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PACULTY.

For the Willamette Farmer. Thermal Belt, or Vernal Zone.

BY A. P. DAVIDSON,

[Concluded.]

Now, then, I have spoken of the correlation of the strata of air. This is a new idea. Franklin, De la Rieve, Loomis, Peltier, and many other savants, experimented and learned much of electricity-its origin, force, and use. Peltier may be said to be the founder, or rather the great mover, in that eminent science, the most eminent among the sciences, meteorology. Peltier, by experiments, found out and established its laws; he co-ordinated and collected facts. On these are based meteorology. Now for my authority-to say nothing of my own experience-in regard to the three strata of air, the lower, middle, and upper, hear Peltier. He says: "The diurnal vapors, such as rise in all countries every day, during warm weather, and diffuse themselves between the earth and the tropical current, are divided into three well-defined and distinct strata, as, in summer and in the county, may readily be discerned after the setting sun. A light, whitish mist is then observed in contact with ledge of the atmospheric and terresthe earth; above this appear large grayish strata; still higher, white masses of cumulus, or sometimes the effulgent cirrus which seems to stretch away toward the tropical current." Again, the same author says : "The diurnal vapors situated between the earth and the tropical curreat, that is to say, between two forces acting in a contrary direction, are divided into three very distinct strata. The lowest, that which receives most immediately the resinous influence of the globe, becomes vitreous. The portion next to the surface cannot, it is true, long retain its electricity, for the proximity of the earth too greatly facilitates its efflux; it is only the zone placed at some distance which is sufficiently insulated to preserve a part of its own. The inferior vapors, in assuming the globular form, become white and humid; they form the ordinary fogs, which so easily resolve themselves into dew or drizzling rain through the attraction of the globe." Thus we see the influence of vitreous and resinous electricity. Vitreous and resinous electricity are synonymous with positive and nega-

Now, the inter-change between these different strata of vapor could never take place without a medium. That medium is resinous or vitreous electricity. Around the center, east and west, of the globe, is a belt of heated hir, produced by the sun's direct rays. This heated air ascends, on each side of the equator, to an immense hight, and falls off each way, north and south, forming two resinous, and in the conflict produces the earth to the equator. By the force, vitreous electricity, through a change of conditions, becomes, at the poles, resinous or terrestrial.-Hence we see the same force conmatter from whence it springs, is ways equivalent to its cause. Heat, light, magnetism, electricity, &c., are only force; and, as the conditions, so the force. In a word, a single cause manifesting itself under various forms.

tive electricity, and used mostly by

late electricians.

The vast thermo-electrical belt which surrounds our globe, as a mantle of protection, is produced by evaporation. This evaporation is Rev. S. H. Marser, D.D., President, and Professor of Intellectual Philosophy.

Rev. Horaces Lyman, A.M., Professor of Mathematics.

Ground H. Collier, A.M., Professor of the Natural Sciences.

J. W. Marser, A. M., Professor of Latin and Greek.

A. J. Anderson, A. M., Professor of Theory and Art of Teaching, and Principal of the Academy.

Miss C. A. Harrell, Teacher of Music.

[27]

The surplus heat derived from the surplus heat derived away for a moment by the unusual apparition of men soon alighted near the young, being, in spite of the name of their home, thoroughly unacquainted with dandary heat heat and the surplus heat derived from the surplus heat away for a moment by the unusual apparition of men heat from the the surplus heat derived from the

cessively hot; the reverse in the the deep. night. Not so in dense vegetation.

Now for the use, the practical utility, of a knowledge of electrical phenomena, of the thermal belt or vernal zone; let us see. And, first: If we wish to grow grapes free from mildew, frost, and fungoid growth, we must avoid the low, black lands of our valleys, for the meteorological reasons given. And, secondly, for early gardens, and all tender plants, we must seek a high, slightly sandy, light-colored soil, on a high, dry, southern slope, of some of our hills. It does not depend on the absolute hight, but more on the peculiar chorographical features of the land in regard to frost, so there are low lands around the hill for the heavy air to settle in, and not on the hill. On such situations, the grape, the almond, peach, apricot-all semi-tropical fruits-will grow to perfection, being rich, and free from diseases of all kinds. Hence, then, and necestrial laws in forming climates. The end of science, of experience, of even theories, is good--good to ourselves, our race, mankind. A knowledge of the thermal belt, or vernal zone, is of great use to us, as, by it, we can successfully grow choice fruits.

