More About Strange Explosive Sounds.

BY A. S. HOOKER.

The recent article in the SCIENTIFIC AMERICAN on "Barisal Guns and Mist Pouffers" is worthy of the journal that, since my boyhood, has given so many interesting articles on the mysterious and unexplained things in nature, to the delight and wonderment of thousands of readers. These curious explosive sounds, called "guns," while not all of the same origin, take strong hold on the superstition and the wonderment of mankind. That beautiful sheet of water, Seneca Lake, in the State of New York, has achieved quite a local reputation for its mysterious "lake gun." A writer in Mrs. Stephen's Monthly, in 1857, speaks thus: "The lake gun is a mystery. It is a sound resembling the explosion of a heavy piece of artillery, that can be accounted for by none of the known laws of nature. The report is deep, hollow, distant, and imposing. The lake seems to be speaking to the surrounding hills, which send back the echoes of its voice in accurate reply. No satisfactory theory has ever been broached to explain these noises."

In my work on "Great Earthquakes," it is related, page 123, that long after the earthquake of "November 16, 1827, in New Granada, subterranean detonations were heard in the whole valley of Cauca during twenty or thirty seconds, without any perceptible vibration."

"One of the most remarkable of these 'earth bellowings' is that described by Humboldt as occurring in the elevated Mexican plateaux, called by the inhabitants the 'roaring and subterranean thunder (bramidos y truenos subterraneos) of Guanaxuato.' Far from any active volcano, the noise began about midnight of January 9, 1784, continuing for a month.

"From the 13th to the 16th of January it seemed to the inhabitants as if heavy clouds lay beneath their feet, from which issued alternate slow rolling sounds and short, quick claps of thunder. The noise abated as gradually as it had begun."

At Moodus, near East Haddam, near the mouth of the Connecticut River, every few years a succession of explosive sounds are heard, which have received the name of "Moodus noises," and are noted as far back as 1728 and as recently as two years ago. In the former year, Rev. Mr. Prince said: "I have myself heard eight or ten sounds successively, and imitating small arms, in the space of five minutes. Oftentimes I have observed them coming from the north, imitating slow thunder, until the sound came near or right under, and then there seemed to be a breaking, like the noise of a cannon shot, or severe thunder, which shakes the houses and all the people that is in them."

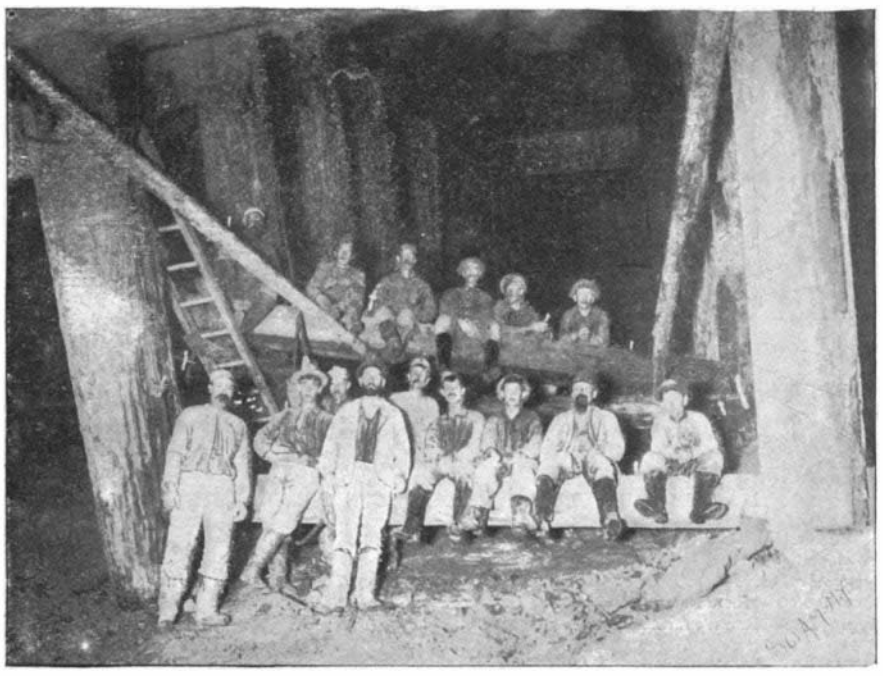
C. Barrington Brown, in his explorations in British Guiana, 1868–72, says: "As we were on the point of leaving the landing to descend the Issano, we were all startled by a heavy booming sound, resembling the distant discharge of a heavy piece of artillery. The sun shone brightly at the time, and not a cloud was to be seen in the sky. On making inquiries, I learned from the Indians that these sounds were frequently heard at this place, and are supposed to have their origin in the mountains to the south."

In 1874, Bald Mountain, in North Carolina, gave forth a series of sounds of a startling nature, loud and explosive, seemingly from its interior, and succeeded by shakings of the earth, and the inhabitants thought it was about to break forth into a volcano.

