

THE DISPATCH.

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K. Appleby - - - Business Manager

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Volcanoes

There are two distinct types of volcanoes; effusive and explosive. An effusive volcano is one in which the lava rises and overflows without explosions or accompanying clouds of smoke. A good example of this class is Mauna Loa of the Hawaiian Islands.

Explosive volcanoes are noted for their violent eruptions which hurl rocks and showers of dust from the crater with great violence. Such eruptions are generally accompanied by earthquakes in the vicinity of the volcano. This class of volcanoes presents a more terrible spectacle—the dense clouds of smoke and steam mingled with flame, through which hurtle large rock and dust, [volcanic dust is erroneously called ashes] gives a terrifying and dangerous scene. Explosive volcanoes are more numerous than the effusive type and often burst out in violent eruption after a long dormant or mildly active period as the eruption of Mt. Pelee on the island of Martinique.

An attempt will be made to give a brief description of the most noted volcanoes of the world, together with the chief events connected with each. Individual members will be considered other than groups or localities.

MAUNA LOA "The Hawaiian Islands are all volcanic in origin and have a linear arrangement characteristic of many volcanic groups in all parts of the world. They are strung along a north-west-southeast line, their volcanoes standing in two parallel rows. In the northeastern islands, the volcanoes have long been extinct and are worn low by erosion. In the southeastern island, Hawaii, three volcanoes are still active, and in process of building, of these Mauna Loa, the monarch of volcanoes, with a girth of two hundred miles and a height of nearly fourteen thousand feet above the sea level, is a lava dome the slope of whose sides does not average more than five degrees. On the summit is an elliptical basin ten miles in circumference and several hundred feet deep. Concentric cracks surround the rim, and from time to time, the basin is enlarged as great slices are detached from the vertical walls and are engulfed in the lava below. Such a basin is called a caldera."

"KILAUEA lies on the flanks of Mauna Loa a four thousand feet above sea level. It is an independent volcano whose dome has been joined to the larger mountain by the gradual growth of the two."

MAUNA KEA is a twin of Mauna Loa in height but much less in circumference. It is estimated that these mountains rise over eighteen thousand feet from the floor of the ocean before they reach the surface so they are over thirty thousand feet in height from the bottom of the sea.

"The eruptions of the Hawaiian volcanoes are of the effusive type as already said of Mauna Loa. The column of lava rises, breaks through the side of the mountain and discharges in Lava streams. There are no explosions and usually no earthquakes or very slight ones accompanying the eruptions the lava in the caldera boils because of escaping steam but the vapor emitted is comparatively little and seldom hangs above the summit in heavy clouds, but we see here in the simplest form the most important fact of all volcanic action, molten rock has been driven upward to the surface from some deep lying source.

The Solar System

The Inferior Planets

Continued

Mercury and Venus are called the inferior planets because they are nearer the sun than the earth, that is, their orbits have less extent than the earth's orbit. The planets, at a greater distance from the sun than the earth, are known as the "superior planets."

If the orbits of the inferior planets were in the plane of the earth's orbit, those planets would pass directly between the earth and sun each year but so two of the orbits of the solar system

are in the same plane so we do not observe the inferior planets cross the sun unless they are at a point where their orbits cut the plane of the earth's orbit at the same time as they are between the earth and sun.

The passing of a planet across the face of the sun is known as a TRANSIT of that planet. The transits of Mercury are more frequent than those of Venus. The latest transits of Mercury were in the month of November of both the years 1907 and 1914. Venus crossed the sun in 1882 which will not be repeated until the year 2004.

It has been found, by observing the transits of Venus and Mercury, that the former possesses an atmosphere but the latter has none, for a halo of diffused light is seen about Venus as she crosses the sun's disc and no such envelope has been observed about Mercury. It is also supposed that the great brilliance of Venus is due to the reflection of the sunlight from the clouds of her atmosphere.

There is a marked contrast between the orbits of the two planets; the orbit of Mercury is the most elliptic of the Solar System while the path of Venus approaches nearest a circle. It is supposed that each of these planets rotate only once a year, that is, they slowly turn as they move around the sun. If this be true, one side has constant day and the other constant night, which appears worse when we know that the inferior planets have no satellites.

Mercury is the smallest planet of the Solar System, having a diameter of two thousand, seven hundred and sixty miles. The mean distance from the sun is thirty-six million miles and he makes the circuit of his orbit in eighty eight of our days and owing to his nearness to the Sun he is only seen during short periods.

Venus is the brightest of the planets and is nearest the size of the earth having a diameter of seven thousand eight hundred and twenty miles. Her mean distance from the sun is sixty seven thousand two hundred miles and she makes her annual in two hundred and twenty six of our days.

The Minerals of New Brunswick

Coal

Continued

The Grand Lake Coal District proper embraces an area of about one hundred and twelve square miles. It seems, from geological observation, that it was a basin with a maximum depth of not over six hundred feet the lower two hundred of which belongs to barren sediments.

The coal measures lie nearly horizontal and, though not of great thickness, they cover a considerable area. Two distinct seams are found with a parting of various thickness; the upper one is about twenty inches thick the lower one ten. They meet in some places forming a workable seam of thirty inches. The coal is near the surface of the ground.

The deepest shaft does not exceed forty feet.

It was formerly believed that deeper borings would locate other layers of coal but at less than three hundred feet the drill passed clear through the coal measures, the core being of the older underlying rocks.

Without reckoning the possibility of deeper seams, the Grand Lake Basin is known to contain an enormous amount of coal. The Department of Mining of McGill University has estimated it twenty four million tons.

Dr. Ellis in his report places the quantity at four thousand tons per acre or a total of twenty seven million tons so his opinion corresponds fairly well with that of the McGill engineers.

The coal mines are located on the Northeastern side of the basin mainly in the vicinity of Newcastle river that flows into Grand Lake. The town of Minto is the centre of the industry. Here are the mines of G. H. King of Chipman, the Rockwell Coal Co., the Northfield Company the John Gibbons Co., and others, besides the Canadian Pacific Railway has extensive interests under development.

The quality of the coal has been pretty well tested by such firms as the Marysville cotton mill the St. John Street Railway the Norton Griffith Company and the C. P. R., and it has been declared an excellent steam coal. The analysis of a sample from the King mine by McGill Mining engineers, revealed an index value of nearly seventy five per cent.

The second field, in which mining is being carried on, is at Coal Branch near

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Important Announcement

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We have set apart this page of OUR PAPER for a SCHOOL and FARM Section. It will contain SPECIAL INFORMATION along the line of work prescribed for the public school as well as the general principles of agriculture as outlined by the specialists at work on its different branches.

A column will be devoted to questions and answers on points that may arise in school work.

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