#### The late of Birds.

Far south, in the Indian Ocean,

midst of almost eternal surf and spray, rises what is appropriately termed Danger Island, Of all the lonely spots on the globe whose existence has been ascertained, this is probably the most lonely. Once on-Jy since the creation has it been The sea, for many hundred miles, rolls and flashes over a shallow. bottom, till, arriving at a certain degree of latitude, the floor of rock abruptly terminates, and the ocean becomes, in a moment, of unfathomable depth. On the very edge of this abyss stands Danger Island, which the least touch of an earthquake, or an unusual stroke of hurricane, may some day topple over into the bottomless gulf. From this persuasion, possibly man has never it. There it stands, in the midst of traversing the ocean in all directions restrial electricity, and flows along the foot of the precipices, one gentleman discovered a small fissure, of more amiable disposition. law of correlation or equivalency, the through which he felt confident they could climb to the summit; and the boat being pushed quite close to the was truly extraordinary. Rendered eggs of innumerable occanic birds, which, rising from the task of incuand cerulean blue, dotted with brown from the shells; and the mothers,

there is none, or but little, vegeta- one nest, divided into several comtion and dry sand plains, there is partments, where the naturalist, if very little evaporation. Hence, on he could live on eggs, might study all deserts there are extremes of the appearance, habits, and characheat and cold-during the day, ex- ter of half the winged dwellers on

#### Visiting the Pope.

The following is the etiquette observed when the Pope receives visitors: After passing through the ante-chambers, you are introduced to the Pope's presence. His Holiness sits at the end of the room, under a canopy, on a small throne, raised one step from the floor, in an arm-chair of velvet and gold, with a writingtable before him. You kneel at the door, again in the middle of the room, and a third time just before you reach the throne. The Pope presents his foot, and you kiss the white slipper where a gold cross is placed. You remain kneeling until his Holiness motions you to rise. To men of the world the sign is made instantly, and the conversation takes place standing. To religious persons, monks, and even secondary prelates, the sign to rise is frequently not made at all, and they speak while still kneeling. Some high personages also speak with the Pope while kneeling; M. de Merode atways, though so intimate with Pius IX. There is nothing extraordinary in this, for nuns kneel before their confessors for a whole half-hour. It is an Oriental usage, which is common in the religious world at Rome, and seems to shock nobody. Sometimes, indeed, persons squat down familiarly on their beefs, Cardinals and bishops kiss the Pope's writes a newspaper traveller, in the hand, and sit on a gilt stool. Some French bishops insist on kissing his foot. No lady is admitted to an audience except queens and princesses, with their ladies of honor. As to the other ladies, the Pope meets them in the gallery or gardens, not in the apartments. The toilet for known to have been visited by man. ladies, of whatever rank, is black, with a veil. Men take off their gloves. The Pope remains scated with cardinals and bishops, He rises to receive princes and princesses. For kings, he advances to the middle of the room and receives them there. For emperors he goes as far as the ante-chamber. When the Pope returns the visits of kings or emperors, etiquette requires them to come down to his carriage and open the door. It is a tradition that Popes are charming in their audienattempted to erect his dwelling upon ces. Everything is arranged to astonish and disconcert the visitor: the surge, overcanopied by the bluest | One would say that the secretaries of the blue skies, surrounded by a and chamberlains guard the majesty boundless expanse of waves, gene- of God. The result is a contrasting rally shining and beautiful, but as effect, at the first smile of this venerlittle specked by sails as if they gir- able divinity one's heart is moved. dled an uninhabited planet. Yet, Christina of Sweden could not re-though no gale is astir, the billows frain from tears in the presence of incessantly fret and foam against the Alexander VII. The infamous Alvast currents constantly pouring to cliffs of Danger Island, which on all exander VI. (Borgia) was literally the poles as vitreous streams. On sides decend sheer into the deep, so captivating. He had a frankness, arriving at the poles, an inter-change as to appear from a distance perfect- which was most charming. He gave takes place; the vitreous becomes ly inaccessible. A surveying ship, a public audience every Thursday. the aurora borealis and the aurora for scientific purposes, once approached this wild rock. After rowing to a considerable distance along bow form. The resinous is now terminate the conflict purposes, once approached this wild rock. After rowing to a considerable distance along the conflict purposes, once approached this wild rock. After rowing to a considerable distance along the conflict purposes, once approached this wild rock. After rowing to a considerable distance along the conflict purposes, once approached this wild rock. After rowing the conflict purposes, once approached this wild rock. After rowing the conflict purposes, once approached this wild rock. After rowing the conflict purpose in the conflict purp is an angel!' Never was there a Pope A DESTRUCTIVE STORM IN UNION

COUNTY, EASTERN OREGON -A corrocks, two or three of the most dar-ing landed, and after no slight toil vicinity was visited by the heaviest stantly acting according to constant-ly changing conditions. Force, like prospect which then presented itself this valley. It commenced at 2 o'clock and in less than 30 minutes the whole face of the country was a never lost. It produces an effect al. green as an emerald by the agency lake of water. A water spout burst ways equivalent to its cause. Heat of the islet was thickly strewn with farms of Mrs. Cates and Mrs. D. R. eggs of innumerable occanic birds. Union, and the whole cataract from summit to base, the water in bation, formed a canopy of fluttering of the gulches being six feet deep; wings overhead. The eggs were of washing hundreds of tons of stone all colors-white, light chocolate, down into the roads and fields below, many of which would weigh from 300 to 500 pounds, and two or three or crimson, or turquoise or black. have been estimated at 1,000 to 1,500 Here and there little bills protruded pounds. It ruined Mr. Benson's garden and uprooted some of his ap-