

watertight, and it contains a number of ornamental flower-beds surrounded by low brick and cement walls, surmounted by cornices which overhang 2-3 in. The surfaces of the beds are about 12 in. below the top of the walls.

On certain occasions I find worms in the back street, generally of medium to a rather large size, which have the appearance of being "drowned," although it is very rarely that life is extinct. On the esplanade they are present in large numbers. They occur at all points between the beds and the sea-wall, over which many of them must pass, for one can find them on the watertight stone undercliff. One naturally expects worms to rise after rain, but in a wet season I have known eleven wet days in succession without a single worm appearing, while on the twelfth day large numbers were to be found on the pavements, the road, and the back street. On the other hand, I have known them to occur after a rain-storm following dry weather. In several years the dates in November and January have coincided. The first thing that strikes one is that the phenomenon occurs only at long intervals, and then such large numbers participate in it. At other times one may never see a single worm. I have often wondered if it were in response to a migratory instinct.

The mystery is how these worms mount a wall 12 in. high and negotiate the overhanging cornice. On several occasions I have known quantities of "whitebait" and other things that occur at the surface of sea-water similarly strewn upon the esplanade and roads, and I have been tempted to ask if these worms have not been caught up similarly and returned to earth with the rain. W. J. LEWIS ABBOTT.

I THINK Sir Ray Lankester (*NATURE*, June 2, p. 424) will agree with me that earthworms when underground must frequently or usually be in contact with other moist surfaces. My impression is that in dry weather, when the upper layers of soil contain only adsorbed water and are what we call "dry," earthworms seek the lower layers where the particles are moist—that is, are surrounded by a surface film of liquid water, however thin this may be. When in such a moist layer the surface of the worm must at many points be obtaining its air-supply through the medium of water which is not part of itself. The air, as Sir Ray Lankester says, reaches the worm through the porous soil, and I think in part through the moisture on the surface of the particles. The statement in my letter in *NATURE* of May 19 can admittedly be read as implying that the worm was partly dipped in slime or mud, but this was far from my meaning. J. H. COSTE.

Teddington.

#### Vitality of Gorse-seed.

By way of supplementing my letter to *NATURE* of September 26, 1918 (vol. cii., p. 65), on the above subject, it may be of interest to record the fact that the seedlings arising from seed which has lain dormant in the soil for a quarter of a century have produced vigorous plants. A small part of the 20-acre field was not reploughed owing to its steepness, and the gorse seedlings which came up on it after the war-ploughing of the winter 1917-18 have been allowed to grow. They are now in their fourth season of growth, and are good-sized bushes averaging 2 ft. in height, which have been this spring a mass of bloom, like the gorse generally in this district and I believe, throughout the country.

I can also add another year, making twenty-six in all, to the vitality of buried gorse-seed; the field in

NO. 2694, VOL. 107]

question, save for the above-mentioned steep slope, was reploughed in the winter 1918-19, with the result that a fresh crop of gorse seedlings appeared the following summer. The field has now reverted to grass, and these two-year-old seedlings are being grubbed up. JOHN PARKIN.

The Gill, Brayton, Cumberland, June 3.

#### Habits of the Hedgehog.

IN the article on the hedgehog which appeared in *NATURE* of May 19, p. 375, mention is made of the widespread belief that hedgehogs suck the teats of cows. Although farmers have assured me that they have found evidence of milk on the hedgehog, I do not think that any credence can be given to the statement. The belief probably arises from the extrusion of the contents of the vesiculæ seminales of the buck hedgehog when crushed, kicked, or otherwise injured. The vesiculæ seminales are, when full, extraordinarily large in proportion to the size of the animal, and the milky fluid can easily be mistaken for cow's milk, especially when the hedgehog has rolled itself up for defensive purposes and the face has become smeared with the seminal fluid.

That hedgehogs will eat young birds I have had personal experience, but I doubt if they do much damage to game in this way.

In 1906 and 1907 several albino hedgehogs were found at Goathland, Yorkshire. I attempted to cross an albino doe with a normal buck, but when placed together the latter promptly attacked and killed it. In attempting to breed them in semi-captivity, *i.e.* in a large walled garden, I found that the bucks harried the does a good deal, thus rendering it difficult to secure a litter, and that if the nest was disturbed the mother would frequently eat her young. This proved a real difficulty in the experiments.

G. A. AUDEN.

Birmingham, May 29.

#### Principles of Picture-hanging.

THERE is no need for picture-wire (*NATURE*, May 19, p. 362; May 26, p. 395; June 2, p. 438) if the principle is adopted described in the *Times Engineering Supplement* of April, 1919, of the application of Kelvin's Five-Point principle to the picture-hanging.

A rail, say of black enamelled electric conduit tube, is supported along the wall at an appropriate height on bracket-hooks fixed in the wall, and the pictures are hung on the rail by two bent iron hooks fastened on the back of the upper edge of the frame. This gives four points of contact, and the fifth is made by a round-headed screw in the lower edge to set the face at an appropriate cant. One degree of freedom is still left of a motion of the picture sideways into the desired place. A picture is lifted off in a trice and thrown out of the window in case of fire, as of a gallery of portraits in an old mansion; and the pictures can be hung over each other, two and three deep if space is limited, as in the Royal Academy.

The principle is appropriate in a modern physical workshop for the support of apparatus, however heavy, bracketed out from the wall, if a plate is built into a course with a projecting lip. A nail cannot be driven into the glazed-brick wall, but a picture-board can be kept for that purpose and placed where required. The difficulty is avoided of the suspension of apparatus from the roof or ceiling.

The principle seems to have been employed in the Pinacotheca of the ancient Acropolis of Athens.

G. GREENHILL.

1 Staple Inn, W.C.1, June 6.