FACTS USEFUL AND CURIOUS.

The greyhound runs by eyesight only, and this we observe as a fact. The carrier pigeon flies his 250 miles homeward by eyesight—namely, from point to point of objects which he has marked; but this is only our conjecture. The fierce dragon-fly, with 12,000 lenses in his eye, darts from angle to angle with the rapidity of a flashing sword, and as rapidly darts back, not turning in the air, but with a clash reversing the action of his four wings, and instantaneously calculating the distance of the objects, or he would dash himself to pieces. But in what conformation of the eye does this consist? No one can answer.

A cloud of 10,000 gnats dance up and down in the sun, the minutest interval between them, yet no one knocks another headlong upon the grass, or breaks a leg or wing, long and delicate as these are. Suddenly, amidst your admiration of this matchless dance, a peculiarly high shouldered, vicious gnat, with long, pendant nose, darts out of the rising and falling cloud, and, settling on your cheek, inserts a poisonous sting. What possessed the little wretch to do this? Did he smell your blood in the mazy dance? No one knows.

A carriage comes suddenly upon a flock of geese, on a narrow road, and drives straight through the middle of them. A goose was never yet fairly run over, nor a duck. They are under the very wheel and hoofs, and yet somehow they contrive to flap and waddle safely off. Habitually stupid, heavy and indolent, they are nevertheless equal to any emergency.

Why does the lonely woodpecker, when he descends his tree and goes to drink, stop several times on his way, listen and look round, before he takes his draught? No one knows. How is it that the species of ant, which is taken in battle by other ants to be made slaves, should be the black, or negro ant? No one knows.

The power of judging of actual danger, and the free and easy boldness which results from it, are by no means uncommon. Many birds seem to have a most correct notion of a gun's range, and while scrupulously careful to keep beyond it, confine their care to this caution, though the most obvious resource would be to fly right away out of sight and hearing, which they do not choose to do. And they sometimes appear to make even an ostentatious use of their power, fairly putting their wit and cleverness in antagonism to that of man, for the benefit of their fellows. We lately read an account, by a naturalist in Brazil, of an expedition he made to one of the islands of the Amazon to shoot spoon-bills, ibises and other of the magnificent grallatorial birds, which were most abundant there. His design was completely baffled, however, by a wretched little sandpiper that preceded him, continually uttering his tell-tale cry, which at once aroused all the birds within hearing. Throughout the day did this individual bird continue his self-imposed duty of sentinel to others, effectually preventing the approach of the fowler to the game, and yet managing to keep out of the range of his gun.

THE BEST VEHICLE.—An anecdote is told of a physician who was called to a foreign family to prescribe for a case of incipient consumption. He gave them a prescription for pills, and wrote the direction: "One pill to be taken three times a day in any convenient vehicle." The family looked in the dictionary to get at the meaning of the prescription. They got on well until they got to the word vehicle. They found "cart, wagon, carriage, buggy, wheelbarrow." After grave consideration they came to the conclusion that the doctor meant the patient should ride out, and while in the vehicle he should take the pill. He followed the advice to the letter, and in a few weeks the fresh air and exercise secured the advantage which otherwise might not have come.

NEW INVENTIONS.

We publish descriptions of the following new inventions, obtained through Dewey & Co., *Mining and Scientific Press* Patent Agency, San Francisco:

HORSE HITCHING DEVICE.—Reuben Seiders, 737 Howard St., S. F. This invention relates to an improved device for securing horses at points where it is necessary to leave them; and it consists in the employment of a rod, one end of which may be dropped upon the ground at will. The other end is hinged to a slide which moves in a hollow barrel or guide, said guide being secured beneath the vehicle in a horizontal position. A rod is secured to the slide and extends toward the front, having a loop or ring to which a line may be attached and led to the horse's bit. When a stop is made the hinged rod may be let down so that its end rests upon the ground, and any forward movement of the horse will draw the sliding rod back into the tube or guide, thus pulling upon the rein or line, and the horse's mouth. A spring in the rear of the tube forces the rod forward when the horse backs or the strain is relieved. This device has been applied to a number of vehicles, and the inventor informs us that the results are very satisfactory.

RAILROAD RAIL JOINT.—Silas Harris, 7 Liberty St., S. F. The ordinary form of rail joint is made by means of fish-plates on each side of the rail, crossing the joint, slots being formed through the fish-plates and rail, so that bolts may pass through them, these bolts being secured in place by nuts. The difficulty with this connection is that the nuts are continually being shaken loose until the bolts fall out and the plates drop off, leaving the meeting ends of the rails without proper support. This difficulty is obviated by discarding the screw bolts entirely, and using bolts which are held in place by an eccentric, which, while it can be loosened when desired, will not jar loose by the passage of trains. This device consists in binding the fish-plate against the sides of the rail by means of an eccentric horizontal bolt or fastening connected with said fish-plate through peculiarly-formed bolts or plates. The eccentric joins the parts together immovably, and dispenses with all nuts or screw-bolts.

