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LITERATURE.

MR DARWIN'S NEW BOOK.*

Although the farmer and the market gardener have a well-grounded faith that their turnips and cabbages will not walk over the field fence or garden wall, it is nevertheless a matter of common observation that plants do move more or less, and sometimes in very curious fashion. Strange histories may be read in the course of roots, stems, and branches. We are all familiar with the unhappy fate of the aspen, doomed to shiver incurably for ever and aye, though never a breath of wind be discernible to stir its nervous leaves. Most of us have heard of the sensitive plant that in a garden grew, and many of us may have observed with what keen resentment it shrinks from a foreign touch. The poet, who apparently rose betimes, has left it on record how, when Phœbus 'gins arise, then winking marybuds begin to ope their golden eyes. The flowers and leaves that open wide their bosoms to receive the gentle and cheering influences of the sun are observed to close and draw themselves together before the ungenial approach of rough blasts or the coming on of cold and darksome night. The "Jerusalem" artichoke—it has no more to do with Jerusalem than the famous ship Bellerophon has to do with "Billy Ruffian"—is really, as the schoolboy that cons the curiosities of language knows, the "girasol," that is, the "turn-to-the-sun" artichoke; and the lovers of flowers know very well how quickly plants, when removed from a dark room or a shady place, turn their leaves to the light and the warmth of the sun. Since the discovery of Linnæus, plants have been known to sleep, although the knowledge of this fact has perhaps not extended very far beyond the circle of botanists and of observant or imaginative poets; Mr Darwin now draws firm distinctions between the phenomena of real plant-sleep and other very similar phenomena that are really of an essentially different nature. In previous works Mr Darwin has had much to say on the movements of plants. In one work he has fully discussed the incontinent nimbleness of climbing plants, with all the vagaries of creepers and runners and the philosophy of tendrils. In another work he has recorded observations and comments on flesh-eating plants, with all the strange behaviour of special gland hairs and the not unnatural stomachic disturbance of cells in the near prospect of a non-vegetable dinner. The present volume takes a wider sweep. It has for its chief object "to describe and connect together several large classes of movement common to almost all plants." Specimens fairly representing the length and breadth of the vegetable kingdom have been carefully chosen and carefully observed. The vast number of leading observations here detailed form the chief portion of the new volume; the explanations accompanying and the conclusions drawn from the observations occupy but a small space. The labour and attention spent by Mr Darwin and his sons on the experiments recorded here could have been supplied only from the patience of genius and an overmastering constraint to the search after truth. The generalisations that Mr Darwin reaches on the basis of his observations tend decisively to the support and further elucidation of the fitness of the hypothesis that bears the name of the greatest master in biological science.

The most widely prevalent movement, called by Sacks "revolving nutation," is described here under the more convenient name of "circumnutation. It is "essentially of the same nature as that of the stem of a climbing plant, which bends successively to all points of the compass, so that the tip revolves." The description of its character and significance ought to be read in the author's own words.

If we observe a circumnutating stem which happens at the time to be bent, we will say to the north, it will be found gradually to bend more and more easterly, until it faces the east; and so onwards to the south, then to the west, and back again to the north. If the movement had been quite regular, the apex would have described a circle, or rather, as the stem is always growing upwards, a circular spiral. But it generally describes irregular elliptical or oval figures; for the apex, after pointing in any one direction, commonly moves back to the opposite side, not, however, returning along the same line. Afterwards other irregular ellipses or ovals are successively described, with their longer axes directed to different points of the compass. Whilst describing such figures, the apex often travels in a zig-zag line, or makes small subordinate loops or triangles. In the case of leaves the ellipses are generally narrow. . . .

Apparently every growing part of every plant is continually circumnutating, though often on a small scale. Even the stems of seedlings before they have broken through the ground, as well as their buried radicles, circumnutate, as far as the pressure of the surrounding earth permits. In this universally present movement we have the basis or groundwork of the acquirement, according to the requirements of the plant the most diversified movements. Thus, the great sweeps made by the stems of twining plants, and by the tendrils of other climbers, result from a mere increase in the amplitude of the ordinary movement of circumnutation. The position which young leaves and other organs ultimately assume is acquired by the circumnutating movement being increased in some one direction. The leaves of various plants are said to sleep at night, and it will be seen that their blades then assume a vertical position through modified circumnutation in order to protect their upper surfaces from being chilled through radiation. The movements of various organs to or from the light, so general throughout the vegetable kingdom, are all modified forms of circumnutation; as again are the equally prevalent movements of stems, &c., towards the zenith and of roots towards the centre of the earth.

