

nitrogen. These gases are then drawn into retorts heated to 500°, where an artificial lung, so to speak, of anhydrous oxide of barium absorbs the oxygen, while the nitrogen is drawn off to a gasometer for conversion into ammonia, etc. The use of baryta for the purpose is not unknown, but hitherto it has required frequent renewal at great expense. The Brins claim to make it virtually indestructible and unchangeable, so that with a lung for the machine and the atmospheric air for the material they can make just as much oxygen as they like. If such an almost fabulous reduction in the cost of oxygen could be secured its production in large quantities would mean a revolution in half the process of chemical industry, and the adoption of numberless new processes. For ventilation, aerating water without carbonic acid, for increasing the heat of blast furnaces and the light of lamps its uses are self-evident.

This year considerable interest is being manifested by entomologists in the periodical cicada because two extensive broods, the one having a period of thirteen, the other of seventeen years, will reach maturity together, an event that last occurred in 1664, and will not occur again till the year 2106. By the popular but erroneous name of seventeen-year locusts, most people have heard of one form of these interesting insects, which occurs in the eastern and middle States; the thirteen year form is confined to the Southern States and is consequently less familiar to us. The progress of the larvæ during their long underground sojourn has been carefully studied. Their development is extremely slow, and they cast their coats two or three times a year. When the term for transformation into the perfect insect has arrived the pupæ come to the surface and get into trees to make the change. Their sudden appearance is most surprising to the uninstructed. A writer on *Science* thus describes it "The unanimity with which all those that rise within a certain radius of a given tree crawl in a bee-line to the trunk of that tree is most interesting. To witness these pupæ in such vast numbers that one cannot step on the ground without crushing several swarming out of their subterranean holes and scrambling over the ground, all converging to the one central point, is an experience not readily forgotten, and affording good food for speculation on the nature of instinct. The English sparrow having declared war on the cicada, it will no doubt rapidly disappear, its distribution having been already narrowed by other causes.

The colossal Washington Monument seems destined to play the part of an immense lightning conductor in addition to its other uses. On the 5th June it was struck by a flash and slightly damaged, the point of its aluminium cap being fused and one of the four stones immediately under the cap stone being split. The damage has been repaired without difficulty, but it is apparent that while there is sufficient conducting capacity in the four heavy iron columns extending up the monument, between which the elevator runs, the aluminium apex alone does not possess sufficient collective or distributing power, and this will doubtless have to be increased by the addition of more metal.

In a country like Eastern Canada, where cedar logs are cheap and good, these will doubtless remain the standard telegraph poles for a long time to come, but in other countries metal poles have already been adopted with signal success, and it is now proposed to replace the poplar poles on the Government lines on the prairie section, which have a life of only two or three years when it is not further shortened by prairie fires, by hollow tubes of galvanized iron that will be everlasting. GRADGRIND.

NOTES FROM THE CONTINENT.

PARIS, FRANCE.

M. RÈNE BELLOC does not admit that the French nobility is a close borough or a caste. It seems the union of family parchments, of genealogical trees, more or less authentic, with sacks of crowns, is as commercially active to-day as in the time of Louis XIV.—a monarch who detested manufacturers and traders, as he did Parisians—when a broken-down nobleman married the heiress of a fabricant "to manure his title." This desire of the rich *parvenu* for the penniless Duke, Marquis, or Viscount, has survived revolutions because springing from even the heart itself. The motive of the union between aristocrats and plutocrats is economy, the desire to sustain the house. Democracy loses nothing; the value of a title has not fallen; on the contrary, it is still good for exportation; it attracts colonial and American girls; a titled bachelor has only to choose, in France as elsewhere; no matter what branch of industry the bride may belong to, no matter whether she be plain or pretty, she is for his picking. A grand name in this commercial age is like Lafitte, Clos-Vougeot, or Margeaux wines—which have a sole locality for production. The amateur must pay for the monopoly. Titles *versus* cash form a barter that has become a custom. But the rich middle-class ladies cede in nothing to blood, more or less blue, in point of cultivation and manners; and it would be difficult to detect the difference between an improvised duchess and a *grande dame* whose quarterings are irreproachable. These marriages are more or less political; the nobleman transforms to his advantage the financial potency of the age. When a member of the industrial class thus respies in an aristocratic atmosphere, he discovers what he wanted on the eve—prestige and space; he no longer elbows among the feverish crowd. The experienced eye of woman can alone detect the *parvenu* under impertinences and the airs of the false gentlemen. A noble lady, vegetating on three thousand francs a year, once observed of millionaires: "They are people of nothing; they have worked all their life." Decadence, in the eyes of such a lady, commences with work. And yet how the Messieurs Jourdain would be less grotesque, did they but listen to their wives before donning the travesty of aristocrats. It is only when the

grand seigneur, dating from Pavia, Marignan, or—yesterday, approaches public life that he experiences how low he is quoted in popular estimation.

