

four performances a week. Should they have forbidden him to play, a private gentleman, who is supposed to be Cornelius Vanderbilt, offered 50,000 dollars to the little boy's father for his musical education. So wonderful is his playing, that he is called by the musical critics Mozart the second.

The late Mrs. Astor having bequeathed all of her valuable lace to the Metropolitan Museum of Art, that splendid storehouse will be for the ladies the most interesting place in America.

Sir Charles and Lady Tupper occupied a box in the theatre the other night at Washington, and witnessed Mrs. Brown Potter's impersonation of "Juliet."

Mrs. Potter's talents, however, are only suitable for light society plays. As a social success, Mrs. Potter has the advantage of Mrs. Langtry, who seems to be tabooed by New York society. But this does not prevent her from giving large dinner parties, perfect in every detail, to men of the clubs, somewhat similar to those given by the English aristocracy. Some day she will batter down the wall of prejudice, and enter the portals of society, triumphant with money, the golden key which wins success in the end.

OLIVIA EVANS.

MUSICAL ECHOES.

In the course of his annual address to the students of the Royal Academy of Music, the late Sir George A. Macfarren observed that it was of the utmost importance to all who worked in music to keep constantly exercising their faculties. Those who composed must make mental exercises by the construction of musical phrases, of planning musical arrangements, of exercising the faculty of invention and the faculty of design. It was of infinite importance to singers always to practice those technical exercises which gave volubility to the voice and extended its compass; and to instrumentalists such technical exercises were in every way indispensable in order to give to the fingers the ability to move rapidly on the instrument which they played. It was not ever in the career of the artist that one could say, "I have finished." The learned professor particularly urged that in order to master their art fully, and to do justice to the productions of the present times, they must have a knowledge of the works of preceding periods. Genius could only demand recognition when it had created the taste by which it was to be appreciated. Let them work at the productions of musicians of former times, and let them hear with interest the productions of their own times; but let them be content in their own compositions to emulate the past, and let them have the conviction that originality would only find its proper expression when they had commanded, by constant exercise, such power over their faculties as would enable them to give utterance to that which was individual in themselves. It was remarkable in the history of our best musicians that their youngest productions were expressed in the idioms of their own times, and it was not till their later works that those distinctive qualities appeared which separated Beethoven from Mozart, and Mozart from Handel.

VALUE OF C SHARP.—A new tenor singer has appeared at Berlin in Bellini's "Norma." His nom de theater is "Riccardo." He is in reality a Hungarian, by the name of Palik, and is the fortunate possessor of C sharp Masini, who has it, receives \$3,000 a night in Buenos Ayres. Tamagno finds it to bring him \$1,000 in Europe, and Marconi gets by it \$600 a night; hence it must be the bank-note of tenors.—*American Musician.*

LIEZT.—The *Allgemeine Musikzeitung* brings the news of the finding at Weimar of a posthumous piano concerto in E minor, by Liezt. The accompaniment is for string orchestra only, and the form resembles that of the A major concertos. It is entitled "Malediction," and seems to have been written during Liezt's sojourn at Switzerland. It is said to be beautiful and poetic, but that it needs re-writing and scoring for grand orchestra. Bern. Stavenhagen is studying the new work, which possibly is the same that Joseffy wrote about two years ago.—*Musical Courier.*

The Carl Rosa Company has performed Massé's "Galatea" with the greatest success at Bristol, in England. Here is an example for our attempts at English operas. The libretto has been admirably adapted by Mr. W. Grist and Mr. Frank Wyatt.—*American Musician.*

ANOTHER PATTI.—Another Patti—as this is at least the hundredth she may be a good one—has dawned upon the operatic world. Miss Melva, otherwise Mrs. Armstrong, the young and pretty wife of an Australian and the pupil of Marchesi, who, with her husband, was present at the performance, made her debut on Thursday night of last week in Brussels at the Theatre de la Monnaie in the role of Gilda in "Rigoletto." Her voice is reported to have more volume than had Patti's at the same age, with all that charm of tone and crystalline purity of sound of the great diva. She is to appear in "Lakmé" and in "Faust," and this her first debut on any stage was an unqualified success, and Brussels is considered by the profession to be the most critical of all continental cities.—*Musical Courier.*

INDUSTRIAL NOTES.

HOW THE CHINESE DRILL WELLS.—The French Abbé Huc, lately returned from China, thus describes the system of deep-earth boring practiced in the district in which he has for some time resided. A wooden tube, 6 feet in length, is first driven down through the surface soil. This tube is held at the surface of the ground by a large flag stone, having a hole in the center to allow the tube to pass through and to project a little above it. A cylindrical mass of iron, weighing about 400 pounds, hollow and pointed at

its lower end, and having lateral notches or apertures, is jerked up and down in this tube at the end of a lever, from which it is suspended by a rope. This kind of "monkey" disintegrates the rock, the debris of which, converted into sludge by water poured in, finds its way through the lateral apertures into the interior of the cylinder. By raising the latter at intervals, this sludge is removed from the borehole. The rate of boring in rock of ordinary hardness is one foot in 12 hours. Only one man is employed at one time to work the lever. By this means wells of 1800 feet deep are sunk in about two years by the labor of three men relieving one another every six hours.

