Philosophical Society, he holds either honorary or corresponding relations to many scientific associations, including the Academies of Science in New York and Philadelphia. He has been a member of the Association for the Advancement of Science for many years, and at one of its earlier meetings served as secretary.

No worthier selection could have been made by the American Association from among its more than 2,000 members, for its president, and in the choice of Professor Le Conte a graceful tribute is paid the members from the Pacific States, who showed, nearly twenty-five years ago, their foresight and wisdom in calling him to their first and best scientific educational institution.

Meteorites.

Geologists are indebted to Mr. J. R. Eastman for a concise account of the Mexican meteorites. In a paper read before the Philosophical Society of Washington, January 2, 1892, he presented the latest and most complete information upon the subject, in a compact form ready for reference. A list of the iron meteorites with a table of their weights was given, followed by remarks as to the relative occurrence of iron and stony meteorites.

From the available data the ratio of weight of the former to the latter is as 1 to 12·23. The aggregate weight of meteoric iron observed and discovered to date on this continent is about 153 tons. If the above ratio is true in all cases there should have been a fall of about 1,880 tons of stony meteorites, or in all over 2,000 tons of meteoric matter precipitated upon the earth.

Mr. Eastman offers the following theory to account for the apparent excess of iron over stony meteorites: When a stony meteorite falls to the earth it generally breaks into many fragments, and the ruptured surfaces plainly indicate the nature of the catastrophe. The author knew of no case where an iron meteorite showed any indication of having been twisted, broken, or torn from another mass of the same material.

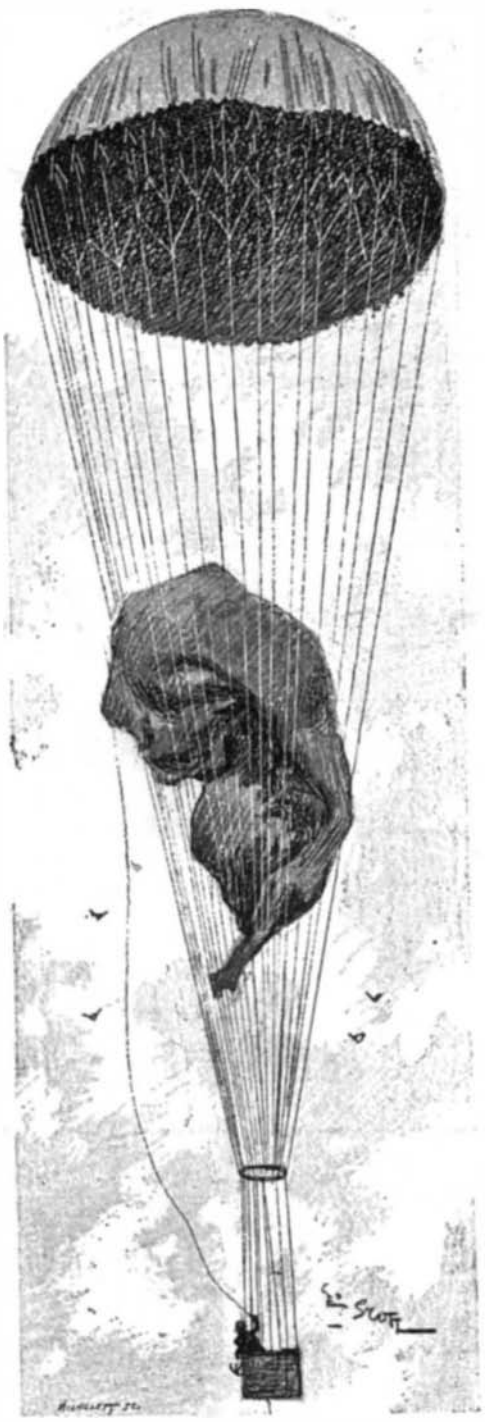
The true type of meteorite which reaches the earth from outer space is probably like that which fell in Iowa County, Iowa, on February 12, 1875. This meteorite is composed almost wholly of stony matter, but scattered through the mass are small grains of nickeliferous iron. This iron may exist in the stony matrix in all forms and sizes, from the microscopic nodule to the mass weighing several tons. When the stony mass comes in contact with the earth's atmosphere the impact breaks up the matrix, sets free the iron bodies, and they reach the earth in the same condition, so far as mass and figure are concerned, as they exist in the original formation. In such cases it is probable that the stony portion of the original body is rent into such minute fragments by the explosion that they would not reach the earth in any appreciable size. The larger the masses of iron the more complete would be the destruction of the original body, and the larger stony meteorites would be those that contain the smaller granules of iron.—*Amer. Naturalist.*

Photo. Prints in Colors.

