The Island of Sulphur.

About thirty miles from the shore in the Bay of Plenty, North Island, New Zealand, is an immense rock or rather series of rocks three miles in circumference which rise precipitously from the sea to a height of 860 feet. "White Island" is the name given to the spot, and the name is particularly appropriate because it is constantly enveloped in thick impenetrable clouds of white vapor which rise to over 10,000 feet in height, making White Island a conspicuous object for many miles around. It is perhaps the most extraordinary island in the world, and it is the subject of an interesting article by James R. Falconer in the September number of The Windsor Magazine, and from this article we obtain our facts.

The island is practically one mass of sulphur, while the clouds of vapor constantly rushing from the craters are highly charged with acid fumes, which can be noticed sixty miles away. The appearance from the sea is most imposing, the rocks rising abruptly from the waters. At first sight it seems impossible to effect a landing, but as the steamer sweeps around the south side of the island into Crater Bay, a beach comes into view, which though small is sufficient to admit of disembarkation provided the sea is calm. This is the only level stretch on the island, the rest being great irregular rocks.

In the center of the island is an immense lake 50 acres in extent and 12 feet deep and it is 15 feet above the level of the sea. The water contains vast quantities of acid and the temperature is about 110° Fah. It is dark green, and dense clouds of dark sulphurous fumes are constantly rolling off from this boiling caldron. At one side of the lake are blowholes, and the roar of steam as it pours forth into the air is deafening, and huge bowlders and stones are often hurled to a height of several hundred feet.

A boat brought from the ship can be launched on the lake, and the very edges of the blowholes may be safely explored, but the trip is by no means an enjoyable one, and only those who have inhaled fumes of acid can form any idea of their very overpowering nature when given off in large quantities from such an expanse.

Should the boat upset, death would be almost instantaneous. When the boat was taken to the sea, it became so corroded that it dropped to pieces after all the passengers had been landed. The mouths of the blowholes are weird in extreme. Steam belches forth from every fissure and crevice in the rocks and ground, while the noise drowns all other sounds. The whole island is in a ceaseless state of agitation.

Except in the immediate neighborhood of the craters no sulphur is apparent on the surface, but by digging a little into the earth large beds of this mineral will be laid bare, for the island is practically one mass of sulphur mixed with a quantity of gypsum and one or two other substances. The White Island sulphur is much esteemed on account of its purity, and it can be employed for any purpose without any preliminary preparation. The older deposits contain about 90 per cent pure sulphur, and that around the blowholes 98 per cent. It is surprising that these immense deposits have not been more systematically worked. Some years ago a company was formed for working the deposits, but for lack of capital the scheme was abandoned and the amount of sulphur and gypsum exported at present is very small. In the event of a serious war, doubtless the island would immediately rise to prominence.

Did Man Once Possess a Third Eye?

This query heads the following statement in a recent number of The Evening Telegram:

Deep researches as to the structure of the human body have recently furnished some startling facts regarding changes which man is at present undergoing physically.

It is believed that man was formerly endowed with more teeth than he possesses now. Abundant evidence exists that, ages and ages ago, human teeth were used as weapons of defense. Unintentionally, traces of such use are often revealed by a sneer. The teeth are sometimes bared, doglike, ready, as it were, for action.

The practice of eating our food cooked and the disuse of teeth as weapons are said to be responsible for the degeneration that is going on. The wisdom teeth, in fact, are disappearing. Human jaws, found in reputed Palæolithic deposits, have wisdom teeth with crowns as large as, if not larger than, the remaining molars.

In ancient times a short-sighted soldier or hunter was almost an impossibility; to-day a whole nation is afflicted with defective vision. It is almost certain that man once possessed a third eye, by means of which he was enabled to see above his head. The human eyes formerly regarded the world from the two sides of the head. They are even now gradually shifting to a more forward position.

In the dim past the ear flap was of great service in ascertaining the direction of sounds, and operated largely in the play of the features. But the muscles of the ear have fallen into disuse, for the fear of surprise by enemies no longer exists.

