent. It is stated to be from 30 to 50 feet in diameter, but we doubt very much that the statement can be verified. The Gibbs meteorite, in the Yale College Cabinet at New Haven, is noted for its size, but it weighs only 1,635 pounds, and has a length of 3 feet 4 inches, a breadth of 2 feet 4 inches, and a height of 1 foot 4 inches. It came from the Red River.

A still more noted one is the Tucson meteorite, from Sonora, Mexico, which is now at the Smithsonian Institution. It is ring-shaped, and 49 inches in its greatest diameter. The most remarkable masses of which we have any knowledge have been found in South America. One discovered in the district of Chaco-Gualamba was estimated to weigh 16 tons, and another found near Bahia, Brazil, to contain 28 cubic feet, and to weigh 7 tons. These weights and volumes would, however, be quite dwarfed by a comparison with those reported for the Pennsylvania meteorite. But there is probably still a little romance attached to these accounts, and the true dimensions will not be reached until later.

An odd superstition clings to meteors, and many who witnessed this remarkable one were inspired with the dread belief that it brought with it a spirit of pestilence and famine; but if these people would only call to remembrance the wide prevalence of meteoric visitors, they would conclude that the most persistent spirit which their imagination could attach to them must be quite exhausted by this time. Dr. Kleiber of St. Petersburg has calculated that 4,950 pounds of meteoric dust fall to the earth every hour, which would make 59 tons a day, or more than 21,500 tons in a year, while Professor Proctor thinks that even this estimate is too small. Yet very little damage is done by the fall of these "air stones," for the most of them fall upon unoccupied ground or into the sea. Relic hunters are reported to be already at work and carrying off the meteorite by piecemeal. This seems to indicate either that the mass was very much shattered by its fall, or that it has a large predominance of stony matter, which would enable fragments to be broken off; for the most accomplished vandal would find difficulty in securing a souvenir from a piece of meteoric iron.

GRAPHICAL COMPARISON OF PERFORATION FORMULÆ.

In connection with the Board on Armament of Fortifications, Major W. R. King, of the Corps of Engineers, U. S. Army, has compiled a comparative table of all formulæ relating to the perforation of armor plating; and in order to show at a glance the relative values obtained by using the different formulæ, has plotted the results to a uniform scale. As this sheet gives information of some interest to engineers, it has been published by the government and distributed to the different members of the corps. The two axes in the diagram represent the thickness of the unbacked wrought iron plating in inches, and the energy in foot tons per inch of shot's circumference, so that the resulting curves at any point show the values obtained from the formulæ of different authorities.

They display wide discrepancies, and, indeed, the variations in the quality of both the shot and the plate

used by the investigators are such that it is quite impossible to obtain any general formulæ which are entirely accurate. The present graphical method has the advantage, however, of showing these conflicting results with admirable clearness, and it may be valuable in helping us to reach more uniform formulæ by calling attention to the existing confusion, and the need for further and more careful experimentation.

CURIOS FEATURES OF THE ELECTRIC LIGHTING BUSINESS.

The business of the voltaic arc light companies may be said to furnish additional evidence of the credulity of human nature. The picture presented by hundreds of sub-companies spread over the country, living on prospects rather than profits, stimulates the observer and invites the analyst. At the recent meeting of the National Electric Light Association, it was not difficult to see in which direction the profit lay. Those engaged in selling light exhibited the unmistakable evidences of depression, while their fellows who confine their efforts to the sale of electric lighting plant were correspondingly elated and buoyant.

The first discussed economical processes with an interest that was profound and serious, as though their only hope of profit lay in a reduction of running expenses, while the second looked on with ill-concealed indifference.

To those who have had the time and inclination to study the electric lighting business, this will not be surprising. They will have discovered that there is an immense profit in electric lighting plant, and but little, if any at all, in the sale of the light. Like glucose, the electric lighting plant business is advertised but little; the private circular having been found to be the most judicious method of reaching purchasers.

Go into the office of one of the so-called parent companies, and talk about electric lighting plant, and you will be astonished by the prospective profits of light selling. It will be proved to you with mathematical precision that few modern enterprises offer such a large margin of profit as the operation of an electric lighting plant. But if there is so much profit in selling the light, why don't these companies go into the business themselves? Why do they confine themselves to selling plant? You will scarcely fail to be struck with this when hearing the plant people talk on the subject of light selling.

Last week two large electric lighting plant companies were consolidated. One of these companies only two years ago had a little office in Union Square, before which a single arc light hung suspended. This was rarely lighted, as if the dispensing of arc light was a luxury far too costly to be indulged in by any but sub-companies.

This company has now a great factory in New York city, where large quantities of lighting plant are manufactured for those provincial projectors who are possessed of robust bank accounts and adamantine credulity.

Fortunes have been made in arc light apparatus, but the only people who have profited, thus far, from the light itself are the gas companies, because its brilliancy so pales the gas jets by comparison that gas consumers, in order to counteract its influences, are forced to turn on more burners and use more gas.

STUDENT MECHANICS.

The most ardent supporters of technical schools do not claim that they can supersede the workshop; but they do claim, properly, that the inexperienced boy can obtain in them a general knowledge of the character of materials, the methods of working them, and the reasons why these methods differ. None of our older mechanics ever regret the smattering of theoretical knowledge of natural laws that they obtained at school from the meager instruction afforded by the text book on natural philosophy; and in after years some of its statements—mere commonly known axioms—have been easy to quote, and beneficial to heed. Book knowledge on practical subjects may be useful, even if it does not teach the handling of tools and the best methods of doing a job. As a preliminary to the shop novitiate, the technical school is a wonderful helper.

Sometimes boys of fourteen or fifteen see clearer than do their elders the possible advantages of a theoretical mechanical education; but no experienced mechanic can visit one of our modern technical schools without feeling that he was a loser because they were not in his boyhood days, and that he had no opportunity for the advantages which they unquestionably give to the embryo mechanic. Such a school is a means of guiding the young man to the choice of an occupation; mechanical bent, discouraged at home, is given room for development. Occasionally, however, a parent has the wisdom to help the son in his inclination.

An instance in illustration is that of a boy of fourteen, left by his father, a prominent government official, with a considerable fortune. He shows a decided taste for mechanics, is provided by his sensible mother with a home workshop used in vacations will leave