counted twenty, the eyes of the audience were turned attentively upon the white disk on the screen. As soon as twenty had been counted, the disk was cut off, and a flood of light thrown upon the screen. The audience then saw a black circle upon the spot occupied by the white disk, the effect of the partial blinding of the retina. This paralysis of the optic nerve, it was explained, extended beyond black and white to the various colors of the spectrum. Supplementing this experiment, Professor Tyndall threw a large circle of white light on the screen, and over the centre of that circle he placed a smaller black surface. Again the audience looked steadily at the black surface while the lecturer counted twenty; and when the disks were removed, and a flood of light covered the screen, a white circle appeared in the place where the black surface was shown. A purple light was projected; and when it was removed, after the audience had gazed at it a sufficient length of time, a disk of green, the complementary color of purple, was visible. Similar experiments were made with a white disk and a smaller blue surface over it, and a yellow disk appeared to the eye; with a white disk and red surface, the effect on the eye was green; and with a white disk and green surface, the effect red.

Professor Tyndall then said he should try to reverse the spectrum itself. He did not know whether he should succeed in doing so, but the attempt was worth being made. Throwing the spectrum upon the screen, he asked the audience to look closely at it while he counted thirty. He hoped to be able partially to blind the gazers to the colors of the spectrum. He should then cut off the spectrum, and allow the white light to enter the eye. A complementary spectrum was thus produced in the eye after the real spectrum had vanished. The experiment was successful, and was loudly applauded.

THE PROGRESS OF SCIENCE.

THE president of the British Society of Engineers, Mr. P. F. Nursey, in his recent inaugural address, said: "The facts I have brought before you also point to the moral and material progress of the world. 'The bee that hummed its busy hour through the bowers of paradise,' wrote Sydney Smith, 'fashioned its hexagon with the same mathematical precision which it does now and here. Six thousand years have added nothing to the sagacity of the horse or the intelligence of the dog.' But how widely different with man! He commences as a fire-worshipper, and rises to a Newton, a Faraday, a Stephenson, a Siemens. He tempts the river in a few fragments of bark lashed together with thongs of rawhide, and crosses the Atlantic in an iron steamer of 22,500 tons burden, — the 'Great Eastern.' He burrows in the earth, and then builds a city with 4,500,000 inhabitants. He sticks a dried reed in a lump of fat to light his mud hut, and carbonizes 2,200,650 tons of coal per annum to illuminate London. He takes weeks to send messages on sticks to Montezuma from the coast, and at last reports in London the details of a battle fought in the Soudan the same morning. He slays his foe with a sling and a pebble chosen from the brook, and meets the enemy with a machine-gun firing six hundred rounds a minute by means of its own recoil, — the Maxim gun. He lays siege to a city with a ballista throwing a fragment of rock, and finally attacks a fort with a gun weighing 110 tons, projecting a steel shell of 1,800 pounds, with a charge of 906 pounds of gunpowder. The axe-head that floated for a few seconds on the Jordan three thousand years ago, when the 'iron did swim,' was a miracle indeed. These are the beginnings and endings of science, but they are the ending of science as regards the present only. They are by no means final, as science never stands still. They are but the landmarks of our times, which, as Emerson puts it, are 'trivial to the dull, tokens of noble and majestic agents to the wise; the receptacle in which the past leaves its history, the quarry out of which the genius of to-day is building up the future.'"

PAINTING MICROSCOPIC SLIDES.

A CORRESPONDENT tells of a visit to the house of a microscopist, who thus describes some of his treasures: "I have several little things to tell you that are not known except by microscopists. Here is a slip of glass, for instance," he continued, as he picked up a narrow glass slide, "which contains the representation of a beautiful bouquet of flowers. The representation, when looked at with the naked eye, can scarcely be seen at all. It simply looks like a small shot. The bouquet, when you look at it through the instrument, contains, as you can discover, eighty-two distinct flowers of various shades and colors; and each is as perfect as it would be possible for an artist to represent it on canvas. The entire bouquet, including all the flowers, leaves, etc., was made from the scales and hair of Brazilian butterflies. The dust from the wings of the butterflies was picked up and placed in position by Henry Dalton of London, who is now dead. Dalton, with the aid of a microscope, picked up one particle of the dust at a time on the end of a hair, and adjusted it to the slide in such a manner, that, when his task was finished, the bouquet assumed its present beautiful and perfect form. Although Dalton was dissipated, he excelled most of his imitators in his peculiar line of art. Among microscopists his works are prized as highly as the works of the great masters in painting are valued by artists who work on canvas. A painter who can paint a complete scene on a surface as small as a sleeve-button is considered skilful; yet Dalton used a single hair for a brush, and dealt with particles of matter scarcely visible to the naked eye, which he placed in their respective positions with the aid of his microscope with such accuracy that he finally produced his representations, which are so correct in every detail that artists who have examined them critically have been almost overcome with astonishment. This is what I call one of the wonderful achievements of the century. He was a fast worker, and by laboring almost incessantly he could finish it, I think, in the course of a week or ten days. The Dalton slides are very valuable in America. There are not more than fifty Dalton slides in this country, and they can scarcely be purchased for love or money. In fact, as I have said before, they are as highly prized by microscopists throughout the world as a rare painting by a celebrated master is prized."