There seems to be an undying interest in the manners of the eighteenth century. M. Gustave Desjardins, in his "Petit Trianon," contributes some curious chapters to this subject, and above all to that side which relates to the life of Marie Antoinette. He gives the history of the constructions and of the grounds of the botanic garden, specially created by Jussieu, and of the comic opera dairy erected by Migur, to humour the caprices of her Majesty. There are also most interesting descriptions of the fetes and theatrical representations given at the Trianon, and valuable details on the taste and arts of the period. The work is historic also, as it lays bare the frivolous, the almost licentious life of the unfortunate queen at Trianon, and the compromising friendships she formed while closing the doors against her heavy and wearisome husband. It results from all the grave accusations directed against Marie Antoinette that, while they cannot be precisely brought home to her, they fully justify the severity of the judgment passed upon her, and that she showed herself worthy of her character, her rank and birth, only the day when she fell, and suffered a punishment which, as an expiation, was out of proportion with her faults.

M. G. MONOD takes a sober view of Victor Hugo's career. In the extraordinary honours associated with the poet's interment, he sees a little of the national instinct for the theatrical which unconsciously dominates his fellow-countrymen, while attributing a large part to that national vanity intended to glorify France in Hugo. To estimate the importance of a writer, not only must his literary talent be judged, but also his acts and the rôle he filled. As a dramatic poet, Voltaire is not superior to Racine, nor as philosopher to Descartes, nor as an historian to Montesquieu; and yet he exercised a greater influence during his epoch than they did, and so incarnated the spirit of his age as to eclipse them in glory. Similarly with Hugo, his influence does not spring exactly from the beauty of his works as from the rôle he played, and the power he wielded in politics, as well as in literature. It was thus, that while living he had become a kind of national monument; criticism was suspended respectfully to allow his declining years to enjoy pacific glory. He became for not a few a demigod, who canonized him before his death as the symbol of France of the current century, the sonorous echo of the most generous sentiments of humanity. He chanted all the political schools in France, but there was ever the revolutionary spirit in his works. It is thus that in his dramas—Hernani, Marion Delorme, and Ruy Blas—the most beautiful rôles are allotted to the insurgents, to the conspirators, to the vassals even; he there claims popular rights, and flagellates the crimes of royalty and ministers. It was his hate against the Empire which achieved his fortune. His exile to Guernsey made him the symbol of the Republic. There upon his rock he was for the imperial Don Juan a statue of the Commander, predicting the day of divine vengeance. The multitude in its imagination accepted the Channel Island as the antithesis of St. Helena. In the literary point of view, his great merit is to have revised the poetic form of the French language; he has been the renovator of Parnassus; he has renewed the chords of the French lyre while augmenting their number. He was neither critic nor savant, and had but little esteem for science. But he saw clear into the past, and his imagination has clothed disappeared epochs with animation, and vanished characters with life. He is far from being as great as Homer, Dante, and Shakespeare, but like them, he is unique in his kind in the creation of images, and draping almost the impossible with reality.

DR. BLANCHARD, without going as far back as "the missing link," maintains that "all men without exception possess a tail," and quotes the demonstrations of Paul Broca to support his assertion. Lord Monboddoo long ago made the same observation, adding that it was modesty made man conceal that appendage. However, the tail of man is so rudimentary, undergoing no augmentation, that it is concluded ordinarily, we have no tails. Dr. Blanchard states the human embryo in one of its stages presents a caudal appendix in no way differing from other mammifera or reptiles. But after the third month, the tail retrogrades in proportion as the spinal marrow develops downwards; at the fourth month it disappears, because the spinal marrow remounts into its case—to remain on a level with the body—which is the second or third of the vertebrae. Hence, in mammifera, the more the spinal marrow ascends the smaller is the tail, as for example, in the wild boar, pig, rabbit and several species of monkeys. Per contra, the more it descends the longer is the tail, as in the ox and the squirrel. The bat approaches most to man in respect to a tail; it is large in the embryonic stage, but disappears rapidly with the ascension of the spinal marrow. De Maillet cites the case of De la Cioutat, the intrepid enemy of Turkish pirates, famous as much for his bravery as for his prolonged vertebrae or tail. His brother had a similar development. One Barsabas and his sister were similarly endowed, and the latter was so annoyed with the deformity that she entered a convent. De Maillet saw at Tripoli a negro named Borneo who had a tail six inches long—an anomaly hereditary in his family. In 1869 Professor Gosselin amputated the tail of a male infant aged six weeks, and which was nearly two and a-half inches long. Dr. Greve removed the tail of a lad eight weeks old; it possessed mobility and was covered with slight hair. Dr. Corrie testifies to a Chinese youth of eight years having a tail five inches long, and Dr. Lissner had a patient with a caudal appendix half-an-inch long.

Respecting teeth, Dr. Blanchard remarks, man is the only mammiferous animal whose teeth are regular and uninterrupted. When the canine teeth protrude, such is a sign of inferiority of race, as with the aborigines of Australia. No existing mammifera has preserved the type of its primitive dentition, so important have been the changes. Indeed the superior races of humanity, the Europeans, are, respecting teeth, in a period of transition approaching the time when the two jaw bones shall