JAPANESE INDUSTRIES AND THEIR DEVELOPMENT.—During the past few years Japanese manufacturing industries have made very considerable progress, and full advantage has been taken of the limited liability principle. Foreign residents in Japan looked upon the movement with some amount of suspicion, thinking it might be wanting in stability. Recent returns, however, have shown that substantial profits have been earned. In a miscellaneous list of thirty-four companies the dividends vary from 4 to 26 per cent. for the half year. The Osaka Spinning Company, with a capital of 600,000 yen, distributes 26 per cent. to its shareholders; the Tokio Tram Car Company, 21 per cent.; and the Osaka Sulphuric Acid Company, 18 per cent. One hundred and sixty-one banks are quoted as paying dividends for the first half of last year varying from 3.2 to 23 per cent., only one bank not paying a dividend at all. Eighty-two paid over 10 per cent.; fifteen of these paid 15 per cent. and over, and a large number 10 per cent. Of fifteen exchanges quoted, the rates for the half year varied from 3 to 90 per cent., the higher rate being that of the Tokio Stock Exchange. Presuming these dividends to be fairly earned, the returns must be very gratifying to the Japanese, while at the same time they convey a very serious warning to the foreign importer.

METHOD PROPOSED FOR DESTROYING THE PHYLLOXERA.—Dr. Cloum has patented the following process in most civilized countries: He incorporates with the soil sulphides and carbonates which easily undergo decomposition, preferably those of potassium. Potash, which has been made to absorb sulphuric, nitric or phosphoric acid, is then also introduced. The acid gradually acts upon the sulphide and the carbonate, liberating sulphuretted hydrogen and carbonic acid in the soil. These two gases, according to the experiments of Dr. Eyrich, of Mannheim, are rapidly and uniformly distributed, and prove fatal to the phylloxera in its underground state, as well as to Colorado beetles, field mice, moles, etc. The potash remains in the soil as a sulphate, nitrate or phosphate. Commenting upon this method, the *Chemical News* asks whether in addition to the phylloxera, useful animals, such as earthworms, bumble bees, carnivorous ground beetles, etc., will not be destroyed also?

LIGHTNING CONDUCTORS.—In a lengthy letter upon this subject to the *London Times*, Professor Tyndall says: "The convenience of a chain as a prolongation of the conductor is very obvious, but I am obliged to veto its adoption because the contact of link with link is never perfect, and because I have known instances in which the electricity in passing from link to link encountered sufficient resistance to partially fuse the metal. The abolition of resistance is absolutely necessary in connecting a lightning conductor with the earth, and this is done by closely embedding in the earth a plate of good conducting material and of large area. The largeness of area makes atonement for the imperfect conductivity of earth. The plate, in fact, constitutes a wide door through which the electricity passes freely into the earth, its disruptive and damaging effects being thereby avoided. These truths are elementary, but they are often neglected."

A NEW DEPARTURE IN BLEACHING PROCESSES.—If barium peroxide be suspended in water it will be found to undergo a gradual process of decomposition, in the course of which a considerable amount of oxygen is evolved. When such salts as alkaline silicates or borates are added to the water, the action is rendered more rapid and complete. A manufacturing firm in Berlin, Messrs. Jacobson Brothers, has taken advantage of the fact and applied it to the bleaching of animal and vegetable fabrics, using a mixture of 1 part barium peroxide and 1 part sodium silicate to 100 parts of water.

FORTY THOUSAND LINES TO THE INCH.—Dr. H. A. Rowland, of the John Hopkins University has a new engine for ruling his plates for spectrum analysis or decomposition of light. This engine was made entirely at the university under his personal supervision, and is the result of the most careful, painstaking effort. The most important part of it—the screw and its attachments for regulating the width of the lines—was carefully ground under water kept at a constant temperature, so as to avoid all error arising from expansion and contraction, and is guarded against so small an error as one-hundred-thousandth of an inch. The engine is run by water power, and is inclosed in a glass case, and kept in a double-walled brick chamber in the basement, so as to provide as equable temperature as possible. So delicate is the machinery that while it is running the case is kept closed, as the heat from a person's body would affect it. The old machine hardly ruled more than 10,000 lines to the inch, while the new one has ruled as high as 40,000, and can be regulated to rule almost an infinite number, but the metal usually crumbles, and the lines run into each other above 20,000 to the inch. The plates are highly polished, and are made of what is known as speculum metal, though glass is sometimes used for experimental purposes. The prepared plate is placed on the machine, and the screw regulated to the required distance, and when the machine starts it moves the plate the distance, say one twenty thousandth of an inch, and a small diamond point runs across and draws the line while the plate is stationary. It is a matter