Again, our sense of smell is markedly inferior to that of savages. That it is still decreasing is evidenced by observations of the olfactory organ. But the nose still indicates a tendency to become more prominent.

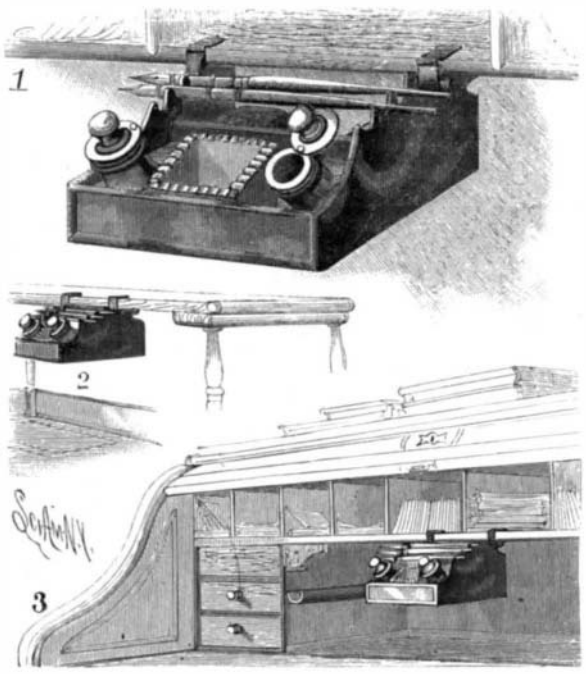
THE HAYNE SUSPENDED INK-WELL.

The inkstand in general use up to the present time monopolizes the most valuable space on a desk, and is often a menace to books and papers because of its liability to be overturned, and usually necessitates an inconvenient reach every time the pen is filled.

The advantages of removing the ink from the surface of the desk are so obvious that it seems strange the suspension arrangement—practically applied in the Hayne Suspended Ink-Well illustrated herewith—has not been sooner employed.

The Hayne ink-well is manufactured by the Universal Specialty Company, of 151 Chambers Street, New York, and consists of a metal frame, the sides of which are provided with lugs, whereby it can be readily suspended from the bottom shelf of one of the pigeon holes of a roll-top desk by means of strong spring clips, or from the rack above a bookkeeper's desk. Within the frame are two flint glass ink bottles and a sponge cup. A third ink bottle can be substituted for the sponge cup when desired. The ink bottles are fitted with hard rubber tubes in such a manner as to render them air-tight and dustproof, preventing all evaporation and congealing of the ink.

The construction of the bottle is such that the pen can be submerged only to a certain depth, thus the ink bottles which may hold two kinds of ink can be easily



SUSPENDED INK-WELL.

filled or cleaned by removing the front plate of the frame.

The entire table surface of the desk is left free and clear, and the device can be put on or taken from the desk in a moment.

When You Weep—and Why.

Tears are the common legacy of every human being, and if you should be asked whence they come and where they go, you would probably display a surprising amount of ignorance about a very simple subject. A writer in The Evening Telegram enlightens its readers as follows:

Our eyes are always wet with tears, not only when we weep, but always. Our eyeballs are subjected to a constant flow of the lachrymal fluid, even when we are asleep, and were the stream to cease only for an hour, miserable indeed would be the lot of the human creature.

At the outer corner of every eye is what is called the lachrymal gland, which nestles under the overhanging bone of the forehead. This organ secretes the fluid which flows over the eyeball to the inner corner, and there it disappears through a little orifice, whence it is in turn conducted to the nostril. That is why you require so many extra handkerchiefs when you have a cold.

Now comes the question, How do the tears find their way to the nose? Examine your eye in the mirror, and you will find a small elevation upon the lower eyelid, near the nose. Place your finger upon the lower eyelid just below this small elevation, so as to turn it outward. There you will see a small hole, like a pin prick, and there you have found the little passage which conducts the tears into the nostrils.

This little orifice, for various causes, frequently becomes obstructed, in which case you are bound to weep incessantly until relief is afforded you by the removal of the obstruction.