Prof. Vogel exhibited recently before the Physical Society, Berlin, a remarkably fine series of colored prints of oil paintings, etc., prepared in accordance with his method by Messrs. Vogel and Ulrich. The method consists in first taking a red, a yellow, and a blue negative of the object on plates specially sensitized for colors. The three negatives are then printed on to one and the same paper by means of complementarily colored rollers or stones. In order to obtain the colors exactly complementary to those of the negatives, the colors used for printing were either the colored sensitizers themselves or some substances whose equivalence to these had been determined spectroscopically. The application of the physical principles involved in the above yielded an approximate reproduction of the natural colors which was surprisingly complete, and will become more so as more and more colored substances are discovered suitable as sensitizers. Prof. Koenig described his new spectrophotometer. Its chief improvement consists in the introduction of Lummer and Brodhun's glass cube, which is, however, so modified as to admit of the measurement of the relative intensities of the parallel rays falling into it.

A NEW PARACHUTE.

At the time of the ascension of the Jupiter, the results of which made so strong an impression upon the public, Mr. Capazza invited a few persons to witness an experiment, the simple announcement of which was well calculated to give the chills. It was laconically stated therein that after reaching an altitude of



THE DESCENT.

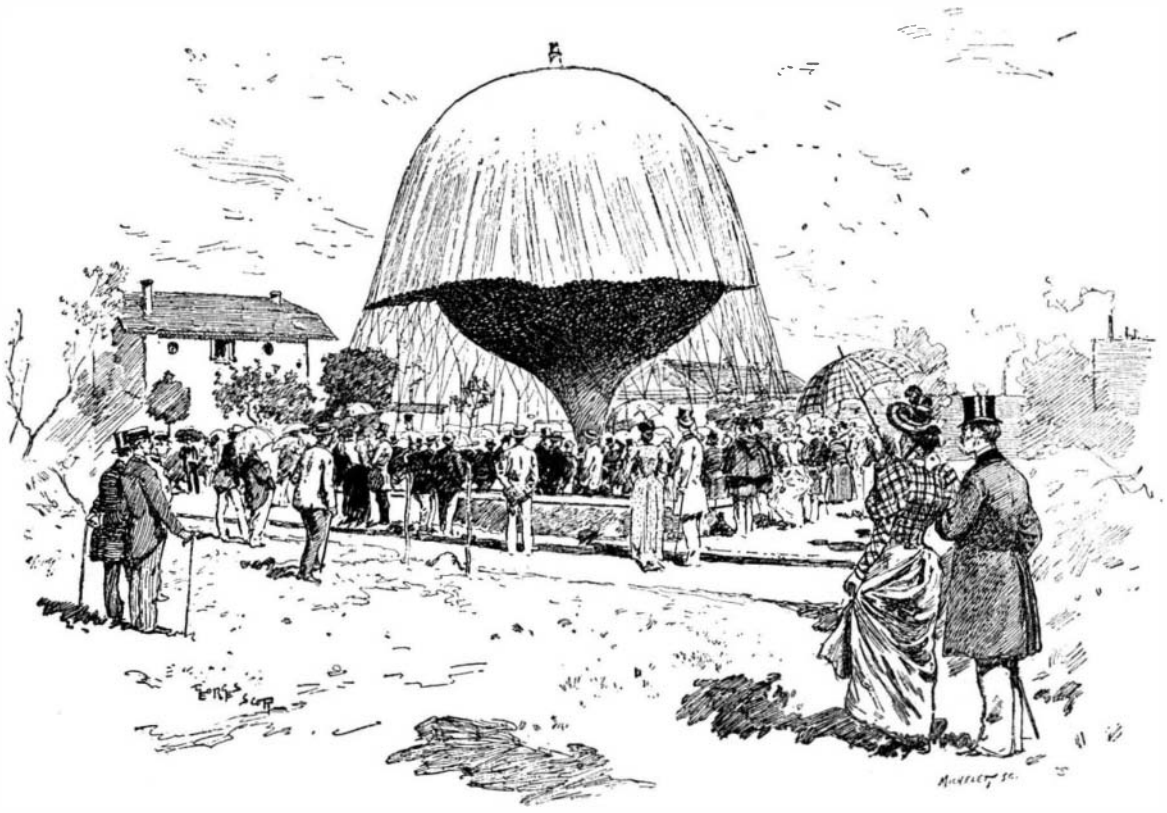
from 3,000 to 6,000 feet, Mr. Capazza would rip open his balloon in order to effect his descent by means of a parachute of his invention. The experiment was to be made at the Villette gas works, and let us say just here that it was a perfect success.