"Four years later, about May 25, 1878, the residents of the mountain, especially a section of the 'Bald' about four miles away from the first manifestation, were startled by sudden movements of the earth, and loud rumbling and crackling noises, with sudden movements in the mountains, and the wildest reports were spread abroad by telegraph and rumor. The newspapers announced, with startling headlines, that Bald Mountain had suddenly become a volcano, and it was some time before the 'volcano' was resolved into ordinary forest fires, and the noises into subterranean sounds, produced by the sliding and breakage of the tilted-up strata of the mountain, near where, a century before, there had been an extensive slide, when a portion of the mountain a quarter mile wide had moved down 500 feet. Now violent explosive sounds, crashing and rumbling noises, and shakings of the earth occurred. Fissures opened in various directions, splitting the steep wall of the mountain in various places. One of these large fissures extended along the 'Bald,' almost at the top, for over 300 feet southeasterly, then turned south and ended a hundred feet farther. The surface opening is from 2 to 6 feet wide, and is entered by two funnel shaped holes, and extends downward in some places 70 feet. The sides are of gray granite, with nowhere a greater width than 8 feet. New cracks were discovered almost every week, running through sections of solid granite."—Great Earthquakes, pages 127, 128.

A cave of large size was discovered under the mountain, and a writer for the New York Herald described the tilted-up and almost perpendicular strata as "large flakes of rock 80 feet high by 50 feet wide and 10 inches thick," and thinks the fall and sliding of these rocks the cause.

DR. LUDWIG MOND, of London, has given to the Royal Institution the freehold of No. 20 Albemarle Street, adjoining the building of the Royal Institution in London, and has also equipped and endowed it to be known as the "Davy-Faraday Research Laboratory of the Royal Institution." It is to be freely open to a limited number of persons who have already done original scientific work or are fitted to do it, without reference to nationality or sex. The laboratory is one of the finest in the world, and Dr. Mond's generosity cannot fail to result in the facilitation of important researches. The directors are Lord Rayleigh and Professor Dewar.



IN THE HOMESTAKE MINES, LEAD CITY, SOUTH DAKOTA.

THE HOMESTAKE GOLD MINES AND STAMP MILLS, SOUTH DAKOTA.

In the native state gold is found crystallized, more commonly in the form of the cube or in plates, ramifications or nodules, commonly known as nuggets. It is generally alloyed with silver and sometimes with tellurium, bismuth, lead, etc. It very frequently occurs in small quantities in metallic sulphides, as in iron, galena and copper pyrites. The alloys, or its combinations with other metals, are very numerous, those with copper and mercury being the more numerous and most important. Gold and copper are found combined in all proportions without materially affecting the color of the former, except that it is somewhat redder. The density of the compound is much less than that of gold, but the hardness is greater and it is more fusible. The extraction of gold is effected more by mechanical than by chemical process.

In its compact state gold possesses a characteristic yellow color of high metallic luster, is nearly as soft as lead, and is the most malleable of all metals. It can be beaten into leaves of a thickness not exceeding $\frac{1}{200000}$, or according to some estimates $\frac{1}{280000}$ of an inch, through which light passes with a green tint. One grain may thus be distributed over 56 square inches of surface. The supreme ductility of the metal is such that the same quantity may be drawn out into 500 feet of wire.

It fuses at 2,016 degrees, and when in this state is of a bluish green color. It is not at all volatile in the heat of the furnace, but by a powerful electric discharge, by the concentration of the sun's rays by a powerful sun glass, or by the oxyhydrogen jet, it is dispersed into purple vapors. Gold has little if any affinity for oxygen.

It undergoes no change on exposure to the atmosphere, and is not affected by hydrochloric, sulphuric or nitric acid, or by any simple acid except selenic acid; nor do the alkalies affect it. It is however dissolved by any mixture which liberates chlorine. Its usual solvent is aqua regia, which is prepared by mixing one part of nitric acid with four parts of hydrochloric acid. For heat and electricity gold has been found to be one of the most perfect conductors.