The overflow of tears which follows some great grief is created by the lachrymal gland under pressure of mental emotion.

Why are tears salt? Literally, our tears are distilled from the very springs of our inmost vitality, for they are separated by marvelous machinery and chemistry from the arterial blood freshly circulated from the heart; and as this contains about six or seven parts in one thousand of saline constituents, so tears contain one-third per cent of chloride of sodium, besides a very small proportion of other salts, ninety-eight per cent being water. The office of this alkaline fluid is to clear, clean and moisten the cornea, which, having no blood vessels, would, of course, wither and dry up without this moisture, and we should become blind.

Thermodynamics of the Human Machine.

In a paper published recently in the Comptes Rendus, M. A. Chauveau gives particulars of a series of experiments made to determine the thermodynamic economy of the human machine. The apparatus consisted of a pair of treadmills, each three meters in diameter, mounted on the same shaft. One of these treadmills was surrounded by a small chamber which was calibrated as a radiation calorimeter. A brake could be applied to either wheel at will and served to both regulate the speed of rotation and to measure the energy exerted. The speed chosen was 80 revolutions per minute, which, with necessary corrections, corresponded to an effective work of 68 calories per hour. The calibration of the calorimeter was effected by means of an electric current passing through heating coils in the chamber. It was thus easy to determine the output of heat required to maintain this chamber at any given temperature above that of the room in which it was placed. According to The Engineering and Mining Journal, the first series of experiments gave very uniform results. When the subject was doing useful work at the rate of 64 calories (units) per hour, he also radiated from his body extra heat amounting to 199 calories per hour. The efficiency of the human mechanism was therefore about 24·3 per cent.

Automobile News.

The Motor Age has just appeared in Chicago and is published by the Cycle Age Publishing Company. It is filled with a number of interesting articles and will undoubtedly prove interesting to its readers. The form, however, is rather small for a paper devoted to motor carriages.

The Automobile is published at 150 Nassau Street, New York city. There are now two papers issued under this name, and The Automobile Magazine will be a third. The specific Automobile to which we refer consists of sixteen pages and contains a number of articles and notes on the automobile industry. It is quite well illustrated.

There is one place in New York where electric carriages are received and stabled and batteries charged at any time during the day. The batteries are charged in position or put on a small truck and taken to the charging-room. In a short time there will probably be facilities for charging storage batteries in every large stable in our cities.

American Enterprise in Siam.

A former citizen of New Haven, Conn., Mr. Wallace J. Palmer, in traveling about the world, especially in the Far East, was particularly pleased with Siam. Having had some experience in operating Florida hotels, he opened one on a small scale in Siam. The American patronage made him prosper, and among the visitors was the King of Siam, who after a few visitations liked the place so well that he made Mr. Palmer his chief caterer.

The relations between the two grew quite cordial until the king at last generously gave Mr. Palmer a large plot of land in the center of the city of Bangkok, on which he is to erect a $200,000 hotel structure. Land in Bangkok is said to be quite expensive. This practical recognition by the king of American enterprise is another example of how American ideas are being advanced in foreign countries.

Microbes in Telephones.

According to The Medical Record, Dr. W. H. Hill, of the bacteriological laboratory of the Boston Health Department, recently made an examination of thirteen public telephones in that city. In several of the transmitters harmless microbes were found, but an inoculation of guinea pigs failed to reveal the presence of any pathogenic micro-organisms. The report states, however, that this examination has demonstrated the possibility of infectious diseases, particularly diphtheria and tuberculosis, being conveyed from one user of the telephone to a subsequent user. He suggests that the receiver as well as the transmitter be also cleaned and disinfected. Precautions of this nature are more necessary in public than in private telephones, as in many cases public telephones are used by persons who are unfamiliar with the instrument and insist upon placing their lips in close contact with the transmitter.

Science Notes.

Capt. Bulatowich, the head of the Russian Abyssinian expedition, has discovered in South Africa a hitherto unknown range of mountains; it has been christened Emperor Nicholas II. Range.