In accordance with these conclusions, a considerable difficulty in the way of evolution is part removed, for it might be asked, how did all their diversified movements for the most different purposes first arise? As the case stands, we know that there is always movement in progress, and its amplitude, or direction, or both have only to be modified for the good of the plant in relation with internal or external stimuli.

The cause of all such bending movements is not altogether clear. It is plain, however, that the old theory of increased growth cannot be maintained as the fundamental cause. In the case of growing plants, increased growth on one side causes a bend towards the other side; the development of tissue goes on more rapidly on the convex side; but it has lately been shown that such increased growth is preceded, at all events in most cases, by a previous swelling on the convex side. And similar movements are present, along with swelling of the cells, where there is no increased growth. In the case of parts provided with a joint or pulvinus, whose cells have ceased to increase from a very early age, we find that the swelling and subsidence of the cells does not result in increased growth, although it is followed by movement. It has further been pointed out that the increased extensibility of the cell-walls is the most important element in the case; and it is obvious that such extensibility must accompany increased turgescence or swelling. After weighing the evidence, Mr Darwin "at present concludes that increased growth, first on one side and then on another, is a secondary effect, and that the increased turgescence of the cells, together with the extensibility of their walls, is the primary cause of the movement of circumnutation." But "why every part of a plant whilst it is growing, and in some cases after growth has ceased, should have its cells rendered more turgescent and its cell-walls more extensile first on one side and then on another, thus inducing circumnutation, is not known. It would appear as if the changes in the cells required periods of rest." And various other suggestions are dropped incidentally throughout the work.

The paramount importance of circumnutation in the life of every plant, is sufficiently insisted on; and it is shown in detail how certain important classes of movement arise from modifications of the general principle. These classes of movement consist of those due to greater longitudinal growth along the upper than along the lower side of a part, which is thus caused to bend downwards, and to the reversed process, in consequence of which the part bends upwards; the movements proper to climbing plants, commonly called revolving nutation; the nyctitropic (night-turning) or sleep movements of leaves and cotyledons; and the two immense classes of movements excited by light and gravitation.

When we speak of modified circumnutation we mean that light, or the alternations of light and darkness, gravitation, slight pressure or other irritants, and certain innate or constitutional states of the plant, do not directly cause the movement; they merely lead to a temporary increase or diminution of those spontaneous changes in the turgescence of the cells which are already in progress. In what manner, light, gravitation, &c., act on the cells is not known; and we will here only remark that, if any stimulus affected the cells in such a manner as to cause some slight tendency in the affected part to bend in a beneficial manner, this tendency might easily be increased through the preservation of the more sensitive individuals. But if such bending were injurious, the tendency would be eliminated unless it was overpoweringly strong; for we know how commonly all characters in all organisms vary. Nor can we see any reason to doubt that after the complete elimination of a tendency to bend in some one direction under a certain stimulus, the power to bend in a directly opposite direction might gradually be acquired through natural selection.

Numerous as are the movements ascribed to the agency of modified circumnutation, "there are others which appear to have had a quite independent origin; but they do not form such large and important classes." Mr Darwin gives examples, and points out the marks of difference. "Yet the difference between the two sets of cases may not be so great as it at first appears."

We have not entered into explanations of the arduous and ingenious devices whereby Mr Darwin and his son compelled their plants to reveal the secret of their movements. For these we must refer to the book itself. The results of the observations are not merely stated in words, but there are some two hundred illustrations, most of which trace the course of movement of the various plants under various conditions. The experiments are of inexhaustible interest, and while they fill one with utter admiration, they irresistibly testify to the power and delicacy and alertness of the author's mind, and an indefatigable perseverance that is nothing short of marvellous. We conclude with the author's summary of a most important, though really distinct, part of the investigations included in this volume; we refer to the wonderful quasi-nerve functions of the tip of the radicle.

