

the handicraft and everyday objects used by the Incas, rather than an historic survey.

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**Carbon Wool.**

Messrs. Constant and Henri Pelabon have recently brought out the fact that carbon is produced in the form of fine thread-like filaments in some forms of coke furnaces. These filaments when agglomerated in a mass, form a material which may be termed *carbon wool*. The carbonization of bituminous coal in the formation of coke for industrial purposes gives rise to a deposit of a thread-like character which is formed in the mass of the coke itself. The collection of such filaments gives rise to the product which the authors call carbon wool, and they have determined to some extent the structure and composition of the product. These deposits, which are never observed in recuperation furnaces where the coal is distilled in a closed chamber, are found especially in coke which comes from open furnaces, particularly of the older types. Here the air comes into the furnace through openings and the gas is allowed to burn in the apparatus. All the flames unite and are concentrated toward an opening placed in the upper wall. Near the opening is a region which is much hotter than the other parts of the furnace, and it is here that the deposits of filiform carbon are found.

These deposits occur inside of geode-like cavities in the coke. Some parts of the carbon wool formed by the intermeshed filaments are gray and other parts quite black. By observing the separate filaments of gray wool under the microscope, they are found to have a cylindrical form in general. The surface is seen to be covered by a glaze such as is observed on the neighboring coke masses. Sometimes filaments are seen which have an alternate contracted and expanded section, as if formed of a great number of cones placed one after another. No trace of crystallization was observed, however. In the carbon wool small black masses are sometimes noticed, about the size of a pinhead. These consist of a mass or roll of very fine and closely packed filaments which are formed on some parts of a coarser filament. The black filaments have a dead color and the surface is covered with asperities which are sometimes disposed quite regularly. These filaments are seen to be formed of a series of rings. One of them had 6 rings per 1-250th inch. The thicker filaments are generally from 0.0012 to 0.0035 inch in diameter. The very fine threads which form the black masses above mentioned and seem to be attached to the thick filaments, are much finer and measure about 0.0008 inch. The length is generally about 2 inches, but may reach as high as 3 inches.

A number of experiments were carried out in order to determine the nature and composition of the threads. By burning them in oxygen, carbon dioxide is formed. Placed in a Moissan oxidizing mixture, with the addition of nitric acid and chlorate of potash, the filaments seem to be either dissolved or changed to a yellow substance. This latter is supposed to be a graphitic oxide. It deflagrates and produces quantities of sparks when heated to 300 deg. C. The carbon wool which is produced in the coke furnace is somewhat similar to that which Schutzenberger formed by passing cyanogen gas over a mixture of retort carbon and cryolite heated to redness in a porcelain tube.

**Some Troubles of the Explorer.**

Prof. Flinders Petrie says in the London Times: "Unhappily, the growing lawlessness of Egypt, which Lord Cromer noticed in each of his recent reports, has affected our work, and 'a large number of offenses, not very serious in themselves, but which cumulatively become serious, have been committed, and but too often have been committed with impunity.' (Report, 1902, p. 40.) A statue was stolen from my house; and though the footprint of the thief exactly agreed with the very peculiar foot of one of the men who were notoriously accused in the village, and all the links were named by witnesses, yet no conviction could be obtained; £35 are said to have changed hands as bribes over this. Next, my workmen from Quft were subject to a general conspired assault in the market, and each robbed of his money at once. But no redress whatever could be obtained. The police officer added to the injury by taking away one man who had been beaten to see the doctor, who did nothing but detain him till he paid 10s. bribe to be let go. Last year the relations of a man who died of fever were mulcted of £6 by another doctor; and, on my complaining, the official inquiry resulted in giving an account which was absurdly false, to my personal knowledge.

"It is impossible that the present machinery can work to elicit the truth. Witnesses are examined by petty officers, who dictate the final statement of evidence at their own will; and the witnesses are sum-

moned, through their sheikh, who is the first man to be 'squared' by the offenders, and, 'who, they think, will assuredly sooner or later endeavor to wreak his vengeance on them.' (Report, p. 36.) Such a system, dating long before the British occupation, is the most perfect for facilitating bribery and the suppression of truth. This is not the place to discuss the remedies. Happily Lord Cromer considers that 'the points which most require attention are the police, the department of justice and sanitation.' I do not touch on more personal threats to our party and being fired at, as I only wish here to refer to the failure of justice. But matters have gone so far that we must look for safety to our own resources rather than to the law, which has in each case proved to us useless."

**A HARMLESS REPTILE.**

BY A. R. M. SPAID.

If there is anything we need to teach more than another, it is that numerous insects and reptiles, which are held by many persons to be poisonous, are perfectly harmless. This is especially so of the pine-tree lizard, or, as it is often called, the fence lizard. It is true that the lizard has teeth, but they are almost too small to be seen, the finely serrated jaws feeling just like the rough lips of a bass. Moreover, these little saurians seldom attempt to bite, and make interesting pets.

I have a box two feet long, one foot high, and six inches wide, the sides being of glass and the bottom covered with white sand to a depth of two inches. With this on my study table I have a good opportunity for watching the five interesting inmates as they eat and sleep. Two are males and three are females, easily



TAME LIZARDS AS ORNAMENTS.

distinguished by their color. Their color seems to be influenced by the conditions of the atmosphere. After a rain or when they first come out of their hiding places in the morning, many of them are very dark. By holding them in the hand a short time, the color changes very perceptibly.