Pencils made from slate dust moulded by hydraulic pressure are made in large quantities in Tennessee. They are much more popular than the solid-cut slate pencils. One concern last year made 25,000,000 moulded pencils.

At the Pasteur Institute in Paris, 1465 persons were treated in 1898, and all but three were cured. For the thirteen years from the foundation of the Institute to the end of the year 1898, 13,181 persons were treated in Paris, and out of this number only 99 died.

Mr. Walter Wellman arrived in London August 28, and has undergone the first surgical operation for straightening his right leg, which was severely injured when he fell into the snow-covered crevasse during his polar expedition. The operation was entirely successful.

By a fall of rock which occurred recently at Niagara Falls the Horseshoe Fall has again been restored to its proper shape from which it derives its name. Of late years the Fall has been nearly V-shaped, destroying much of its natural beauty. From 1842 to 1890 it is stated that 275,000,000 cubic feet of rock had fallen away.

The lighting of the Paris Exposition will call for 20,000 horse power. At the Paris Exposition of 1853, the motive power was only 350 horse power; in 1867, 626 horse power; in 1878, 2,500 horse power; in 1889, 5,500 horse power; in 1900 it is thought that 45,000 horse power may possibly be needed, but about one-half that will probably answer.

On Sunium's marble step the excavators have laid bare the foundations of the thirteen marble columns that give the promontory its modern name, Cape Colonna, and have found inscriptions showing that the temple was dedicated to Poseidon and not to Athene, as was supposed. It corresponds with the temple of Poseidon on the island of Aegina opposite.

An aquarium will be one of the attractions at the Paris Exposition. A dark incline will lead visitors to it, and suddenly they will feel as if transported to the very bottom of the sea, in the midst of marine landscapes and inhabitants of the ocean. Immense glass tanks will form the aquarium proper; the buttresses, pillars and girders which will form the frames of the tanks and hold the glass together will be entirely concealed under rocks.

A pair of joined twins resembling the Siamese twins were recently presented before the Academy of Medicine of Rio Janeiro, Brazil. According to The Medical News, they were united by a band of soft tissue at the upper part of the abdomen, posteriorly and laterally. It was thought that an operation for the division of the band seemed feasible, but incision into the band revealed the fact that the kidneys of the twins extended through it and that this division might prove fatal, and the operation was abandoned.

On July 19, between 8 and 9 o'clock P. M., in the vicinity of Erie, Pa., according to The American Naturalist, the waters of Lake Erie suddenly rose in a single wave about 6 feet high which advanced upon the shore, and after a few moments quietly subsided to its normal level. Five miles west of Erie the rise was between 3 and 4 feet. Three distinct rises were observed. The first and second rises were about fifteen minutes apart, the second and third about half an hour apart. Fifteen miles east of Erie the rise was about 6 feet, and but one wave was observed.

An Irish lord has found it necessary to invoke the aid of the divining rod in order to obtain a water supply for his property. A Dublin professor has been investigating the phenomena connected with the rod and has arrived at a conclusion which is favorable to divination. He believes that hidden water exerts an influence over the muscles of the person holding the rod, and the involuntary twitching gives the signal. There is so much water in Ireland, however, that there is nothing remarkable in discovering water in almost any part of the country. Divining rod frauds are rampant in the United States, and evidently they are not less frequent in Great Britain.

A section of the famous mpundu tree at Chitambo's, which marks the place where Dr. Livingstone died, has been removed and will be sent to England for preservation. Two or three years ago, Mr. Weatherley visited Chitambo's and reported that the tree was in an advanced state of decay and would probably disappear altogether in a short time. The Royal Geographical Society decided that the best course to pursue would be to cut out the section of the tree which bears the inscription and have it sent over to England for preservation in the rooms of the Society. The place where the tree stood is marked by two telegraph poles held in place by stays of telegraph wire, and a large stone cairn has been erected around these poles. In time it is expected that a permanent memorial will be built.

Engineering Notes.

A great gas holder has just been completed for the corporation of Birmingham, England, which is 264 feet in diameter and 160 feet high when extended to its full height. Its storage capacity is 8,250,000 cubic feet.

