the invalid is after. It is true that carbonic acid has a way of accumulating in low and unventilated recesses; but there are cellars, crevices, and deep and narrow valleys in the highlands as well as on the lower levels. As well recommend thin soup to the hungry man as to advise the sick man, whose one lung must do the duty of two, to breathe thin air. Should he climb the mountains to Leadville, he will be warned away by the inhabitants of that city, who will inform him, in the rude poetry of the mines, that a healthy man has to fan the air up into a corner in order to get enough for a breath.

The atmosphere is not necessarily dry at a great altitude, as some suppose, nor damp in the lowlands. There are lofty swamps and low deserts. The mountain peaks, according to the poet, milk the clouds; and in some parts of the world the mountaineer is more sure of his daily rain than of his daily bread. Mount Taylor, in New Mexico, is called the 'Mother of rain' by the imaginative Indians. On the other hand, the deserts of California, which are below the level of the sea, are so dry, that, in the language of the plains, the jack-rabbit has to pack his water with him when he goes upon a journey.

As to the thousands who have been rescued from death by the 'pure, rarefied, and dry atmosphere' of Minnesota, this is a matter of town talk, which impartial observation does not confirm, and which there is no census to deny. In this connection I would challenge the champion of the most celebrated sanitarium for consumptives to produce a list of the patients who have 'got better' under his notice, and I will match against him an equally honest observer from some undistinguished and unpretentious and confessedly unhealthy locality, whose proportional record of improvements will be equally favorable. Why, then, should the sick man become a wanderer, as he certainly will if he once starts in chase of the *ignis fatuus* of a climate cure?

FRANK D. Y. CARPENTER.

LETTERS TO THE EDITOR.

Prehensile feet of the crows.

IN nos. 16, 18, and 20 of SCIENCE are communications by different writers on the intelligence of crows, suggested by one of mine in no. 13. I beg to add one more, concluding what I have to say on this subject.

All seem agreed as to the intelligence of these birds; but few, I find on inquiry, have seen them seize or carry objects in their claws. Yet no amount of negative testimony should invalidate my observation on the Italian bird, when taken in connection with the further evidence to be given. We all look at nature piecemeal; and it is certainly unreasonable to assume that one is in error because he claims to have seen through his pin-hole something which another has not observed through his.

I agree with the doubters, that crows ordinarily use their bills, and not their claws, in seizing and carrying their food. In confirmation of what I claim to have seen, I will adduce similar instances, noticed by others as well as myself, in the Corvidae. I cannot positively assert that the bird I saw was C. corone: it might have been C. cornix, possibly C. frugilegus, but, at any rate, a *crow*, for it had the flight, the proportions, the color, the voice, and the boldness of these birds.

As to crows not nesting among rocks, this is generally true of the American crow (C. Americanus); but the European C. corone, a larger and more solitary species, prefers the sides of steep rocks, as also does the hooded C. cornix. Both the American and European ravens often nest in inaccessible cliffs, and so do the rooks.

To begin with the largest. I have seen C. corax in Iceland holding and carrying in its claws fish-heads from the beaches, and, when disturbed, from one barren crag to another, — an object too large and too heavy to be conveniently carried in the bill, and too precious to be left behind where food is so scarce. I have seen C. carnivorus, in the winter wilderness of Lake Superior, carrying in the same way what looked like a squirrel or rabbit. It is well known that both these birds, when wounded, will strike savagely with their claws, like a bird of prey; which, being perching birds, according to our classifications they had no scientific right to do.

Of the fish-crow (C. ossifragus), Wilson (*Amer. ornith.*, v. 27) writes, "their favorite haunts being about the banks of the river, along which they usually sailed, dextrously snatching up *with their claws* [the italics are mine] dead fish or other garbage that floated on the surface;" and, on p. 28 (*op. cit.*), "These (a singular kind of lizard) the crow would frequently seize *with his claws*, as he flew along the surface, and retire to the summit of a dead tree to enjoy his repast." Audubon (*Orn. biog.*, ii. 269) says the same. Clark's Columbian crow is said to do the same thing, and its claws are sharp and raptorial. I have seen this species, along the shallows of the coast of North Carolina, seize and carry off in its *claws* living fish from the shoals over which it flew.

Buffon, Chenu, Wilson, and Nuttall allude to the custom of capturing crows by fastening one on its back, feet upward, on the ground: its cries bring its companions to the rescue, one of whom is sure to be seized and held by the *claws* of the prisoner.

