THE EVILS OF TRADES' STRIKES.

We take the following from the last number of the *London Quarterly*, it being part of a most able article called forth by the late "strike" among the building trades in London:—

"If strikes and combinations could elevate the condition of labor, Dublin must now have been the paradise of working men. The operatives there, with true Celtic vehemence, have thrown themselves heart and soul into the Unions, and have fought their battles with a devotion worthy of a better cause. Moreover, they have been almost uniformly successful; but their victories have been even more disastrous than defeats. Dublin was formerly the seat of numerous extensive and highly prosperous manufactures and trades. One after another these various branches of industry were ruined by strikes. Flannel, silk, lace, gloves, almost ceased to be manufactured, and the best Irish workmen migrated to England and Scotland. The wretched and poverty-stricken 'Liberties' of Dublin—untroubled by machinery and capital, but infested with pauperism in its most revolting forms—still testify to the ruin inflicted on the trade of Ireland by the combinations of her operatives. O'Connell himself admitted that Trades' Unions had wrought more evil to Ireland than even absenteeism and Saxon maladministration. The monopoly and restrictions enforced by the Dublin unionists were most rigid; but, as usual, their heaviest pressure was upon the working people outside of their combinations, who were sacrificed without mercy. Unskilled labor was paid as low as 6d. a-day in the very shops in which the unionists were striving to keep up their own wages at an unnatural rate. They prescribed a minimum rate of wages for themselves, so that the worst workman should receive the same as the best. They left little or no choice to the employers in the selection of their men; and the master in want of an additional hand had to go to the Trades' Union and take the person who stood first on their register. 'Knobsticks,' or non-unionists were rigidly excluded; and if any unprivileged man ventured to work at any Union trade it was at the peril of his life. Indeed, several poor wretches were assassinated at the expense of the Unions, and the murderers remained undiscovered. No organization could have been more perfect; and its result was ruin. The shipwrights and sawyers carried every point with their masters; and in the course of a few years there was not a single master-shipwright in Dublin. If vessels frequenting the port required repairs, they were merely cobbled up so as to insure their safety across the channel to Belfast or Liverpool. The Dublin iron manufacture was destroyed in the same way. Mr. Robinson, an iron-master, was prohibited by his men from using a machine which he had invented to meet the competition of English-made nails; and the trade in consequence left Dublin, never to return. Another manufacturer, anxious to execute some metal works in Dublin, in order that Irish industry might have the benefit, found to his dismay that he was precluded from competing with England, not by any local disadvantages, or want of coal or iron, but solely by the regulations enforced by his own workmen. It was thus that the iron trade went down. O'Connell estimated that at least half a million a-year had been lost to the Irish capital in wages alone, through the combinations of the unions. Almost the only branch of trade in Dublin against which strikes failed has been that of coach-building; and it has accordingly been preserved. The Messrs. Hutton held their ground with heroic perseverance. The unionists battered their carriages, cut the silks and laces, beat their foremen, and compelled the masters to ride home armed and guarded; nevertheless, they persisted in carrying on their business in their own way, and by this means kept up their splendid coach manufacture, which would doubtless otherwise have been driven out of the island. The strike infatuation ruined the trade of other districts in Ireland. An Irish capitalist erected a costly manufactory at Bandon, and succeeded in obtaining a large contract. He bought machinery; the workmen worked till it had been erected, and then struck for increased pay. 'We know,' they said, 'that you have got a contract in Spain and Portugal, and you must, therefore, give us higher wages.' The proprietor gave the increase demanded, worked out his contract, and then abandoned the manufactory. The consequence was a loss to the Bandon work-people in wages of about £12,000 a-year. Dr. Doyle stated before the Irish Committee of 1830, that the almost total extinction of the blanket trade of Kilkenny was attributed to the combinations of the weavers. No sooner was it known that any manufacturer had taken a contract than the weavers immediately insisted on an advance. The consequence was that manufacturers would not enter into contracts; they withdrew their capital, the blanket trade was ruined, and weavers became paupers, and had to be maintained at the public expense. Such are only a few illustrations of the triumphs of strikes in Ireland."

THE WAY THE TEMPERATURE OF OUR BODIES IS REGULATED.

