

## SCIENTIFIC MISCELLANY.

Some remarkable observations on the longevity of germs in dust have been recorded by Dr. Miguel, a French biologist. In 1881 some earth was taken from a depth of ten inches in Montsouris park, dried for two days at 30 degrees C., and then put away in a dark corner of the laboratory, first being hermetically sealed in tubes. On recently opening the tubes, after sixteen years, it was found that the dust still contained 3,500,000 microbes per gramme, the original number in the soil having been but 6,500,000 per gramme, which the drying reduced to less than 4,000,000. From the surviving bacteria the tetanus microbe was isolated, and so wonderful was its vitality that it caused death in guinea pigs after an incubation period of two days.

The stomach movements of a cat have been studied by Dr. W. C. Cannon by means of Roentgen rays. Subnitrate of bismuth mixed with the food caused the wave-like movements of the pyloric portion of the stomach to become clearly visible, about 2,600 of the waves being counted during the seven hours a cat was digesting soft bread. A Frenchman, M. Blennard, uses the X-rays for measuring the adulteration of flour with chalk and sand. Comparing the shadows of the sample under investigation and of others of known adulteration, it is easy to determine the proportion of foreign matter when as small as three per cent.

Curious effects of a magnetic field upon electric discharges have been described by a German electrician. An arc between a ring of carbon and a concentric rod of carbon may be made to spin round rapidly, and a comet-like appendage may be made to revolve round the cathode in an egg-shaped discharge.

Calcium carbide finds a new application in the treatment of the black rot of grapes. M. G. Rodier having discovered that sprinkling the green grapes with this substance is effective.

The sounds produced by tapping the surface of the body with the finger are dull if a compact organ, like the heart or liver, is beneath, but sonorous if the organ is light and full of gas, like the lungs or stomach. To enable the ordinary ear to detect the character of these sounds when their difference is slight, Drs. Bianchi and Bazzi have devised a new apparatus called the phonendoscope. This so magnifies the sound that the physician is able to trace the outlines of the organs resting against the external envelope of the body, and to mark them in chalk upon the skin. The organs are heard in a living and moving state. They are in perpetual motion, and their position and shape are not those seen in the cadaver but are continually changing according to the position and condition of the body. Abnormal condition as well as size of the organ may be indicated, pneumonia, for instance, giving a dull sound to the lung. Digestion may be studied as never before, and drawings of the stomach by means of the phonendoscope have already shown by the varying distension that liquids pass much more slowly from that organ than was formerly supposed, and that dyspeptics should drink ordinary water, with little of the beverages—such as seltzer water and beer—that expand the stomach by gas.

Variegated plants of almost any species may be produced, in the belief of a German botanist, by grafting upon that species a nearly allied form having colored leaves. Experiment has shown, moreover, that the shoots of

a green species that has been grafted with a variegated one will be variegated. A green plant of *Malvastrum capense* on which a variegated abutilon had been grafted produced variegated shoots below the graft, while a green plant of *Kitalbelia* grafted on a variegated abutilon became variegated and gave vigorous cuttings which remained variegated when grown.

A mixture of acetylene with oil gas, in the proportion of one to three, has been adopted on the Prussian state railways for lighting cars. Experiments have proved the mixture to be safe, with much greater illuminating power than oil-gas alone, and it can be used without any change in the gas-holders or burners now employed.

Incandescent lighting at a third of its present cost is promised if the possible improvement suggested by Prof. Nernst of Göttingen should prove to be practicable. Instead of carbon filaments, he uses rods of chalk, magnesite and kaolin, which are remarkable for the large proportion of visible light rays in their radiation, no matter by what means the materials are raised to a high temperature. The lime light and the Welsbach incandescent gaslight are based on this principle. The materials, slightly warmed beforehand to diminish their very great resistance, can be raised to a high temperature electrically, alternating currents being used to avoid electrolytic action on the material. It remains to be seen whether there are difficulties in operating lamps of this kind that cannot be overcome.

The Sussman accumulator, which feeds a portable electric lamp lately described at the mining school of Liege, is a dry storage battery. The plates are covered with a layer of lead oxide formed into paste with a weak solution of India rubber and sulphate of ammonia, and in place of a liquid electrolyte is used a paste of filter paper reduced to a dry powder, or cellulose formed into a plastic mass. This is saturated with sulphuric acid and filled in between the plates.