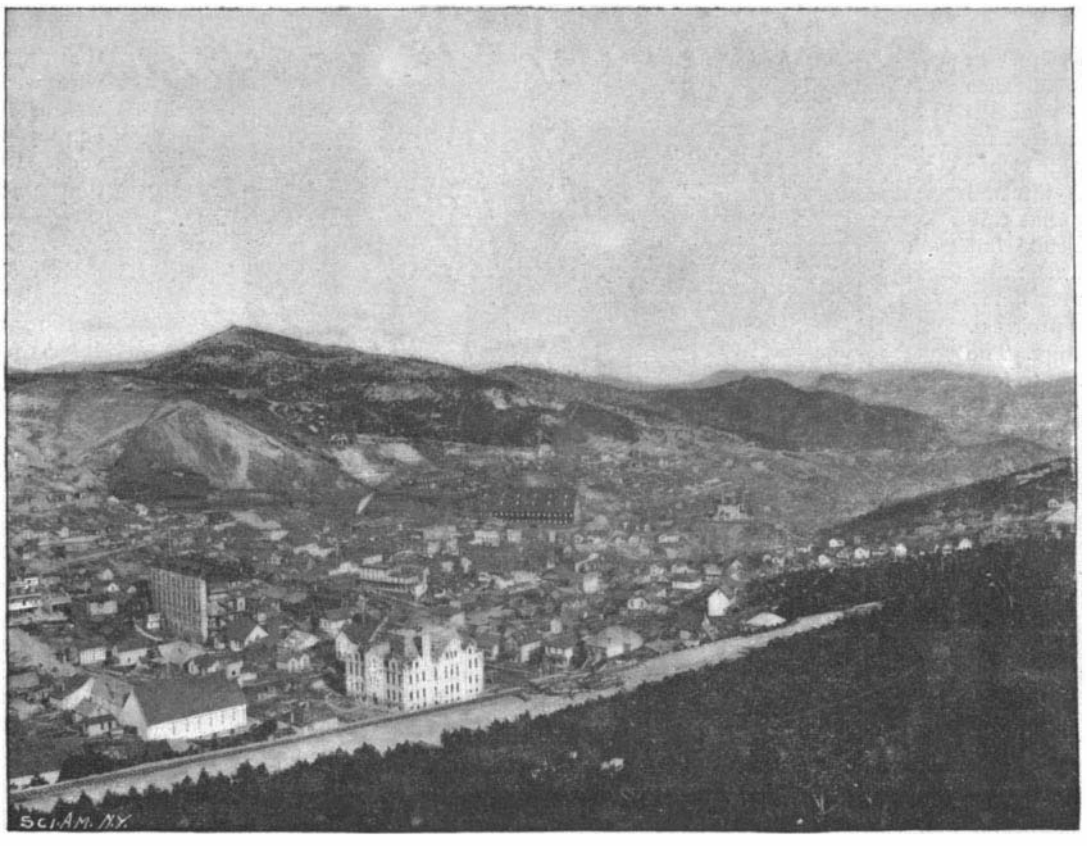
The specific gravity of this metal is less than that of iridium or platinum, ranging from 19·2 to 19·4.

One kind of gold crushing is done by means of large cast iron rollers, which break the auriferous quartz as it passes between them. The more common form of crusher is the stamp mill, with iron-shod piles of wood, worked by an axle with projecting cams after the fashion of the flint mill. The ore pounded by the stamp is washed, and for doing this there is an endless variety of contrivances. In one of the richest quartz districts of Dakota, it is carried by a steady current of water over coarse woolen blankets laid on inclined boards. By this means the lighter particles of quartz are carried away and the gold, which of course is the heaviest, becomes entangled in the fibers of the wool. The blankets are changed and washed each day.

The gold contained in these drifts and in the stamped quartz is recovered by amalgamation, and the mercury is afterward distilled off in a retort, leaving the gold chemically pure.

At Lead City, Dakota, are the celebrated gold mines known as Homestake, which form the subject of the accompanying illustrations. The ore bodies mined here have an average width of from two hundred and fifty to four hundred feet, and penetrate into the bowels of the earth to an unknown depth. Six hundred stamps, crushing 20,000 cubic feet of ore every twenty-four hours, drop incessantly day and night in the six mills without intermission, even Sundays.

The Black Hills, Dakota, are seamed with veins of ore-bearing rock which will return $35 to $175 in gold to the ton of ore stamped. But unfortunately the ore is refractory, and cannot be treated by the ordinary process of amalgamation. Only recently it has been discovered that by a process



LEAD CITY, SOUTH DAKOTA.

known as lixiviation the precious metal can be cheaply separated from the auriferous vein rock. Following this discovery, leaching works of one and two hundred tons capacity were constructed at Deadwood, Dakota, and gold which was formerly proof against amalgamation on the battery plate or in the pan is now readily recovered in the leaching vats.