For thousands of years before mankind knew anything of the property of heat to become latent, our Maker had been using this property to adjust the heat of our bodies. The supply of heat to our systems is furnished by the lungs, which operate precisely like a small furnace, producing a slow fire in our breasts, burning the carbon in the fat and other portions of our food, and thus generating a constant supply of caloric. The heat thus produced varies in amount; when we are exercising violently our breathing becomes more rapid, and thus the fire in our lungs is fanned, and the quantity of heat generated is greater than when we are at rest. As it is necessary that the several fluids and solids of which our bodies are composed should be kept at a temperature of about 98°, provision had to be made for carrying off this heat in quantities proportioned to the supply. A part of it is constantly going off by radiation. It is the nature of heat, as soon as it is produced, to fly away in every direction in straight lines, with a velocity of about 200,000 miles in a second; if it meets any body which has a nature adapted to absorb it, it enters into the body, making it warm; if it strikes a reflecting surface, like polished steel, it rebounds from it as an elastic ball does from the side of a building; and if it meets no obstruction, it speeds its straight and swift flight away into the depths of infinite space. It is not, however, by radiation that the temperature of our bodies is adjusted, but by evaporation. If we place an open vessel of water over a fire, we can never raise the temperature of the water above 212°, however intense may be the heat of the fire. At 212° water changes from the liquid condition to that of vapor, and in this change it absorbs and renders latent about 1,000° of heat. If we take a mass of water of the temperature of 212° and pass 1,000 degrees of heat into it, the water will all be changed into vapor, and the vapor will be no hotter, sensibly, than the water was before it had received this great quantity of caloric; the 1,000° of heat have been absorbed and hid, or rendered latent. It is consequently very easy to keep any vessel, or any substance, at a constant temperature of 212° by simply placing it in a water bath. If it had been desired to keep our systems at this temperature the process would have been simple: our lungs would have been made sufficiently large, and the supply of caloric sufficiently abundant, to keep the blood in our veins literally boiling. But the temperature required for the proper action of our muscles and the proper operation of the various viscera of the system is not 212° but 98°, and to maintain this temperature, nature makes use of the same property which substances have of rendering heat latent by their passage from the liquid to the aeriform state, which we use in the water bath. There is no man living who has not had many barrels of water pass out through the pores of his skin in the form of invisible vapor—insensible perspiration, as the physiologists call it. It takes 1,000° of heat to create this vapor from the water of which it is formed. When we are at rest and the action of our lungs is moderate, the insensible perspiration is correspondingly slow, and when a more rapid action of the lungs generates a greater amount of heat, the perspiration is correspondingly increased; and in this way the temperature of our bodies is regulated.

SOME STATISTICS OF TOBACCO.

The Dean of Carlisle has recently delivered a lecture in England upon the subject of tobacco, from which we gather some interesting statistical information concerning the use of the weed in that and other countries.

In 1856, thirty-three millions of pounds of tobacco were consumed in England, at an expense of £8,000,000, to say nothing of vast quantities smuggled into the country. There is a steady increase upon this consumption, far exceeding the cotemporaneous increase of population. In 1821, the average was 11.70 oz. per head per annum; in 1851 it had risen to 16.36, and in 1853 to 19 oz., or at least at the rate of one-fourth increase in 10 years. There are 12 city brokers in London expressly devoted to tobacco sales, 90 manufacturers, 1,569 tobacco shops in London, 7,380 workmen engaged in the different branches of the business, and no less than 252,048 tobacco shops in the United Kingdom. And if we turn to the continent, the consumption and expenditure assume proportions perfectly gigantic. In France much more is consumed in proportion to the population than in England. The emperor clears 100,000,000 francs annually by the government monopoly. In the city of Hamburg 40,000 cigars are consumed daily, although the population is not much over 150,000; 10,000 persons, many of them women and children, are engaged in their manufacture; 150,000,000 of cigars are supplied annually, a printing press is entirely occupied in printing labels for the boxes of cigars, &c., and the business represents £4,000,000. In Denmark the annual consumption reaches the enormous average of 70 ounces per head of the whole population; and in Belgium even more—to 73 ounces, or 3 pounds and 3-5ths of a pound per head. In America the average is vastly higher.

It is calculated that the entire world of smokers, snuffers and chewers, consume 2,000,000 of tuns of tobacco annually, or 4,480,000,000 of pounds weight—as much in tunnage as the corn consumed by 10,000,000 Englishmen, and actually a cost sufficient to pay for all the bread corn in Great Britain. Five millions and a half of acres are occupied in its growth, the product of which, at two pence per pound, would yield £37,000,000 sterling. The time would fail to tell of the vast amount of smoking in Turkey and Persia—in India all classes and both sexes indulge in this practice; the Siamese both chew and smoke, in Burmah all ages practice it—children of three years old and of both sexes; China equally contributes to the general mania; and the advocates of the habit boast that about one-fourth of the human race are their clients, or that there certainly are one hundred millions of smokers!