Aluminum is plated with copper by welding in the process of Herr Wachtitz, a German engineer. It is claimed that the plated sheets can be soldered, grooved, tinned and nicked, that there is no separation in even the thinnest sheets when rolled or drawn, and that all objections to the use of aluminum are thus overcome.

A new paint for ships' bottoms has for its chief constituent seaweed, which green and wet, is ground in oil and then mixed with litharge, lead acetate, turpentine and linseed oil previously well boiled together. This is claimed to solve the problem of preventing shells and seaweeds from adhering to the vessel.

The expedition of Major Gibbons, to cross Africa from Cape Town to Cairo, will have aluminum launches that may be separated into sections for carrying.

## CHICAGO'S PLAYHOUSES

Chicago, Ill., March 30, 1898.—The Damrosch-Ellish Grand Opera company closed their engagement on Saturday afternoon, after playing two weeks to splendid business. They have presented an equal number of German and Italian operas, the leading exponents of the former being Nordica, Kraus, Bispham, Galski and Fisher, while the Italian operas were interpreted by Melba, Campanari, Ibos, Salignac, Boudouresque and others of less prominence. It is said here that Melba soon goes to San Francisco, together with Campanari and some others of the company, and they are to appear in

Salt Lake about the middle of April. If this be true, let all lovers of pure singing turn out to greet them, as Melba and Campanari are looked upon as the ideal soprano and baritone of the Italian school. Melba is undoubtedly the greatest soprano since Patti's day.

The Sign of the Cross company, under the management of Charles Frohman, finished a very successful two weeks' engagement at the Columbia theater on Saturday. The play, which has been a great success in this country and in England, treats of the struggles of the early Christians under the tyrant Nero, when to acknowledge being a follower of the lowly Nazarene meant death in some horrible manner, usually in the arena for the amusement of the Roman populace. The leading roles were sustained by Charles Dalton, Irene Rook, a young English actress, touring this country for the first time, and Miss Gertrude Boswell, who played the part of Stephanus, a young Christian boy.

This week at the Columbia Charles Frohman's company is presenting the comedy *Never Again*.

McVicker's, another first-class house, is one of the oldest theaters in town. It contains a large pipe organ, which answers a double purpose, being often used in the orchestra, and also on Sunday's, when religious services are held by the "People's Church." One goes there Sunday morning and listens to an eloquent discourse, and at night witnesses a performance of *Shore Acres*, *The Sunshine of Paradise Alley* or *Tom Keene in Richard III.* The latter is playing there now, having begun an engagement last Sunday night.

The Chicago Opera House, the Olympic and the Haymarket are high class vaudeville theaters. During the past few weeks Bessie Bonehill, Johnstone Bennett and other well-known people have appeared at these houses. Vesta Tilley, the great London music hall star, is drawing immense crowds just now. She plays a week at one place and then moves over to one of the others.

The Grand Opera House has been brought into prominence of late, resulting from the position it has assumed as against the theatrical syndicate. During the past season Francis Wilson, Richard Mansfield, Minnie Maddern-Fiske and other prominent "non-syndicate" people have appeared on its boards. Hoyt's Milk White Flag, as breezy and tuneful as of yore, is playing a two weeks' engagement there. A *Stranger in New York*, Mr. Hoyt's newest work, is booked for an early presentation at the same place.

There are some half dozen play houses down town, of rather unsavory reputation, which give cheap performances of opera, vaudeville and burlesque.

At one of these places was presented a short time ago, a couple of burlesques, entitled *The Mormon*, and *Carrie Duncan's Mormon Maidens*. Just what the pieces were I didn't learn, but the bills announced "A Roaring Farce Just Fresh From Salt Lake," and "The Thirty Mormon Maidens Are All Beauties."

Hooley's theater, tho' small, has presented more first class attractions during the past season than any house in town. Wm. H. Crane, Secret Service with Gillette and the original company, Sol Smith Russell, E. H. Sothern, Nat Goodwin, Charles Coughlan, Julia Arthur, E. S. Willard, and a coterie of similar artists have succeeded one another at this popular theater during the past few months. Mr. Willard, unfortunately, was unable to complete his engagement, owing to an attack of typhoid fever. He is still confined to his bed at the Auditorium Annex. His company has, disbanded for the season.