There were three hundred and twenty-five competitors for the prize for an improved garbage and refuse wagon, which was offered some time ago by the London County Council. The accepted design has four sliding covers, with wind guards raised eight inches above them; it has also a tipping screw.

The tides are now utilized for generating power at Pont l'Abbé, Finisterre, France, during fourteen hours a day. At flood tide the water flows through the canal two and one-half miles inland into a pond in the rear of the power house, and returns to the sea at ebb tide. The total fall is 7½ feet, and 80 horse power is generated by turbines.

The Illinois Central Railroad is experimenting with an inspection car driven by a gasoline motor. The experiments have been very successful, and it is probable that the road will adopt this kind of a car on all its divisions. It is really an "automobile of the rail," and should come into general use where the old hand-work inspection cars are used. Twenty-five miles an hour is the average speed of the car. A gallon of gasoline will ordinarily run the car for seventy-five miles.

Russia has objected to the Sultan's mounting pneumatic guns at the northern entrance to the Bosphorus, on the ground that such action implied that he doubted the Czar's friendliness. The result is that the Sultan has canceled the contract for the pneumatic guns, which were the work of a New York company. It is said that the Sultan got the idea of employing pneumatic guns from the accounts of the actions of the United States dynamite cruiser "Vesuvius" in the war between the United States and Spain.

There is a small station on the Chesapeake and Ohio Railroad, near Cincinnati, called California. The town had developed away from the station, and the railroad company has moved it to the center of the town. The building measured 60×25 feet and was one story high. Iron shoes were fixed under the structure, which was raised by jacks. An engine was then hitched on, the rails were greased between the engine and the building, and in exactly four minutes the station was conveyed a third of a mile and the men were rolling it on a new foundation. The work of changing the location of the station occupied only one hour and fifty minutes.

For the Suez Canal Company Messrs. William Simons & Company, Renfrew, are about to begin the construction of a great hopper dredger. The vessel, which is specially intended for improving the entrance of the canal at Port Said, will be 270 feet in length, 48 feet in breadth, and 19 feet deep amidship. She will have hopper capacity for 2,200 tons of dredging, and the bucket-ladder will dredge to a depth of 40 feet. The lifting capacity of the vessel will be 1,500 tons per hour, each of the buckets lifting about two tons of material. Messrs. Simons & Company have also recently received an order to construct a powerful twin-screw dredger for Japan.—The Engineer.

The United States steamer "Michigan" is said to be the oldest iron steamboat afloat. It was constructed at Pittsburg, 1841-43. The parts were transferred to Erie, put together and launched in 1843. The original machinery, with the exception of the boilers, is still in her and in good condition, and, according to Cassier's Magazine, there are two direct-acting engines, the paddle wheels being of the radial kind, 21 feet 6 inches in diameter. The vessel has been in continuous service until the present time, over fifty-five years, and is apparently as good for service as ever. Her armament is six 6-pounders, two 10-pounder rapid-fire guns, and two machine guns. Of late years her principal occupation has been in the instruction of the United States naval militia at the different lake ports.

Trials have been recently made in England of a device for shutting a railway carriage door, the object being to enable the guard to close and lock all of the doors of the train simply by turning a handle in his compartment, which we would call a "caboose." According to The Practical Engineer, compressed air was the agent employed, and was conveyed along the train by the aid of flexible couplings like those used for the Westinghouse air brake. Under each coach is fitted an air cylinder with a piston actuating a pair of horizontal rods which slide in guides under the footboards on each side of the train. The doors are connected by suitable devices so that when the guards bring the rods into action, with the aid of air valves, the doors are opened simultaneously. A spring connection renders the whole operation very gentle and noiseless. If the passenger's finger should be in the way, it would only prevent the door from closing, and would not injure it. The locking is managed in a similar way, and it is an extraordinary thing that abroad railway passengers have accepted for so long a period such crude fastenings for railway doors, and the new device is a step in the right direction.

Electrical Notes.