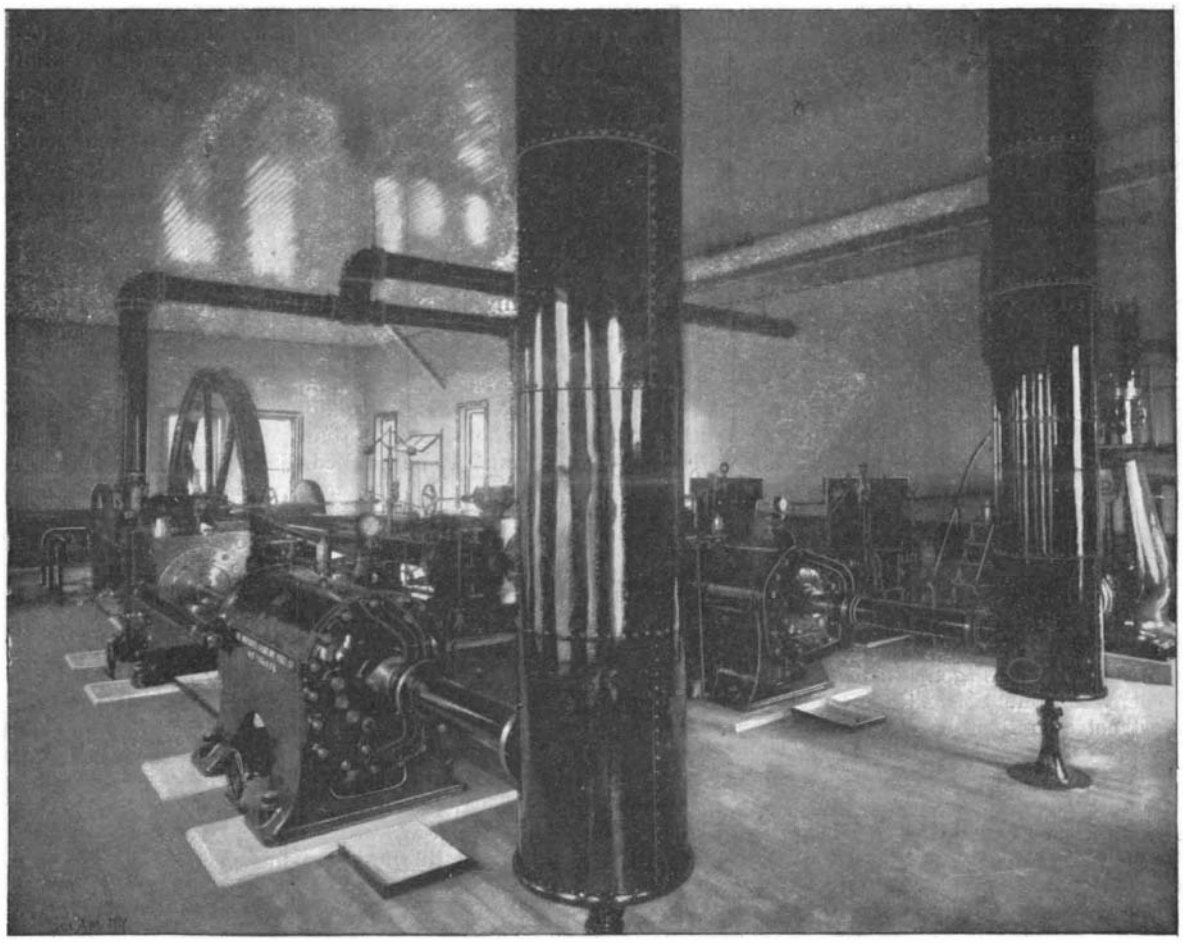
A Swiss Mountain Railroad.

An interesting description has lately been given of the Stanserhorn Railroad, one of the most recently opened of the Swiss mountain railroads, says the Railway Review. It consists of a series of inclines, each of which is operated by cables driven by independent electric hoisting engines. The current is generated by dynamos driven by turbines actuated by a mountain torrent some five miles distant. This plant also supplies current for lighting the village and hotel, and also for the search lights on the mountain tops. The road is constructed in three parts, each at an angle with the other, the gradients being in some instances as high as 60 degrees. The passengers are required to dismount twice in each ascent of about 5,000 feet.

Two cars are attached to the ends of a pair of wire cables, and are provided with automatic safety devices consisting of rail grippers on one rail. These are thrown into operation by a worm operated by a pair of bevel gears, the driver of which is loose on the axle and is driven thereby by means of a conical friction disk or pulley which is pressed against its counterpart as soon as the tension on the hoisting rope is released.

Should the rope break or the strain be released, the friction disk grips, and beginning to revolve, drives the worm, which spreads the longer ends of the two levers, the short ends of which are wide and flat, and immediately bears against the web of the rail; less than two revolutions of the axles hold the cars in place without chance of slip. This device also prevents the wheels from rising from the rails, as the jaws of the grippers are directly under the heads of the rails.

The conductor is supplied with an "electric whip" by which he can immediately communicate with the engineer at the terminal and intermediate stations. This "electric whip" is a brass rod provided with a wooden handle; two insulated wires passing through it connect at all times with the telephone and signals. Thus the car can be stopped instantly by the engineer on signal in case of need, even when out of sight. This mountain road is built on solid masonry from end to end, and in no case is there any possibility of shifting of roadbed. The hillsides are "palisaded" where the earth is not solid or where forests have been felled, and there are masonry gutters on each side. Numerous paths are carried over and under these roads by stone arches, provisions which, of course, add materially to the first cost. It should be mentioned that, in order to keep the safety device in perfect working order, tests are made regularly every fortnight. SCIENTIFIC AMERICAN SUPPLEMENT, No. 1077, contains a fully illustrated article descriptive of the Rigi, Brunig, Pilatus and other celebrated mountain railways.