Finally, it is impossible not to be struck with the resemblance between the foregoing movements of plants, and many of the actions performed unconsciously by the lower animals. With plants an astonishingly small stimulus suffices; and even with allied plants one may be highly sensitive to the slightest continued pressure, and another highly sensitive to a slight momentary touch. The habit of moving at certain periods is inherited both by plants and animals; and several other points of similitude have been specified. But the most striking resemblance is the localisation of their sensitiveness; and the transmission of an influence from the excited part to another which consequently moves. Yet plants do not of course possess nerves, or a central nervous system; and we may infer that with animals such structures serve only for the more perfect transmission of impressions, and for the more complete intercommunication of the several parts.

We believe that there is no structure in plants more wonderful, as far as its functions are concerned, than the tip of the radicle. If it be lightly pressed, or burnt, or cut, it transmits an influence to the upper adjoining part, causing it to bend away from the affected side; and, what is more surprising, the tip can distinguish between a slightly harder and softer object, by which it is simultaneously pressed on opposite sides. If, however, the radicle is pressed by a similar object a little above the tip, the pressed part does not transmit any influence to the more distant parts, but bends abruptly towards the object. If the tip perceives the air to be moister on one side than on the other, it likewise transmits an influence to the upper adjoining part, which bends towards the source of moisture. When the tip is excited by light (though in the case of radicles this was ascertained in only a single instance), the adjoining part bends from the light; but when excited by gravitation the same part bends toward the centre of gravity. In almost every case we can clearly perceive the final purpose or advantage of the several movements. Two, or perhaps more, of the exciting causes often act simultaneously on the tip, and one conquers the other no doubt in accordance with its importance for the life of the plant. The course pursued by the radicle in penetrating the ground must be determined by the tip; hence it has acquired such diverse kinds of sensitiveness. It is hardly an exaggeration to say that the tip of the radicle thus endowed, and having the power of directing the movements of the adjoining parts, acts like the brain of one of the lower animals; the brain being seated within the anterior end of the body, receiving impressions from the sense-organs, and directing the several movements.

The closer *rapprochement* of vegetable and animal physiology is advanced a distinct and very large stage by the publication of the present work.

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* THE POWER OF MOVEMENT IN PLANTS. By Charles Darwin, LL.D., F.R.S., assisted by Francis Darwin. With Illustrations. London: John Murray. 1880.

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LITERATURE.

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Although the farmer and the market gardener have a well-grounded faith that their turnips and cabbages will not walk over the field from one end to the other, it is nevertheless a matter of common observation that plants do move more or less, and sometimes in very curious fashion. Strange histories may be read in the course of roses, stems, and branches. We are all familiar with the unhappy fate of the apem, doomed to shiver incurably for ever on a tree though never a breath of wind be discernible to stir its nervous leaves. Most of us have heard of the sensitive plant that in a garden grew, and many of us may have observed wild tendrils resentment if shrinks from a foreign touch. The poet, who apparently rose betimes, has left it on record how, when Phœbus 'gins arise, then winking rosy-buds begin to ope their golden eyes. The flowers and leaves that open wide their bosoms to receive the gentle and cheering influences of the sun are observed to close and draw themselves together before the ungenial approach of rough blasts or the coming on of cold and darksome night. The "Jerusalem" artichoke—it has no more to do with Jerusalem than the Italian Bellerophon has to do with "Billy Ruffian,"—is really, as the schoolboy that cons the curiosities of language knows, the "girasol," that is, the "turn-to-the-sun" artichoke; and the lovers of flowers know very well how quickly plants, when removed from a dark room or a shady place, turn their leaves to the light and bloom in the direction. Since the discovery of Linnæus, plants have been known to sleep, although the knowledge of this fact has perhaps not extended very far beyond the circle of botanists and of observers of imaginative poets; Mr Darwin now draws firm distinctions between the phenomena of real plant-sleep and other very similar phenomena that are really of an or ginally different nature. In previous works Mr Darwin has had much to say on the movements of plants. In one work he has fully discussed the important subject of climbing plants, with all the vagaries of creepers and runners and the philosophy of tendrils. In another work he has recorded observations and comments fairly represented, with all the strange behaviour of special gland hairs and the not unnatural stomachic disturbance of cells in the near prospect of a non-vegetable dinner. In this new work he has taken a wider sweep. It has for its chief object "to describe and connect together several large classes of movement common to almost all plants." Specimens fairly representative in length and breadth of the vegetable kingdom have been carefully chosen and carefully observed. The vast number of facts so accumulated have detailed form the chief portion of the new volume; the explanations accompanying and the conclusions drawn from the observations occupy but a small space. The facts and attention paid by Mr Darwin and his sons on the experiments recorded here could have been supplied only from the patience of genius and an overmastering consciousness of search after truth. The generalisations that Mr Darwin reaches on the basis of his observations tend decisively to the support and further elucidation of the fitness of the hypothesis that he has made use of the greatest master in biological science.