To tell the truth, the Capazza parachute does not constitute an invention in the proper sense of the word. Mr. Capazza has contented himself with improving, by simplifying, what was already known, and especially with more rationally applying the laws that govern the operation of analogous apparatus. In the preceding experiments with parachutes, the apparatus was defective, and, at the moment of acting, remained inert, or else, on the contrary, spreading abruptly, gave a shock which was dangerous for the system as a whole. Moreover, during the descent, the apparatus was wanting in stability and oscillated in the air in a perilous manner. Mr. Capazza's idea consists, in the main, in ascending with his parachute *wide open*. To this effect, his balloon is absolutely free from all fastenings and is not provided with a netting. What takes the place of the latter is the parachute itself, which covers the entire upper part and extends below its "equator."

The balloon covered with its parachute is inflated in the usual manner. It is held by its ascensional force against the parachute and remains in place as long as it is inflated. The parachute is provided throughout its circumference with a band of strong canvas, to which, throvgh the intermedium of metallic eyelets, are hooked fine cords that unite in pairs below and terminate in cords that hold the car at a considerable distance (95 feet) from the balloon. Such a length, unusual up to the present, has the effect of drawing more obliquely upon the edges of the parachute, leaving more liberty to the latter to hold itself open, and to preserve its static equilibrium automatically. Moreover, a sort of conical chimney of canvas placed at the summit of the parachute assures the flow of the gas contained in the balloon when the latter bursts, by accident or otherwise, and afterward serves to allow of the escape of the superabundant air during the descent.

The inflation of the balloon was effected normally, as shown in one of our engravings, except during a sudden squall which gave the persons who held the balloon all the work that they wanted to do. This picturesque incident has been rendered by our artist with much accuracy.

The ascension took place along about five o'clock. Mr. Capazza, alone in his car, rapidly reached an altitude of 4,300 feet, at which he ripped open his balloon. The excitement of the spectators was at a high pitch when the latter was seen to abruptly change form, hang beneath the parachute and then drop upon the ring, while the parachute kept immovable. The descent was made at the very moderate velocity of 4¼ feet per second, and the aeronaut reached earth without difficulty in a wheat field at Drancy. The experiment seems conclusive, and we may believe that the Capazza parachute will hereafter become reglementary for ascensions.—*L'Illustration.*



THE BALLOON AND ITS PARACHUTE.

What are Diatoms?

The plants in question are so small as to be seen only with the aid of the microscope; those of ordinary size, when magnified about three hundred and fifty diameters, appear about a quarter of an inch long. Others are much larger. They are curious little plants with a silica shell, which, in certain places, is provided with little apertures through which living parts of the plant protrude. In this way they are enabled to move about freely in the water by which they are generally surrounded, for, though they are not all strictly water plants, they all need considerable water to enable them to thrive, and so are always found in wet places.

Owing to their freedom of motion, they were at one time supposed to be animals. Now it is known that they are plants, as they can perform all the functions of plants, and no animal, with all his superiority, high nature, etc., is able to do this. They are found everywhere in all inhabited countries, and in fact all over the seas. So it may be readily granted that a plant so common and widespread as this should be quite familiar to every one.