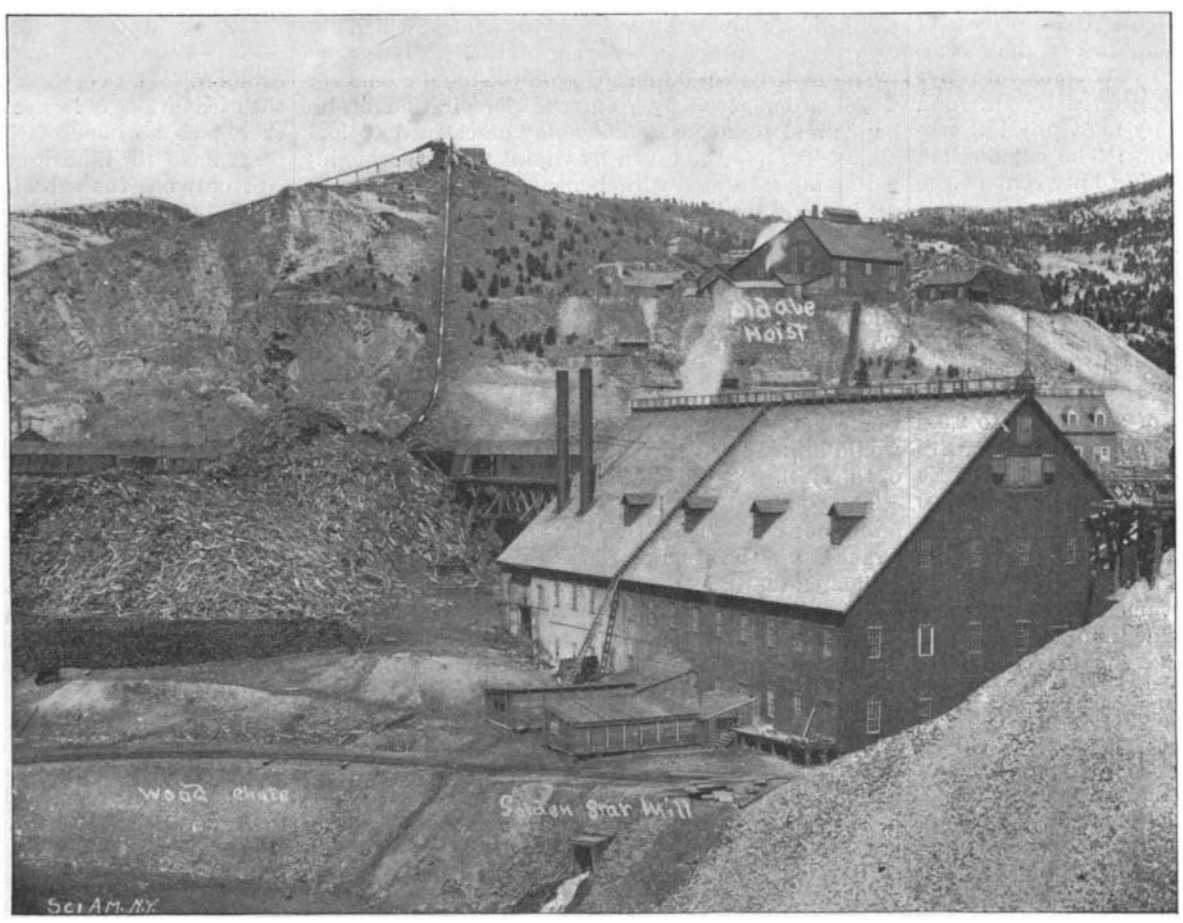
AIR COMPRESSOR AND ELECTRIC PLANT, HOMESTAKE MINE, LEAD CITY.

The Text of the Iliad.

Mr. Grenfell, who has been exploring in Egypt last winter, brought recently to Dublin the many fragments he had discovered and transcribed, and among them are several passages in iambics, one in anapests, and some in prose, which he has not yet been able to assign to any known Greek author. There is one prose passage so like Plato in style that it seems hardly possible it can belong to any one else. But we have not yet identified it. These fragments are in very old hands, as old as the classical fragments in the Petrie papyri, and therefore dating from early in the third century B. C., perhaps even earlier. Every syllable we can recover of Greek writing so ancient as this has, at any rate, a great palæographical interest. But there are a good many of these fragments representing an early copy of some books of the Iliad—I hesitate to say the whole Iliad, from the size of the writing. For the professional book hands of this date are (so far as we know) much smaller. The fragments in Mr. Grenfell's possession amount to about eighty lines or parts of lines, and come from various books, iv, viii, xxi, xxii, and xxiii. There is no doubt whatever that the writing is of the earliest kind we know, and thus undoubtedly dates from before the days of the Alexandrian critics. To me, therefore, who published the first scrap of such a text in the Petrie papyri, it was naturally of the highest interest to learn whether the newly discovered text presented the same peculiarities.