The most widely prevalent movement, called by Sachs "circumnutation," is the movement that seems under the more convenient name of "circumnutation. It is "essentially of the same nature as that of the stem of a climbing plant, which bends successively to all points of the compass, so that the tip revolves." The description of its character and significance ought to be read in the author's own words.

If we observe a circumnutating stem which bends at the time here to the west, will say to the north, it will be found gradually to bend more and more easterly, until it faces the east; and so onwards to the south, then to the west, and back again to the north. If the movement had been quite regular, the apex would have described a circle, or rather, as the stem is always growing upwards, a circular spiral. But it generally describes irregular elliptical or oval figures; for the apex, after pointing in any one direction, commonly moves back to the opposite side, not, however, returning by the same line. Afterwards other irregular ellipses or ovals are successively described, with their longer axes directed to different points of the compass. Whilst describing such figures, the apex often travels in a zig-zag line, or makes small subordinate loops or retracings. In the case of leaves the ellipses are generally narrow.

Apparently every growing part of every plant is continually circumnutating, though often on a small scale. Even the stems of seedlings before they have broken through the ground, as well as their buried radicles, circumnutate, as far as the pressure of the surrounding earth permits. In this universally present movement we have the basis or groundwork of the supplementary, according to the requirements of the plant the most diversified movements. Thus, the great sweeps made by the stems of climbing plants, and the tendrils and rootlets, result from a mere increase in the amplitude of the oscillations of circumnutation. The position which young leaves and other organs ultimately assume is acquired by the circumnutating movement of the petioles, joints, or other bases. The leaves of various plants are said to sleep at night, and it will be seen that their blades then assume a vertical position. Through some circumnutation in order to protect their upper surfaces from being exposed to radiation. The movements of various organs to or from the light, so general throughout the vegetable kingdom, are all modified forms of circumnutation. The same and equally prevalent movements of stems, &c., towards the south and of roots towards the centre of the earth.

In accordance with these conclusions, a considerable difficulty in the way of evolution is part removed, for it might be asked, how did all their diversified movements arise? The most different purposes first arise? As the case stands, we know that there is always movement in progress, and its amplitude, or direction, or both, may be easily modified for the good of the plant in relation with internal or external stimuli.

The cause of all such bending movements is not altogether clear. It is plain, however, that the old theory of increased growth cannot be maintained as the fundamental cause. In the case of growing plants, increased growth on one side causes bend towards the opposite side; the development of tissue goes on more rapidly on the convex side; but it has lately been shown that such tissue is not actually produced, at all events in most cases, by a previous swelling on the convex side. And similar movements are present, along with swelling of the cells, where there is no growth at all. In the case of parts provided with a joint or pulvinus, whose cells have ceased to increase from a very early age, we find that the swelling and subsidence of the cells do not correspond in increased growth, although it is followed by movement. It has further been pointed out that the increased extensibility of the cell-walls is the most important element in the cause; and it is obvious that such extensibility must accompany increased turgescence or swelling. After weighing the evidence, Mr Darwin "at present considers that increased growth, first on one side and then on another, is a secondary effect, and that the increased turgescence of the cells, together with the extensibility of their walls, is the primary cause of the movement of circumnutation." But "why every part of a plant whilst it is growing, and in some cases after growth has ceased, should have its cells rendered more turgescent and its cell-walls more extensible first on one side and then on another, thus inducing circumnutation, is not known. It would appear as if these changes in the cells required periods of rest." And various other suggestions are dropped incidentally throughout the work.

The paramount importance of circumnutation in the life of every plant, is sufficiently insisted on; and it is shown in detail how certain important classes of movement arise from modifications of the general principle. These classes of movement consist of those due to greater longitudinal growth along the upper than along the lower side of a part, which is the cause of upward curvature, and to the reversed process, in consequence of which the part bends upwards; the movements proper to climbing plants, commonly called revolving nutation; the hypnotropic (night-turning) or sleep movements of leaves and cotyledons; and the two immense classes of movements excited by light and gravitation.