When my pets are ready to go to bed, they dive into the sand, where they remain covered up until morning. Then here and there a head bobs up, and gradually the saurians either stretch out on the sand or prop themselves up on their forelegs in a most comical manner. They soon become alert, and show how keen their appetites are if flies, crickets, grasshoppers, or katydids are thrown to them. Frequently, when one has seized a particularly fat grasshopper, another will attempt to take it away. They are also fond of roaches, but care nothing for hard-shelled beetles. They will not seize an insect unless it is moving, and one often knows when the attack is to be made, as the lizard opens its mouth just a little way before springing upon its prey. It uses its tongue with the same agility as does the frog or toad, and gorges a large insect pretty much the same way as a snake swallows a toad.

In burrowing in the sand they make several strokes with the right or left forefoot, changing from one to the other; but when this dirt is to be worked out of the way, they use their hind feet with alternate strokes with great rapidity. The female in this way evidently digs into the ground, where she deposits a dozen or more white eggs, which she leaves for the warm earth to hatch.

I know of nothing else so easily tamed. When caught in the hand they seldom attempt to escape.

Placed on one's clothing, they often sit in the same position for a long time. Knowing this peculiarity, I decorated my little son with nineteen lizards, just to prove to some skeptical people that I was willing to back up my assertions with a demonstration. Yet one observer who witnessed it declared that it was risky, and that he knew a man who had lost a finger from the venomous bite of a fence lizard. A teamster who was not afraid to handle a snake could not be persuaded to touch a lizard, although they both saw a finger thrust into a little saurian's mouth. Ignorance is hard to banish, but it easily drives away the truth.

They are not only harmless, but beneficial. Lying on the fences which surround the field of growing crops, they devour many insects as these attempt to enter the fields, thus benefiting the farmers, who have no appreciation of their value.

**A Strange Use for Skimmed Milk.**

BY GUY E. MITCHELL.

A use to which skim milk, sour milk, buttermilk, or even whole sweet milk is not often put is paint-making, yet this product of the dairy makes possibly one of the most enduring, preservative, respectable, and inexpensive paints for barns and outbuildings. It costs little more than whitewash, provided no great value is attached to the milk, and it is a question whether for all kinds of rough work it does not serve all the purposes and more of the ready-mixed paint, or even prime lead and paint mixed in the best linseed oil. It is made as follows, and no more should be mixed than is to be used that day: Stir into a gallon of milk about three pounds of Portland cement and add sufficient Venetian red paint powder (costing three cents per pound) to impart a good color. Any other colored paint powder may be as well used. The milk will hold the paint in suspension, but the cement, being very heavy, will sink to the bottom, so that it becomes necessary to keep the mixture well stirred with a paddle. This feature of the stirring is the only drawback to the paint, and as its efficiency depends upon administering a good coating of cement, it is not safe to leave its application to untrustworthy or careless help. Six hours after painting this paint will be as immovable and unaffected by water as month-old oil paint. I have heard of buildings twenty years old painted in this manner in which the wood was well preserved. My own experience dates back nine years, when I painted a small barn with this mixture, and the wood to-day—second growth Virginia yellow pine—shows no sign whatever of decay or dry-rot. The effect of such a coating seems to be to petrify the surface of the wood. Whole milk is better than buttermilk or skim milk, as it contains more oil, and this is the constituent which sets the cement. If mixed with water instead of milk, the wash rubs and soaks off readily. This mixture, with a little extra of the cement from the bottom of the bucket daubed on, makes the best possible paint for trees where large limbs have been pruned or sawed off.

**The Current Supplement.**

The current SUPPLEMENT, No. 1463, opens with an illustrated account of the Stewart-Eaton steam-operated cinder pot. Mr. Stephen de Zombory presents an excellent discussion of aerial tramways as economical means of transportation. His paper is illustrated with engravings of historical interest, among them one showing a Roman wire cable dug up in Pompeii, another a historical German rope tramway reproduced from an old print. Commissioner Lindenthal's proposed improvement of the Brooklyn Bridge, whereby the carrying capacity of the structure will be materially increased, is described. Mr. Albert P. Sy's account of the nitrocellulose stability tests is concluded. Prof. W. M. Davis' paper on the geography of the United States, read before the American Association for the Advancement of Science, is also printed.

**The Scientific American at the South Pole.**

A subscriber, who is at the head of one of the large transatlantic steamship companies, informs us that through his instrumentality the SCIENTIFIC AMERICAN is about to take a southerly journey which will certainly carry it further toward the South Pole than it has ever traveled before, and probably as far, if not farther, south than any printed matter has yet made its way. He tells us that in packing a box with articles, which he was sending out to a friend by the relief ship which will shortly sail from Tasmania in search of the "Discovery," he included a year's file of the SCIENTIFIC AMERICAN. With the papers was sent a strict injunction that one copy at least was to be nailed to the South Pole! While we must confess that we are scarcely as confident in the near discovery of the pole as our subscriber, we must confess that among the remote corners of the earth to which the SCIENTIFIC AMERICAN has penetrated, this last is decidedly the most unlooked-for and interesting.