It will be remembered that the former scrap from the eleventh book showed beginnings and endings of lines not in our texts, and this so frequently as to amount to a surplus of one-sixth. Mr. Grenfell had already examined his fragments from this point of view, and showed me that, out of about eighty lines, thirteen are not to be found in our vulgate. The conclusion, therefore, which I had drawn, that before the recension by the Alexandrian critics the Iliad presented a very different appearance, is hereby confirmed, in spite of the adverse criticism of some learned Germans. They held that the Petrie text was an accidentally bad and slovenly copy, with many variations from the texts received even in that day. In the face of the new discovery I am disposed to maintain my original conclusion, and now prophesy that whatever new texts of the Iliad, in handwriting of this great age, are hereafter found, the additional lines will amount to fifteen per cent. I may not be right in every case, for in the present group of fragments those from the twenty-first book show hardly any departures from our text, but the general result will, I believe, corroborate the facts now ascertained. When Mr. Grenfell publishes these fragments, the critics will have ample opportunity of examining this interesting question.

We already possess a very large number of specimens of the Iliad from the second to the fourth century A. D. Every year adds to them. But they all represent (discounting mere blunders) the vulgate text of our printed editions. The solitary exception is the Genevan fragment published by Prof. Nicole. This has many additional lines like the old texts, but a glance at the writing will show any palæographer that it must have been written (in the second century A. D.) three or four hundred years after the pre-Alexandrine fragments. The considerable variants in this fragment show that the old, perhaps loose and prolix, text still survived. It affords us, at all events, a third witness to the fact, and makes it well-nigh impossible to deny that the labors of Aristarchus and his great predecessors were not so conservative as has usually been assumed. — Prof. J. P. Mahaffy, in London Athenæum.



HOMESTAKE STAMP MILLS, LEAD CITY, SOUTH DAKOTA.

DAMAGE by lightning is unmistakably increasing, according to the director of the statistical office of Berlin. Various causes are assigned, such as the employment of electricity in various industries, the continual change of form of the earth's surface by deforestation, drainage, etc., and the impurities introduced into the atmosphere by the growing consumption of coal. Professor Von Bezold some time ago showed that for Bavaria the fires due to lightning increased from a yearly average of 32 in 1833 to 1843 to 132 in 1880 to 1882, while the number of persons struck by lightning and of those killed rose from 134 and 73 respectively in 1855 to 186 and 161 in 1885. An interesting fact noted is that persons struck generally perceive neither lightning nor thunder, but receive the impression of being enveloped by fire.—Public Opinion.

Science Notes.

Underground Ireland is almost unknown. M. Martel, the French cave explorer, proposes to hunt for Irish caves and to examine those he finds thoroughly. He has devised a system of portable ladders, telephones, and electric lights for cave exploration.

The result of recent analyses show that the loss of weight suffered by coal from exposure to the weather is considerable. In some cases it reached 33·08 per cent, while the deterioration in quality for purposes of fuel or gas making reached a still higher figure.

Vesuvius is an interesting sight just now. One stream of lava flowing down from the center is a hundred feet wide and from seven to fourteen feet deep, while a hundred other smaller streams are running down the cave and a big column of black smoke rises into the sky.

Sir William Macgregor receives the Royal Geographical Society's gold medal this year for his explorations in British New Guinea, and Mr. St. George Littledale the patron's medal for his Pamir journeys. The Labrador explorers, Messrs. Low and Tyrell, receive grants of money.

Friedrich August Kekule, professor of chemistry at the University of Bonn, who has just died at the age of 77 years, by the discovery of the fouratomic character of carbon established the basis for the modern theory of chemical combinations. The paper describing this discovery and Kekule's later paper on the theory of benzole are the most important speculative works in chemistry of this generation.

Messrs. Read, Campbell & Company submitted to the Royal Society of London small receptacles (capsules), of pear shape, about 16 millimeters diameter, containing liquid carbonic acid under a pressure of 60 atmospheres. Each capsule weighs less than 10 grammes. Five thousand may be packed into a box 30 centimeters in each direction. For making "mineral" waters and carbonated beverages generally, one capsule being sufficient for one bottle. Each capsule has a peculiarly constructed hard rubber stopper, which is broken off after placing the capsule on the mouth of the bottle.

An official report on the death of Prof. Langerhaus' child, which was the occasion of an attack on the antidiphtheritic serum last winter, has at last been published in Berlin. The professor injected the serum into his healthy boy himself to inoculate him against croup; the child died almost immediately, when his father published a violent attack on the serum. The whole stock of anti-toxin, from which the portion used on the child was taken, has been traced, analyzed chemically and microscopically, and found to be of normal quality. The doctors who made the post mortem examination found that the child died of suffocation. He had eaten his dinner just before the injection and had some milk and cake with it; this he threw up, and being faint on account of the pain from the injection, could not get rid of the matter, but drew it into his larynx, where it choked him. The injection was justified by the present state of medical knowledge. This statement the Lancet reproduces from the Berliner Klinische Wochenschrift.