When we speak of modified circumnutation we mean that light, or the alternations of light and darkness, gravitation, slight mechanical resistances, and other external or constitutional states of the plant, do not directly cause the movement; but they cause a modification or partial suppression of those spontaneous changes in the turgescence of the cells which are already in progress, so that when light, gravitation, &c., acts on the cells it not known; and we will here only remark that, if any stimulus be applied to one side of a plant, it will cause some slight tendency in the affected part to bend in a beneficial manner, this tendency might be greatly increased by the continued action of the more sensitive individuals. But if such bending were injurious, the tendency would be increased unless it was overpowered by other strong; for we know that we possess all characters in all organisms vary, and we see no reason why tendencies to bend for complete elimination of a tendency to bend in some one direction under a certain stimulus, the power to bend in a different direction under another stimulus, if there are others which appear to have had a quite independent origin; but they do not form such large and important classes." Mr Darwin gives some examples, and points out the nature of difference. Yet the difference between the two sets of cases may not be so great as it first appears.

We have not entered into explanations of the arduous and ingenious experiments whereby Mr Darwin and his son compelled their plants to reveal the secret of their movements. For these we must refer to the work itself. The results of the experiments are not merely stated in words, but there are some two hundred illustrations, most of which trace the course of movements of the plants under various conditions. The experiments are of inexhaustible interest, and while they fill one with utter admiration, they irresistibly tend to excite a feeling of sympathy and alertness of the author's mind, and an indefatigable perseverance that is nothing short of marvellous. We conclude with the author's summary of a most interesting, and a really distinct, part of the investigations included in this volume; we refer to the wonderful quasi-nerve functions of the tip of the radicle.

Plants, in consequence of their with the resemblance between the foregoing movements of plants, and many of the actions performed unconsciously by the nervous system of the higher and astonishingly small stimulus suffices; and even with allied plants one may be highly sensitive to a slight stimulus, and another highly sensitive to a slight momentary touch. The habit of movement is inherited, and is acquired both by plants and animals; and several other points of similitude have been specified. But the most striking resemblance is the transmission of sensitiveness; and the transmission of an influence from the excited part to a remote part, where movement occurs. Yet plants do not of course possess nerves, or a central nervous system; and we may infer that with plants such actions depend on the life of the more perfect transmission of impressions, and for the more complete intercommunication of the whole organism. We believe that the tip of the root structure in plants more wonderful, as far as its functions are concerned, than the tip of the brain. If it be injured, pressed, or burnt, or cut, it transmits an influence to the upper adjoining part, causing it to bend away from the affected side; and, when the tip is pressed, the tip can distinguish between a slightly harder and softer object, by which it is simultaneously pressed on opposite sides. The influence thus transmitted by a similar object a little above the tip, the pressed part does not bend towards the harder, the more distant parts, but bends abruptly towards the object. If the tip perceives the air to be moister on one side than on the other, it transmits an influence to the upper adjoining part, which bends towards the source of the moisture. The tip can distinguish between the light in the case of radicles this was accomplished in only a single instance), the adjoining part bends towards the light, and the tip by giving direction the same part bends towards the centre of gravity. In almost every case we can clearly perceive that these movements are of the very several movements. Two, or perhaps more, of the exciting causes act simultaneously on the tip, and one conquers the other no doubt in accordance with its importance for the life of the plant. The sensitiveness of the radicle in constructing the ground must be determined by the tip; hence it has acquired such diverse kinds of sensitiveness. It is hardly an exaggeration to say that the tip has acquired, and endowed, and having the power of directing the movements of the plant, the functions of the brain of the lower animals; the brain being seated within the anterior end of the body, receiving impressions from the sense-organs, and directing the several movements.

The closer *rapprochement* of vegetable and animal physiology is advanced a distinct and very large step by the publication of the present work.

* THE POWER OF MOVEMENT IN PLANTS. By Charles Darwin, F.R.S., LL.D., assisted by Francis Darwin. With Illustrations. London: John Murray. 1880.

NOTES ON THE RIVIERA DE PONENTE.

II.

Ah! what a life were this, how sweet, how lovely!
Hives not the hawthorn bush a sweeter shade
To shepherds looking on their silly sheep,
Than doth a rich embroidered canopy
To kings, that fear their subjects' sudden change?
O yes, it doth, a thousandfold it doth.