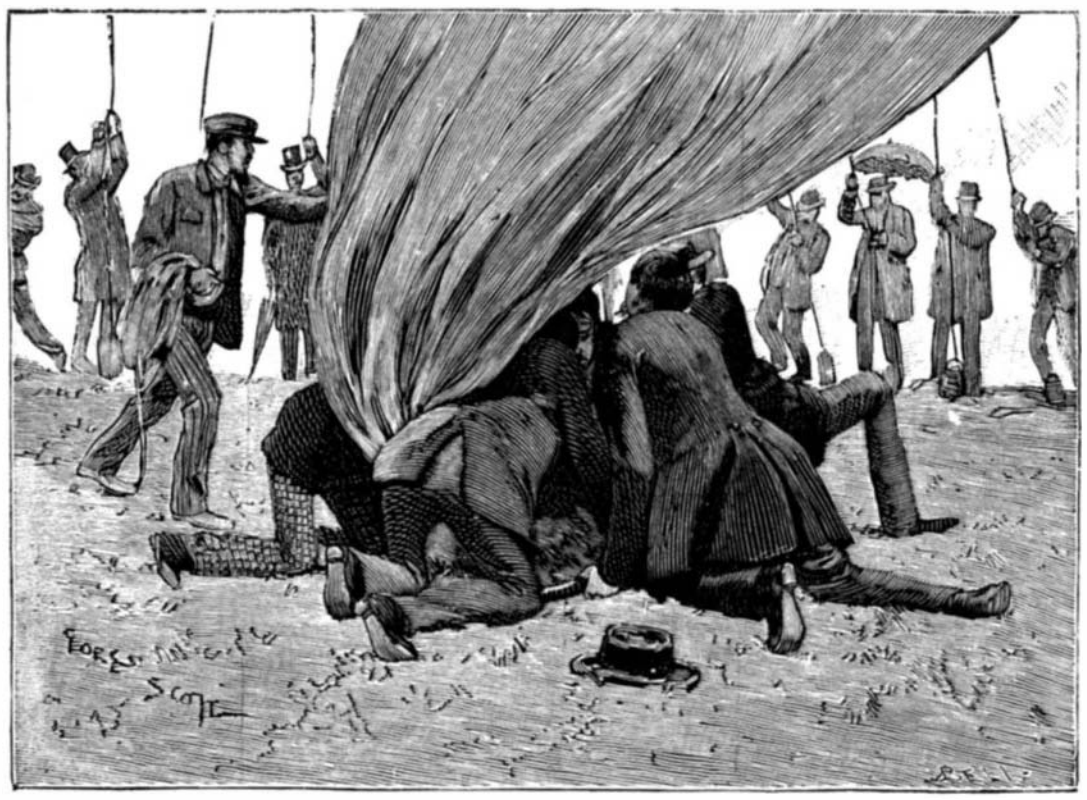
Again, not only are the living plants so widespread and common, but the shells of the dead ones remain intact for many years; and in certain localities these tiny shells are so numerous as to form a large portion of the soil. Some of the best known of these localities are the sites of Richmond, Va., and Berlin, in Germany.—*Emily L. Gregory, Popular Science Monthly.*

Spontaneous Combustion.

Dr. Kedzie, professor of chemistry in the Michigan State Agricultural College at Lansing, in a recent address before the Michigan Association of Fire Underwriters, said: "Vegetable oils, and especially spirits of turpentine, tend to take oxygen rapidly from the air, and thus generate heat. The large extent of surface exposed to the air promotes this oxidation, and the rags, being poor conductors of heat, retain the heat produced by oxidation, and hence arises the danger of spontaneous combustion. The danger is increased if the rags are moist. Similar instances of spontaneous combustion are seen in hay mows, when the hay has been put up damp. The danger is greater where the rags are soiled by vegetable oils, for example, linseed and cotton seed oil, and especially spirits of turpentine used in making varnish.

"One day, while returning from Lansing, I saw Mr. Lapman rush out of his planing mill with a box of smoking sawdust in his hands, which burst into flames when thrown upon the road. A painter had rubbed the paint from his hands with the sawdust in the box, and departed unconscious of danger. Within fifteen minutes the oil of this paint thus spread over a large surface of sawdust was smoking and just ready to break into flame.

"The danger from spontaneous combustion is increased where a quantity of greased rags are left in a pile so loosely placed as to allow a free access of air, yet so compact as to keep in the heat caused by oxidation. The mineral oils are much less liable to spontaneous combustion than vegetable oils."



A SQUALL DURING THE INFLATION OF THE BALLOON.

NAVAL RESERVES AT TARGET PRACTICE.