LATEST DISCOVERIES IN AFRICA.

A letter was read before the American Geographical and Statistical Society, on the 5th inst., addressed to that body by the celebrated African traveler, Dr. Livingstone, under date of "Tette, Zambesi, Feb. 22, 1859," in which he gives some interesting particulars of his latest discoveries. Referring to his explorations of the Zambesi river, he says:—

"We are all quite sure now, that, during at least eight months of each year, a steamer of four or five feet depth of draught could trade without embarrassment. The reason why so little has been known about the Zambesi may have been the branching in the stormy promontory, by which it was hidden from navigators. And these easy-chair geographers, dreaming over the geography of Ptolemy, actually put down the Zambesi as flowing into the sea at Quilimane, which in his days it probably did, though not a drop of Zambesi water in ordinary circumstances reaches that port. Had some branch of the Anglo-Americans planted their footsteps on its banks, the world would have known all about it long ago; and no one would have ventured to play with the river as has been done, making it loose itself and flow under the Kalahari desert."

Dr. Livingstone and his party ascended a branch of this river, the "Shire," and he gives some account of the people and things along its banks, thus:—

"So far as we can ascertain, this river has never been explored by Europeans before. One part of the luxuriant valley of the Shire is marshy and abounding in lagoons, in which grow great quantities of the lotus plant. The people were busy collecting the tubers, which when boiled or roasted, resembled chestnuts. They are thus real Lotophagi, such as are mentioned by Herodotus. Another part of the valley abounded in elephants. Herd upon herd appeared as far as the eye could reach; and noble animals they were. We sometimes chased them in our little steamer; for the Shire branches off occasionally, and forms islands. The upper part of the valley is well peopled, and many of the hills are cultivated high up. But never having seen Europeans before, they looked on us with great suspicion. They watched us constantly, well armed with bows and poisoned arrows, ready to repel any attack, but no incivility was offered when we landed, nor were our wooding parties molested.

The greatest coward fires first; so, thinking we had as much pluck as they, we did not lift a gun, though we saw them ever-ready to fire, or rather shoot. We did nothing to make us ashamed to return, and if we have their confidence, we may go further. They had abundance of provisions and sold them at a cheap rate; also cotton of two kinds—one indigenous, short in the staple, but very strong and woolly to the feeling—the other very fine and long in the staple. We brought a number of specimens of their spindles and yarn, and, as it was quite equal to American uplands, did not offer them any American seed. The cotton plant is met with everywhere, and though burned down annually, springs up again as fresh and strong as ever. They grow sugar cane too, bananas, manioc, &c. The men are said by the Portuguese to be very intelligent, but very wild. The women wear the lip ornament, which is a ring, about four inches in circumference, and nearly a quarter of an inch thick, passing through a hole in the lower lip, which is thus made to protrude frightfully. I am thus particular, [the doctor is somewhat waggish], in case our own ladies, who show a noble perseverance when fashion dictates, may wish to adopt lip ornaments."

Of the climate, and the health of the party. Dr. Livingstone, in conclusion, writes as follows:—

"We were warned by the fate of the Niger expedition not to delay among the mangrove swamps of the delta—the very hot-beds of fever. We accordingly made all haste away, and we took daily a quantity of quinine. The period of the year which I selected, though not the most favorable for navigation, was the most so for health, and thank God our precautions were successful. The Kroomen, from Sierra Leone have had more of it than we, until a short time ago, when it was the most unhealthy season of the year even to the natives. Three of us have had touches of the complaint, but are all now quite well. I have never had a day's illness since my return. We find too, that, so far from Europeans being unable to work in a hot climate, it is the want of work that kills them. The Portuguese all know that so long as they are moving about, they enjoy good health, but let them settle down, and smoke, or drink brandy, fever follows and the blame is all put on the climate."

This letter was written in acknowledgment of the author's election as a corresponding member of the American Geographical and Statistical Society.

At the same meeting Mr. Folsom introduced M. Du Chaillu, the African traveler, who read a paper detailing his adventures for four years in Central Africa, under the meridian, among the cannibal and other tribes. The trade of these savages, he said, seemed to be confined to an exchange of dead bodies on which to feed. Human bones were found in large quantities, everywhere around their villages. He was never in danger amongst them, inasmuch as he was regarded as a magician, and they were afraid of him. The tribes of negroes in Central Africa, other than the cannibals, were numerous. He had visited 35 of them, but found, notwithstanding that, the country was generally very sparsely populated.