In my last communication I mentioned Dr Bennet's garden, and I said that I would send you a brief description of it.

Dr Bennet, let me premise, was at one time a London physician, but after twenty-five years of hard work in the metropolis, he became consumptive, and was therefore forced to seek a change of air and scene. He came southward in the autumn of 1859, and settled down for the winter at Mentone, as he thought, to die. This was not to be. The wonderful climate of the Riviera acted like a charm upon his shattered frame. He completely recovered; but instead of wholly returning to his professional life in London, he adopted the wiser plan of practice here during the autumn and winter months, and the other six in London. This plan he has followed out for the last twenty years, with the slight modification, that he divides the time spent in Mentone between his house in a property which he has bought at Weybridge, Surrey.

Since the climate of Mentone had done so much for Dr Bennet, it was natural that he should fix on a place and seek to recommend it as a winter's residence to such of his fellow-countrymen and women as were broken down in health. Accordingly in 1861 he published an essay on the climate and vegetation of Mentone, which in subsequent editions has grown from a mere 55 pages to a goodly volume of "Winter and Spring on the Shores of the Mediterranean: or the Genoese, Riviera, Italy, Spain, Corfu, Zante, Cephalonia, Archipelago, Constantinople, Corsica, Sicily, Sardinia, Malta, Algeria, Tunis, Smyrna, Asia Minor, with Biarritz and Arcachon, as Winter Climates." Of the subsequent editions of these places, and in the above-mentioned treatise he gives the interesting results of his travels. As a resistance for invalids, especially the consumptive, he gives Mentone the palm. In corroboration of his numerous and weighty arguments in favour of Mentone, he has prepared and planted the garden to which I have referred. It occupies the bold eastern headland of Mentone Bay, and is about ten minutes' walk beyond the Italian frontier. A more delightful spot for a garden could not be imagined. Looked at from below it seems only a bare precipitous limestone rock, studded here and there with olive trees; but you pass in by the gate, where you read the courteous words "Salvete Amici," and lo! you are in a fairy-like paradise of the Garden of Eden. A series of terraces has been formed at great labour and expense covering the bare rock, and embellished with shrubs, and at least, twenty acres. Along the terraces are ranged flowers, shrubs, and trees from many lands. Amongst the flowering shrubs, you may see, *e.g.*—*Petunias, Saponaria, Primulas, Salvia*, red and lime, *Cyclamen Persicum, Stocks, Chrysanthemums, Camellias, Gloire de Dijon* and *Safrano*, &c. Amongst the immense variety of palms. I will only mention a few, but the list might be greatly extended. The *Date* and *Banana Palms*, *Chamærops humilis, Chamærops Hermaphrodita and Excelsa, Latania Borbonica, Phœnix Farinosa, Corypha Australis, Oreodoxa Sancona, Cocos Oleracea, Jubaea Spectabilis*, &c.

I may mention here that at Bordighera, an Italian town nine miles to the east of Mentone, a considerable trade in Bordighera is carried on in palm branches and young palm trees. From thence come all the palm branches used in Rome on Palm Sunday. When you enquire why Bordighera has been honoured to supply the Holy See City with such a needful commodity, you are told the following story:—Once upon a time, a large number of workmen were employed in the place of raising the large obelisk now standing within the precincts of the Vatican. When they had almost accomplished their task, they found that the obelisk was still too short to effect their purpose. A sailor in the crowd standing around observed the difficulty, and was able to suggest a remedy. "Pour water on the ropes," he shouted. This was done. The ropes tightened and did their work in a few minutes. The Pope, Sixtus V., is said to have been Sixtus V., on hearing this incident, enquired whence the sailor came, and on being told from Bordighera, he rewarded the ingenious engineering skill by there and then conferring on his native town the right to supply Rome with palm branches in all time coming.

But to return to Dr Bennet's garden is chiefly made up of the *debris* of limestone rock. It is, therefore, not very well suited for Conifers. Still, we find the Cedar, *Cupressus Sempervirens, Pinus Maritima* and *Pinus Halepensis*. The most of the Cypresses do well, particularly *C. Pyramidalis, C. Macrocarpa*, and *C. Lambertiana*.

In several places, the Norfolk Island pine rears its graceful form. Aloes are everywhere, but I never saw a single one blossom in flower at home. Here it is otherwise. Several of their curious flower-stalks, 14 or 15 feet high, shoot up from various parts of Dr Bennet's garden.