Nelson laid his ship, the Victory, beside the enemy and dashed into the opposing ship his entire broadside. Fifty cannon sent forth each its roundshot and stand of grape—the round to open the way, the grapeshot to follow in and spread destruction generally. Sometimes the opposing ships were so close that their sides ground together on the swell of the sea and the lower port covers had to be blown off to allow the loaders to use their rammers.

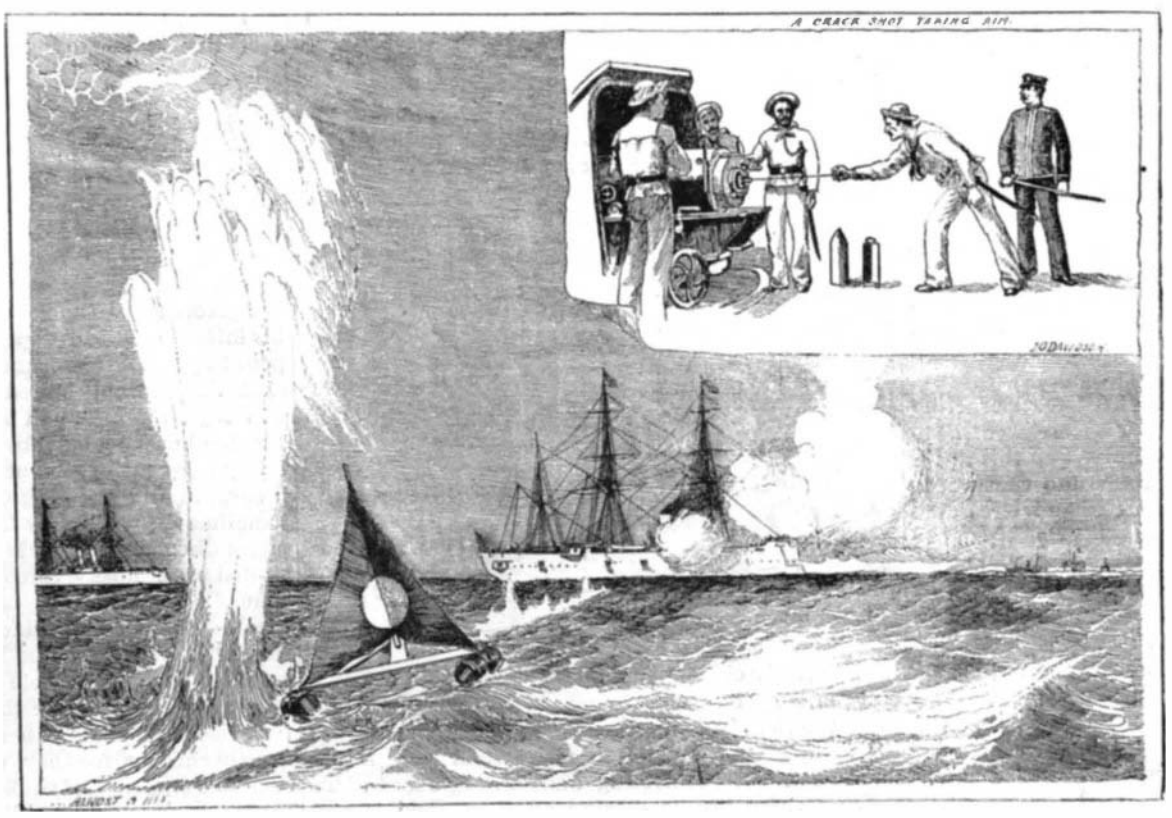
If Nelson had been told by one of his captains (the gallant Trowbridge, for instance) that the day would come when guns would be made carrying a shot equal in weight to his entire broadside and as large and heavy as one of his big guns, and that the shot would go in the breech instead of the muzzle, and its range would be fifteen miles, the good admiral would probably have said:

"Trowbridge, poor fellow! has lost his mind."

We have such guns now, however, and, stranger yet, the men who manned them lately and made their great shots dance over the sea to the horizon were crews of "greenhorns" and "haymakers," who, two years ago, knew nothing about guns and ships. When the gallant naval reserves first trod the white decks of Uncle Sam's war ships the true professional salt water "Jackies" made much of them—patted them on the back encouragingly as they showed them how the big guns were worked. The haymakers, lawyers, and millionaires did little talking but much thinking, and When it came their turn to fire off those big rifles they demolished those targets looking like specks out on the water in a fashion that made the old salts stare and stow away their patronage indefinitely.