SCIENTIFIC BREVITIES.

PYROTECHNICS. — Not many people of those who have witnessed, during pyrotechnic displays, the bursting of those wonderful bombs which send out showers of gold and party-colored stars, have any idea how they are made and fired. The principle is the same as the military shell, the case being made of paper instead of heavy metal. Two hollow hemispheres are charged with innumerable conical-shaped stars made from compressed coloring matter; and when the halves are joined together and paper-sealed, they are thrown from a mortar. Unless the stars are very carefully arranged, they are apt to detonate by the force of the powder exploded in the mortar. The distance to be travelled by a shell before the stars shall break is regulated with a fuse running 4, 5, 10, 15, or 20 seconds. This fuse, which is a necessary adjunct to all fancy fireworks, is a simple contrivance. It is made by soaking ordinary cotton wick in a compound of meal powder, gum-arabic, alcohol, and water, and is very combustible. At the moment the shell leaves the mortar, the fuse ignites, and is gradually consumed until the flame reaches an interior cavity of the shell holding a charge of powder. Instant explosion ensues; the shell breaks with a loud report, and sheds the burning stars in a perfect shower of beautiful colors.

HOW FAR CAN ONE SEE? — A discussion is going on in Europe concerning the distance at which large objects on the earth's surface may be visible. Emil Metzger mentions that he once saw, with some difficulty, Keizerspickt, in Sumatra, when distant 110 English miles; and he also made out Gug Merapi, in Java, when 180 miles away. From the Piz Muraun, near Dissentis, E. Hill has seen Mont Blanc, the intervening space measuring about 110 miles. J. Starkie Gardner states that Mont Blanc is visible from the Piz Langard, though distant about three degrees. In Greenland, Mr. Whymper beheld a mountain from which he was separated by 150 miles; and from Marseilles, Zuch saw Mount Canigon at a distance of 158 miles. The whole range of the Swiss Alps has been looked upon by J. Hippisley while 200 miles away, while Sir W. Jones has affirmed that the Himalayas have appeared to view from the distance of 224 miles.

THE CONSUMPTION OF TEA. — The popular idea that the people of Great Britain consume more tea on an average per head of population than any other country in the world, is now shown to be erroneous. The Australian colonies and New Zealand (according to one of the Indian journals) drink far more tea per head of population than the British Islands. The Australians come first, with 7.66 lbs. per head; the New Zealanders next, with 7.23 lbs. per head; while the people of Great Britain, though appearing third in the list, consume only 4.90 lbs. each. Newfoundland and Canada come next, while in the United States the consumption is only 1.30 lbs. per head; and in Russia, which is always regarded as a great tea-drinking country, the consumption is only 0.61 lb. per head. Belgium, Sweden, Austria-Hungary, and Spain consume less than the other European nations; but there is not one nation on the Continent, with the exception of Holland, in which the annual consumption exceeds 1 lb. per head. But in certain parts of the countries named, tea-drinking is much more common than in others. In certain Russian districts, especially, tea is drunk constantly and copiously; and it is this fact which has given rise to the notion that Russia is the most bibulous of all tea-drinking countries.

THE WATER-SUPPLY OF EUROPEAN CAPITALS. — Rome heads the list with her 204,000,000 liters of pure water every twenty-four hours. Her population being 345,036, every inhabitant can dispose of 591 liters per diem. London comes next, for every one of whose 4,085,040 inhabitants there are 300 liters daily. Paris takes the third place, her population amounting to 2,240,124, and each inhabitant having for alimentary uses 58 liters per diem, and for secondary purposes 169, — a total of 227 liters. Berlin has 1,302,283 inhabitants, for each of whom there are 140 liters daily; Vienna 770,172 inhabitants, with 100 liters each per day; Naples 463,172, with 200 liters; and Turin 278,598, with 98 liters a head every twenty-four hours. A liter is a little more than 1¾ pint.

PEACH-LEAVES pounded to a pulp, and applied to a bruise, or wound from a rusty nail, or a simple cut, will give immediate relief.