In a recent paper on "The Relief of the Earth's Crust," by Professor Hermann Wagner, of Gottingen, an abstract of which, by Mr. Hugh Robert Mill, is given in Nature, some interesting figures are given. By means of the hypsographic curve connecting elevations and percentages of area derived from measurements of height, depth, and area of land and water, the surface of the lithosphere is divided by Wagner into five regions, in place of the three suggested by Dr. John Murray, and hitherto accepted by most physical geographers. The five are as follows: The culminating area of the earth's crust, occupying 6 per cent of the surface, and lying altogether above 1,000 meters, with a mean height of 2,200 meters, or 7,200 feet above the sea. The continental plateau, occupying all the surface from the 1,000 meter contour line of elevation to the 200 meter contour line of depth, i. e., to the margin of the shallow sea border or continental shelf. It comprises 28·3 per cent of the surface, and has a mean elevation of 250 meters, or 800 feet, above the sea. The continental slope, from a depth of 200 meters to 2,300 meters below sea level, covers 9 per cent of the earth's surface, and has a mean depth of 1,300 meters, or 4,300 feet. The oceanic plateau, between the depths of 2,300 meters and 5,000 meters, occupies no less than 53·7 per cent of the surface, and has a mean depth of 4,100 meters, or 13,500 feet. Finally, the depressed area, deeper than 5,000 meters, is assumed to occupy 3 per cent of the surface, with a mean depth of 6,000 meters, say 20,000 feet. In this classification of regions the coast line is ignored, the abrupt change of slope at 200 meters—or rather the familiar 100 fathom line of our charts—being rightly given the greatest weight in a hypsographic study. The mean level of the surface of the earth's crust is placed by these calculations at a depth of 2,300 meters, or 7,500 feet below actual sea level. The area of the continental block, or region above the mean level of the crust, is found to be 43·3 per cent of the surface, leaving 56·7 per cent for the deeper region.

Cycle Notes.

Copenhagen has 30,000 cyclists.

Yokohama now has its bicycle school.

President Kruger now rides a bicycle.

The Salvation Army in England uses bicycles to some extent.

The charge for carrying a bicycle to Europe and return is $7, and it must be crated.

Parisian cabmen claim the telephone and the bicycle have destroyed their business.

According to reports lately made, says the Bicycling World, there have been 14,006 bicycles stolen this year up to the week ending July 11. Here is an object lesson the very reverse to being attractive. The bicycle thief is more numerous than we had dreamed.

A bicycle rack for baggage cars has been designed by S. J. Collins, general superintendent of the Wisconsin Central lines, to avoid the liability to injury by chafing and swinging which bicycles are subjected to if hung from the roof of the car. The rack is on one side of the car, and the bicycles stand on the floor at an angle of 45 degrees to the side. The space thus reserved is inclosed at the sides and covered by a shelf for baggage.

For seven months in the year, only, is it possible to ride a wheel in the open air in Moscow, says The Wheel. During the remaining five months wheelmen are allowed to ride two days each week in the great military hall. This hall is so large that a five-lap track is easily laid out in it. The only drawback to the scheme is that the authorities will not allow the track to be banked. Despite the vastness of this hall, there is not a single pillar or support to obstruct either the onlookers' view or the racers' comfort.

In Paris a special duty, called the octroi, is levied at the gates on eatables, wines, kerosene, etc. This of course tends to make smuggling profitable. A short time ago a fat man was run over by a wheelman. He was very much flattened out and attempted to run off. The people who had come to his aid found a pool of oil where he fell. The octroi officers arrested the punctured man and found that he was padded with rubber sacks containing liquids. In this country bicycle tires have been used to transport illicitly distilled whisky.

It will interest cyclists to learn, on the authority of M. Bouny, who recently presented a memoir to the Paris Academy of Sciences on the measurement of the work expended in driving a bicycle, that to double the velocity required triple work, and more. He measured the work done by a pedal of special construction, containing two dynamometers, arranged so as to register the force exerted in two directions at right angles to each other, and also so as to take into account the effect produced by the deviations of the pedal from the horizontal plane.

A cone made from good tool steel and properly hardened will run from 20,000 to 25,000 miles in ordinary use, says the Industrial World. They have been tested with 100 pound weight on each cone, which is equivalent to 400 pounds on a bicycle, and under this load they will run 5,000 miles before beginning to show wear.

While strange, it is nevertheless a fact that in England it is possible to send a bicycle by mail if it does not tip the scales at over twenty pounds. The rules of the English parcel post system have been so revised that it is possible to send by mail any article, no matter what it may be, provided it weighs no more than twenty pounds and is valued at not more than $100, by the payment of a small toll and registration fee, which also insures against breakage during transit.

The cork or corkaline grips on the handle bars of a wheel often get dirty from the perspiration of the hands and from dust. They may be cleaned to look almost like new, however, by wiping them thoroughly with a rag saturated with benzine. Should the grips get loose on the bars and twist or come off, they may be replaced by giving the interior of the handle a coating of shellac for about three inches from the end. Then force the handle on to the bar as far as possible and allow the shellac to dry thoroughly before using. To remove a broken or injured handle, heat the bar about four inches from the handle. This will soften the cement or shellac, and allow the handle to slip off. Care should be used not to get the bar too hot, which would injure the nickel finish and take the temper out of the steel.