The gorilla, that terrible monster which bears such an unpleasant likeness to man, formed perhaps the most interesting topic of M. Du Chaillu's lecture. Its existence was long doubted by naturalists, and to America belongs the credit of discovering, or rather re-discovering it. The lecturer exhibited the skull of one of these animals, and gave a description of their habits, size, strength &c., in terms with which, from their frequent publication, readers are sufficiently familiar, but which were listened to on this occasion with new interest from the fact that the speaker had seen and shot them in their native haunts. Their tremendous roar, he said could be heard four miles off, and the beating of their hands upon their chest (a mode of expressing their anger) is audible at a distance of one mile.

THE "DIAMONDS" OF PENNSYLVANIA.—The shipments of coal from the different coal regions in Pennsylvania, except the western part of the State, amounted last year to 7,804,000 tuns, which, at $3.50 per tun in this market, would make its value over $27,000,000. Adding about 4,000,000 of tuns more for the western part of the State, and the value of the entire supply will not be far short of $35,000,000. This is pretty fair for a single product of the State.—*Philadelphia Ledger.*

BOILER INCRUSTATIONS.

MESSRS. EDITORS:—In the inestimable columns of the SCIENTIFIC AMERICAN I often see various recipes for removing the incrustations of steam boilers, the ingredients usually recommended are molasses, hemlock bark, grease, &c. Now it is not my intention to assert that there is no virtue in these materials, or that they have not produced the desired result; for certainly those men who have tried them would not recommend such recipes to the public unless they had been benefited by them; but I must say that *we* have tried all those things with little or no effect; therefore I caution those that rely on hemlock bark or molasses to perform the labor which I think they ought themselves to do. When I say "we have tried all," I mean myself and my firemen, for we work together and are not afraid to take a pick and enter the boiler and pick out the scale; and this, I think, is the only reliable way of doing the thing effectually. I offer this as my experience, not thinking that there is anything new in the advice, or that every engineer does not already know it, but merely to point out a simple fact which, though perhaps well known, is often neglected. J. W. H.

Newburgh, Ohio, Jan. 14, 1860.

[We regret that our correspondent has not given us the minutiæ of his experience with the substances to which he has referred, as being non-effectual in preventing incrustations forming in boilers. We learn from him that astringent substances and molasses placed in boilers fed with "hard" water, to prevent scale forming, have failed with him, although they have proved successful in many cases; and that his present practice is to allow the scale to form from time to time in his boiler, until it acquires a certain thickness; then his engine is stopped, the boiler water is run out, when he with his firemen get into it and pick off the scale with tools. An awful waste of coal takes place in all boilers affected with incrustations, because these are non-conductors. In tubular boilers it is almost impossible to pick off the scales from the tubes; therefore this advice, while it may be good to some persons, is assuredly not to be considered a standard for governing the practice of all engineers. Substances put in boilers to prevent incrustations are, no doubt, lesser evils employed to obviate greater ills; and so far as this view of the question is concerned, we perhaps agree with our correspondent. Our standard remedy for the prevention of incrustations is the use of *pure* water. Those who run steam engines in localities where spring and river waters are "hard," should make large reservoirs and cooling ponds to retain rain water for their boiler feed, or should use some apparatus such as that of Mr. Weissenborn, illustrated on page 113, Vol. XI, (old series) SCIENTIFIC AMERICAN, for purifying the "hard" water before it is admitted to the boiler.—EDS.

DIAMOND CEMENT.—This is a most excellent material for repairing broken china, ornaments, jewelry, and nicknacks. Take half an ounce of gum ammoniac and a tablespoonful of water; melt them together till they form a milky fluid. Then take one ounce of isinglass and six wine-glassfuls of water; boil together till the quantity is reduced one half; then add a glassful and a half of strong spirits of wine. Boil this mixture for three minutes, and then strain it through muslin, adding after, while hot, the ammoniacal fluid formerly made. Finally, add half an ounce of tincture of mastic resin. The cement thus made is best preserved in small phials, in which it sets when cold. When required for use it can be liquified by placing the phial in a cup of boiling water.