To the old-timer, used to twenty-two men at a gun, needing five minutes to fire, there is much to marvel at in the new ten-inch rifle with crew of ten firing a shot in two minutes. The old gunner with his priming needle is also out of date, for the modern gun cartridge is too long for a needle to serve, and in its place there is used a small rifle cartridge, which shoots its little bullet into the big one and opens up a passage throughout the mass of powder, into which the flame follows and ignites it all at once.

Compare, too, the striking power of one of Nelson's guns and those used by the naval reserve. If Nelson's broadside did any damage at a mile, his ordnance officers passed compliments on the excellence of their work. A shot from one of the ten-inch guns that our gallant reserves have been putting through the targets starts on its flight with a striking power at one mile equal to Cleopatra's obelisk in Central Park lifted to Trinity Church steeple and dropped on the pavement. Our picture, for which and the description we are indebted to *Once a Week*, shows the scene at sea when one of these shots strikes close to the floating target. Had it not missed, our artist would have had no chance to show how a target looks.



NAVAL RESERVE TARGET PRACTICE IN GRAVESEND BAY.

Progress of the World's Fair Buildings.

How far along the buildings at Jackson Park are advanced is shown in the official statement issued August 13. There are 8,488 men on the work. This increase is due to the activity of work on the various State buildings, special structures, and concession buildings. The grass plots, flower beds, and roadways are being made. Nearly all the ornamental railings and balustrades around the lagoons are finished. Five large steam rollers are at work packing down the permanent crushed stone roadways and paths around the Woman's and Horticultural buildings. The landscape work is nearly finished around these two buildings, and John Thorpe, of the Bureau of Floriculture, is busily engaged on the large rockery which is to be placed in the central dome of the Horticultural Building.

Of the large buildings not yet completed, the Manufacturers' Building is getting along most expeditiously. The skylight glass is being rapidly placed over the nave trusses. The ironwork is entirely finished on Machinery Hall, and some of the sculptured figures have been placed along the ridgeline of the roofs. Decorative fresco work has been begun in the lobbies of the Agricultural Building, and the large sculptured pediment is being placed; the staff work is being rapidly put on the agricultural annex. The superstructure is well under way for the colonnade connecting the Agricultural Building with Machinery Hall. In the Fisheries Building the aquarial tanks are nearly completed. Upon the Palace of Fine Arts staff work is nearly finished. Twenty-three State buildings are progress. Montana's will probably be the first finished, for the interior work, as well as the exterior staff work, is already well advanced. The Turkey village on the Midway Plaisance will be immediately started. Work has been begun on the building for Germany. On the Mines, Transportation, and Woman's buildings little now remains to be done except the interior decoration. The work on the Electricity Building is being rapidly advanced. The staff covering on its towers advances well. The large hemicycle at the main entrance is now being constructed; under this the statue of Franklin will be placed. The government structures are being actively pushed forward. The main building is nearly finished, while the brick warship Illinois begins to look like a real man-of-war. Its white covering of cement and smokestacks are in place. Work has been begun on the government life-saving station.

The Restoration of Those Overcome by Inhaling Illuminating Gas.

A correspondent of the *American Gas Light Journal* says: I have seen hundreds of men overcome by the inhalation of gas, and I wish to say that to keep a man so overcome on his back would be the worst possible course to pursue; and I should expect to see a man so placed succumb rather than revive under that treatment. The absence of air in the lungs must of necessity cause the limbs to become damp and cold. If the following instructions be faithfully followed—I do not care how bad the case may be—I will guarantee that 99 per cent will be restored inside half an hour. As soon as it is observed that a man is overcome with gas he should be placed on his feet, and large quantities of milk be given him to drink. He may show a disinclination to swallow; if so, the milk must be forced down his throat. A man should be placed on each side of the sufferer, and he should then be walked up and down. He will want to sit down, but on no consideration should this be allowed. When the patient vomits, more milk must be administered, and when the patient is out of immediate danger, which will be the case inside of half an hour, he should be placed in bed, when a little warm brandy and water may be given. The above is a panacea, and I confidently submit the recipe to any one that is engaged on main or service laying.

A VIENNA doctor has declared that cancer can be arrested by an injection of one of the coal-tar derivatives, methyl violet.