The British Association for the Advancement of Science, at Dover, exchanged courtesies with the French Association, at Boulogne sur-Mer, on September 13, by means of wireless telegraphy.

A plant capable of developing 12,000 horse power has been built at Snoqualmie Falls, and the current will be transmitted to Seattle, twenty-six miles away. The falls are 270 feet high. The transmission line is to be of aluminum, which has been made by the aid of water power at the Niagara Falls works.

The Niagara Falls Power Company has called for bids for the construction of a new wheel pit. This pit will be over 400 feet long, 20 feet wide and 180 feet deep. It will be located on the inlet canal opposite the present power plant. There will be room for at least ten 5,000 horse power turbines in this pit.

An electric telemeter for indicating gas pressure has recently been successfully tried in Detroit, where the pressure at the office in the city is communicated to the gas works, a voltmeter being used which is calibrated to read in terms of gas pressure, and a recording instrument is connected in parallel to it so that a permanent record of variations and pressures is kept.

The burning out of the fuse on one of the new motor cars of the Fifth Avenue line of the Brooklyn Elevated Railroad, September 11, resulted in a fire which almost destroyed the car and badly damaged the other car which it was drawing. The accident was the first of its kind in connection with the third rail system in Brooklyn. The fire department was called out, and the conflagration was extinguished.

A Brooklyn trolley car, at Sands and Adams Streets, jumped the switch, bumped over the tracks on the road, and brought up with a crash against the front of a house. The car, after leaving the tracks, had leaped the curb on the opposite side of the street, mowed down an iron fence, and struck the front of the building with much force. A wrecking car was sent for and the car was pulled out of Dr. Bodkin's front yard and replaced on the rails,

Electricity from a traveling crane injured one of the workmen in a large concern which builds steam engines. He sued the company for damages, and has recently obtained a decision in his favor, in the Rhode Island Supreme Court. The men have been shocked a number of times, and rubber gloves have been furnished to them. The court held that the insulation between the motor and the hauling chain should be so complete that its use would involve no risk of injury by electricity.

The Canadian Niagara Power Company has commenced preliminary work in connection with the development of power of the Canadian side of the river, by awarding the contract for boring testing holes along the line of the tunnel it contemplates building. The test holes will be 200 feet deep and 4½ inches in diameter. They will be bored with a diamond drill in order that a core of the rock will be brought to the surface and saved for inspection by contractors who desire to bid on the work.

Long distance telephone conversations, or rather a series of conversations, recently occurred between parties in New York and St. Louis. The total cost of them was said to be about $3,000; most of the talking was done at night, and the bill for one continuous conversation amounted to $716. This figure indicates that the talk must have lasted into the high-priced day hours, for anyone can converse from eight o'clock in the evening to six o'clock in the morning for $600, the rate being $1 per minute. Special care was taken to avoid interruption by operators cutting into the line.

A. Hecker, in Zeitschr. Elektrotechn., states that trolley poles must be allowed considerable up-and-down play in cases where the height of the overhead conductor above the rails is very variable. It often happens that when a trolley leaves the wire, the pole breaks a number of guard wires before the car comes to a rest. The author proposes to dispense entirely with springs in the trolley base and to substitute for them a coil and plunger mechanism traversed by the main current. If the trolley should be thrown off the conductor, the excitation of the magnet ceases and the trolley pole falls down by gravity out of harm's way.

An extraordinary accident occurred to a trolley car at Sing Sing, N. Y., on September 11, which recalls Robert Louis Stevenson's "Dynamiter," in which a man carrying a box of dynamite is jostled by a woman so as to cause the explosive to fall, though it does not explode. In the present instance a ton of dynamite was on a cart when it was struck by a trolley car, and a wheel was taken off the wagon and the vehicle was turned over. The driver of the wagon fell back in a half faint, and he knew it would be useless to run, even if he had not been paralyzed with fear. The motorman was also so frightened for a moment that he could not back away from the wreck. One of the passengers yelled "Dynamite," and they all beat a precipitate retreat, and there was little curiosity evinced when a new wagon was obtained and the dynamite was transferred.