WHERE DO SEABIRDS SLAKE THEIR THIRST?—The question is often asked, where do seabirds obtain fresh water to slake their thirst, but we have never seen it satisfactorily answered till a few days ago. An old skipper with whom we were conversing on the subject said that he had frequently seen these birds at sea, far from any land that could furnish them water, hovering around and under a storm cloud, clattering like ducks on a hot day at a pond, and drinking in the drops of rain as they fell. They will smell a rain squall a hundred miles or even further off, and scud for it with almost inconceivable swiftness. How long seabirds can exist without water is only a matter of conjecture, but probably their powers of enduring thirst are increased by habit, and possibly they go without it for many days, if not for several weeks.—*California Spirit of the Times.*

A COLUMN OF VARIETIES.

Starch, sugar and alcohol are all composed of carbon, hydrogen and oxygen; starch containing 72 lbs. of carbon to 80 of oxygen and 10 of hydrogen; sugar, 72 lbs. of carbon to 88 of oxygen and 11 of hydrogen; and alcohol, 48 lbs. of carbon to 32 of oxygen and 12 of hydrogen.....There are in circulation in Great Britain 50,000,000 sovereigns and about 120,000,000 shillings. .... The growth of the English race is attested by the fact that, when George III. ascended the throne, in 1760, the population of the British empire, including the colonies, did not number 12,000,000, but the populations in the Old and New World who now speak the English language may be estimated at 60,000,000.....In our large cities many boys and girls are found in wet seasons sweeping the street-crossings In the city of London these little mud-larks number from 500 to 600 boys. Their earnings and pickings are estimated at about $15,000 a year..... .It is exceedingly difficult to distinguish animals from vegetables among the lower and simpler forms of organic life. Independent motion in one of this class of organisms is so far from being a proof of animal life, that it is rather evidence that the thing is a vegetable.....Microscopic plants and animals are such as are invisible to the naked eye.....The lowest form of microscopic plant consists of a single cell or sac, filled with fluid, and generally containing one or more solid granules. The simplest animal is also a single cell, generally containing no granules. The green slime that spreads itself over stone walls in damp places is made up of one of the lowest forms of plants, consisting of myriads of distinct vegetables, each of which is wholly invisible to the naked eye.....The bright star now seen in the northeast in the early evening is the planet Jupiter. It is nearly opposite the sun, and consequently some 190,000,000 of miles nearer to us than it will be next summer.....The moon, while it apparently revolves from east to west around the heavens with all the stars once in 24 hours, moves from west to east among the stars about 12° in the same time.....In the daguerreotype, the dark parts are the iodide of silver and the light parts an amalgam of silver and mercury.....The hard metal, irridium, which is used for tipping the points of gold pens, is worth, when pure, $120 an ounce—more than six times as much as gold.....California gold is an alloy, 1,000 lbs. generally consisting of about 880 lbs. of gold, about 100 lbs. of silver, and the remainder of other metals.....The word "California" is formed of two Spanish words meaning hot furnace; and any one who has passed a summer in the interior of that State is ready to believe that it is rightly named, though on the coast a fire is needed every day through the year, the summer being just about as cold as the winter.....Strawberries are sold in the San Francisco market every month in the year.....The republic of Florence, in Italy, issued a coin of pure gold (24 carats fine) weighing about one-eighth of an ounce, and for more than 600 years this coin has not been varied in weight or fineness. A helmet of aluminum has recently been made in France. The soldering and gilding were successfully performed and a light and strong helmet produced. It will resist a blow better than brass, but not as well as steel.....The steamer *Vanderbilt* has made the quickest western passage from Europe to America that has ever been made by any ship, and the *Persia* the quickest eastern passage from America to Europe.....The ferry boats plying between New York and Brooklyn are lighted with gas. It is carried in india-rubber receivers.....Some microscopic plants are covered with a thin film of silica, which is so comparatively indestructable that it will last for many thousands of years after the interior is decomposed. There are large beds of rock composed almost wholly of these coverings of minute plants.....According to the "Watchmaker's Manual," just published by John Wiley, of this city, the number of watchmakers in the United States, in 1850, was 2,901.....Mason & Dixon's line is the boundary line between Maryland and Pennsylvania, surveyed by two able and learned English surveyors at the expense of the heirs of William Penn and Lord Baltimore. It cost the Penn family in the neighborhood of $100,000. Mason & Dixon measured an arc of the meridian in the course of their surveys; and this measurement is cited now in works on astronomy, having been one of the measurements by which the figure of the earth was ascertained.