There is also a wonderful variety of the Cactus tribe. The cactus seems to well thrive in this climate. One might pick up scores of young plants from the walks. The prickly pear attains a large size, quite as large, I believe, as in Africa. Indeed, it is common throughout the Riviera, and its fruit may be bought in any of the markets of the district. We have had it twice on our table at this house. It is very good, if you like it, to me, a disagreeable taste, and it is full of very hard seeds, which are sure to find out a decayed tooth and ache. There is, however, a great deal more about the flowers, shrubs, and trees to be found in Dr Bennet's garden, but I must forbear, lest I should weary the readers of the *Free Press*. Enough has been advanced to show that the owner of it, who, by the way, throws it open to the public every day in the week (Sundays excepted) from 10 to 4, has proved by what grows in it, that there is not in all Europe, nor in Asia Minor, a more genial climate than Mentone.

This is a great place for growing lemons. They are now getting ripe. As many as 15,000,000 are said to be sent from Mentone in a year. It is as good as always to bring the highest price in the market. A curious legend is told in explanation of the large lemon production of this place. It is as follows:—Eve, in company with her husband was sorrowfully leaving Paradise. As she passed through the gate, a beautiful ripe lemon attracted her attention. She pulled it, remarking that she would keep it till she saw a place as wretched as Paradise is possible, and then she would sow the seeds. After weary wanderings over the face of the earth, she and Adam at length reached Mentone. This, said Eve, is the spot most like Paradise. Here I have yet seen. Here, therefore, I will sow my lemon seed. She did so, and hence, so the legend runs, the goodness of that particular fruit here until this day.

J. S.

Hotel D'Italie, Mentone,
December 13, 1880.

LONGEVITY.—The obituary of the *Times* of Thursday, contained some remarkable illustrations of prolonged longevity. Amongst the five gentlemen and four ladies, whose united ages amounted to 787 years, giving an average of 87 years and nearly two months to each, the oldest lady had reached the great age of 95 years, the youngest of the ladies was 75 years of age, of the gentlemen, the oldest was 95, the youngest 85. The following were the respective ages:—81, 81, two at 82, one at 84, one at 85, one at 95. The same obituary recorded the deaths of half a score of septuagenarians at ages ranging from 70 to 79, and the average of 74 years and over two months to each.

THE NEW M.P.—Mr James Cropper, of Ellergreen, near Kendal, who has just been elected M.P. for Kendal in the Liberal interest, is the lineal descendant of the John Cropper, of Dingle Bank Liverpool. His grandfather was the head of the firm of Cropper, Benson, and Co., and in the year 1807 or 1808 years Mr Cropper has resided at Burneside, near Kendal, and has been engaged in public business and in social life. Mr Cropper is the son of Alison, daughter of the late Mr John Wakefield, of Sedgwick, near Kendal, who died in 1865. His only son married Edith Emily, daughter of Sir Henry T. Holland, Bart., M.P. Mr Cropper was one of the Commissioners for the Lancaster and Carlisle Railway. He has been chairman of the Board of Guardians for Kendal, J.P. and D.L. for the county of Westmoreland, and was High Sheriff in 1875.

THE TWO CARDINALS.—At the public Consistory, held on Thursday morning, with great pomp, the Pope placed the red hats on the heads of Cardinal Jacobini and Cardinal Sepinski. The Cardinal Hassoun, created on Monday last; and at a secret Consistory held afterwards in the Consistorial Hall, the Pontiff also promoted seven new archbishops and bishops, provided for six other Sees by brief, and fulfilled the ceremony of closing and opening the mouths and giving the rings to Cardinals Jacobini and Hassoun, conferred on the former the Basilica of Santa Maria della Vittoria, and on the latter the long-suppressed title of the Holy Martyrs, Vitale, Gervasio, and Protasio, with the Church of Santa Maria Maggiore, which the Via Nazionale now runs. The last titular of that ancient Basilica was Cardinal Fisher, created by Paul III., on the 24th of May, 1535, who was beheaded on Tower-hill on the 21st of June following.

The words "Cocoa" and "Chocolate" are of Mexican origin. "Chocolate" from Chocolat, the sound made in pounding the cocoa nuts. Cocoa is the form in common use in commerce, of which Cadbury's Cocoa Essence is a pure and delicious form.

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