The commissioners of indirect taxes have published an interesting return giving the number of bicycles in France. At the time of the exhibition of 1889, it was estimated that they numbered about 50,000, but it was not until 1892 that a tax was levied upon them, and there were then 119,000. The total went up to 132,000 in 1893, while at the end of last year the tax was paid upon nearly 160,000, this being at the rate of four for every 1,000 inhabitants. But the proportion is not, of course, uniform throughout France, and while in Corsica there are only seven bicycles for every 100,000 inhabitants, and only one for every 1,000 inhabitants in several of the mountainous departments, there are nearly 900 to every 100,000 inhabitants in two or three of the departments around Paris, in which there are about 25,000 bicycles. It is stated, too, that about 1 in 20 (or 8,000 in all) of the bicycles belong to women.

Recent Archæological News.

A remarkable discovery was recently made in the Assiot necropolis in Egypt. Among the objects found was a whole company of wooden soldiers fifteen inches in height. The soldiers carry lances and give a good idea of their equipment in the Pharaohs' time.

Recent investigations not far from Sebastopol have yielded some interesting finds. Near the French cemetery the discovery was made of what must have been the site of a very large Byzantine city, and objects of classical Greek art of great beauty have been brought to light.

The excavations among the ancient Greek ruins at Eretria have been carried on some years by the American School of Classical Studies at Athens. The gymnasium and other buildings which have been uncovered are probably part of the buildings on each side of the ancient street laid bare last year between the theater and the naval school of King Otho. When the houses found last year were cleared, a floor of cement and pebbles was discovered about a yard below the surface.

In the course of further excavations in the island of Melos, by the director and students of the British School of Athens, one of the most important discoveries has been that of a mosaic which is believed to be the finest yet found in Greece. It seems originally to have been about 40 meters long, and to have consisted of five panels, three of which are ornamented with geometric patterns and the other two with figure subjects, very beautiful both in design and color. On one of them are represented two vines with leaves and grapes, among which birds and animals are grouped, the other panel, with a circular design, consisting of a series of different fish, while each of the angles holds a tragic mask, very finely treated. The finer details of color are represented with glass tesseræ, while portions of the black are laid in gleaming obsidian, so that the whole has a most brilliant effect. More recently the excavators have come upon a series of graves of the sixth century B.C., in one of which was found a number of ornaments in gold and silver. In another (Roman) tomb was found a series of gold leaves from a wreath, and a gold ring was a fine subject in cameo.

The trained workmen who have for some years been making excavations in order to explore the remains of the Roman city of Calleva, at Silchester, have very recently opened up several additional buildings, one of them with a very interesting hypocaust showing some unusual features, while others are believed to have been used as dyers' workshops. One or two good specimens of Samian ware are among the latest "finds" in the ruins, says the Pottery Gazette. They have been removed to Silchester Museum, at Reading, established specially for the reception of antiquities discovered in the course of the excavations. Perhaps the most important of these was an earthenware pot containing 253 silver denarii, ranging in date from B.C. 40 to A.D. 211, though there have been also many objects in gold, bronze, metal, bone, and glass, much pottery, and a fine slab of Purbeck marble. The Calleva remains are a mile and a quarter in circumference. Some of the walls are nearly 12 feet high, and the pavements are considered very fine examples. The previous discovery of numerous wells, stone hand mills, furnaces, etc., seems, in connection with the buildings disclosed by the latest excavations, to leave no doubt that extensive dye works were once carried on in the buried city.

At a recent meeting in London of the Egypt Exploration Fund, Mr. D. G. Hogarth, the well-known explorer, said, says the New York Evening Post, that the excavations of last season had convinced him that there was no hope of the preservation of any of the contents of the libraries of Alexandria within the city. Not only has the subsoil water risen generally above the Roman level, but, even where the water does not reach, there is a great deal of damp sucked up by capillary attraction, so that there is no chance, even if any papyri were found in Alexandria, of their being legible at the present day. Mr. Hogarth emphatically expressed his conviction that, whether the great libraries were totally destroyed or not, there are not under the houses of Alexandria at this day literary remains of any one of them. One of the main reasons for stopping the work at Alexandria was that even below the water level everything was found to be in the utmost state of ruin; walls knocked down, pavements ripped up, everything as it would be left after the most awful sack and pillage. This had been the experience of every excavator there. The explanation of this fact could only be sought, he thought, in the history of Alexandria, and he suspected that the Arabs were more responsible for it than even the early Christians or the Roman mob. After the Arab conquest, any of the books which remained would naturally drift from Alexandria to Cairo. It is not, however, in the rainy delta that they must be sought, he declared, but higher up the Nile, where man has been less active. It is only to Egypt, he said, that we can look with any confidence, to the Fayum and to the dry upper valley of the Nile, for the best classics—perhaps for Sappho and Menander—and for the missing early Christian literature.