PLOWSHARE FASTENER.—Jacob P. Patery, Dunnigan, Yolo Co., Cal. Patented May 25, 1880. No. 227,991. The mold-board and land-side are fastened to the share by levers provided with cams or catches. The mold-board is secured to the curved beam and the land-side by means of braces, the lower edge of said mold-board resting on a flange on the upper edge of the land-side. On the end of the brace is a fulcrum of a compound lever, the smaller arm of said lever being pivoted on a swinging arm. On the end of this smaller arm is found a hook which grasps a stud on the under side of the share. A slot is found in the end of the brace and another in the end of the land-side, into which fit the studs found on the share, thus steadying the share.

ANIMAL TRAP.—W. J. Webber, Hollister, San Benito Co., Cal. Patented May 25, 1880. No. 227,935. This trap is intended for the capture of animals, birds, etc., and it consists in the employment of one or more needles or sharpened spears, moving in guides and provided with an elastic spring by which the needle is forced forward when released by the action of a trigger. This trigger is operated by the attempt of the animal to pass its free end, and this end is concealed by a stalk, weed, or any natural object. In combination with these devices a guard or protector is employed to be used while the trap is being set or carried about.

NATURAL LIME.

Among the recent discoveries is "natural lime," which occurs in Kansas. It is found in large beds; is of a fine, white color and very fine in texture. It is also soft, smooth and readily converted into a plastic condition by the addition of sand and water. The mortar thus made has apparently the same qualities as the best made from superior "burned lime" from the kilns. It sets and hardens quickly and turns very white.

This discovery brought out the query as to whether such a strange product as this occurs in any other section of our continent. In answer the *Scientific American* gives a letter from Wm. M. Pierson, of Fort Bayard, N. M., in which that gentleman says: "I answer, yes. From 1870 to 1874, I was U. S. Consul at Paso del Norte, Mex., and, while prospecting for silver ore, I discovered a large deposit, in what miners term pocket formation, of natural lime, located in blue limestone, in the foothills, one and one-half miles west from the city of Paso del Norte, Mex. I gave it various trials, and found it to possess all the good qualities of manufactured lime, and for whitewashing far superior to the manufactured article."

IMPROVED METHOD OF MANUFACTURING NITROGLYCERINE.—The French Academy of Science have awarded a prize of $500 to Boubing & Foucher for an improved and less dangerous method of manufacturing nitroglycerine. This method has been for some time in actual use at Vouges, France, without meeting with any accident. The process is described as follows: In the old method, in which fuming nitric acid or a mixture of it and nitric acid is made to act on glycerine, and the mass is suddenly immersed in water, the reaction often produced heat sufficient to decompose a part of the nitroglycerine, occasioning violent explosions in spite of the refrigerating processes adopted. The principle of the new process consists in obviating the greater part of the heat by first engaging the glycerine in combination with sulphuric acid, forming sulphoglyceric acid, and then destroying slowly, by means of nitric acid, the sulphoglyceric compound. Two liquors are prepared in advanced—a sulphoglyceric and a sulphonitric, the latter with equal weights of sulphuric and nitric acids. As they heat considerably they are allowed to cool, and are then combined in such proportions that the reaction takes place slowly. In the old method the nitroglycerine is separated almost instantaneously, and rises in parts to the surface, rendering washing difficult. In the new method it forms in about 20 hours, and with a regularity which prevents danger. It also goes to the bottom, and can be washed rapidly.

PAPER BOXES FROM PULP.—A late invention makes paper boxes directly from paper pulp. Boston takes the lead in the manufacture of these boxes, which are seamless, and can be made to any size or shape. The process, as described, is, that after being dried, the boxes are run through a second machine at the rate of sixty per minute, receiving, under a pressure of four thousand pounds, such embossing as may be necessary. From the time the paper stock is taken from the bales until the perfect box is turned from the machine, manual labor is entirely avoided. By the use of one set of machines, it is said, 30,000 boxes can be produced per day, at less than one-third of the lowest market price of hand-made goods, and doing the work of two hundred hands, as the process is ordinarily conducted. The paper box has come into use for an infinite variety of purposes, and this success is an important contribution to invention.

A LOCOMOTIVE working by means of compressed air has been designed by Colonel Beaumont, an English engineer, who claims that such an engine would be able to accomplish a journey of 10 miles without renewing the charge of air, and drawing two loaded carriages,