For several summers I lived in the next house to a tame and speaking crow, which often came in front of the kitchen in quest of food. One day a half-eaten ear of boiled corn was thrown to him. While engaged in picking it, holding it by the claws, as is the habit with the crows, he was disturbed by the attacks of a barking terrier. Keeping him at bay for a time by vigorous pecks, he finally tried to carry the ear in his *bill* to a favorite perch in a low cedar. As he seized it, first at one end and then at another, the leverage of the free end was such that it gave his head and neck very uncomfortable twists. He finally perched upon the ear in defence of his food, and, clinching it tightly in his *claws*, flew with it, in my sight, to his perch a few feet distant.

Mr. E. A. Samuels (author of the 'Birds of New England') writes to me (Aug. 2, 1883), "I have known of its seizing with one foot — and hopping

with the other — various small articles of food, in one case a small frog;" and also, "I have often seen the crow hold a frog or acorn firmly, with one foot on the ground or on a fence-rail, while he pecked away with his bill." Similar instances I remember to have read about, and one in the Bulletin of the Nuttall ornithological club, where it is described as holding a small bird, which it had killed in an aviary, in its claws, while it tore it in pieces with its bill, like a bird of prey.

The claws of the shrikes, weaker than those of the crows, and quite as insessorial, are used to seize and carry prey. A few winters ago I saw a shrike killed on the Boston public garden by the city forester's men, which had in its claws, during its flight, a still living English sparrow. That the crows in the above-mentioned instances, though perching birds, do use their claws as prehensile organs, I regard as evidence of their intelligence and reasoning power, which enable them, under exceptional circumstances, to use their perching feet for raptorial purposes. We must not measure animal intelligence by our imperfect and arbitrary zoölogical classifications. Since the writings of F. Cuvier, Flourens, and Fée, it seems impossible to deny the possession of a reasoning intelligence to animals below man.

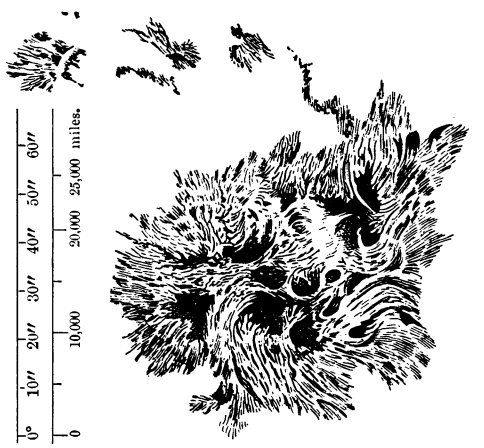
Leaving out of view the instance mentioned in no. 13, I think I have adduced sufficient evidence that the crows do *sometimes* — that is, when they find it necessary — seize and carry objects in their claws, like birds of prey. SAMUEL KNEELAND.

An interesting sun-spot.

The accompanying sketch represents the remarkable sun-spot of July (which was visible to the naked eye), and is of particular interest. I did not see it in its early or formative period, when this was taken; but from my knowledge of Mr. Very's experience and skill I have no doubt of the trustworthiness of the drawing in all its details. His remarks supply all the further information needed. S. P. LANGLEY.

Cambridge, Aug. 21, 1883.

I enclose a sketch of a large and unusually interesting sun-spot, as it appeared through the great equatorial of the Allegheny observatory, of 13 inches aperture, with the polarizing eye-piece. The drawing was made on the 26th of July, 1883.



The spot, while not so large as some, exhibited considerable activity and a remarkable assembly of odd forms, some of which appear so conflicting that it is difficult to imagine how they can exist side by side. The strong inrush from the following side gave one the idea of a viscid sheet or ribbon, rather than that of a bundle of filaments. It bore a striking resemblance to some of the forms which taffy assumes under the confectioner's manipulation. On the upper or northern side the filaments were more graceful, slender, and grass-like. The southern part was remarkable for the length and intensity of its curved filaments. (The longest could certainly be traced through more than 15,000 miles.) But perhaps the most curious portion was the centre, where a mass, possessed of photospheric brilliancy and fringed with curved and tangled threads, gave one the impression that a recently erupted facula, formed somehow in the very middle of the spot, was being torn to pieces by conflicting currents.

Numerous local whirls were evident, and the south-east half of the spot had a decidedly cyclonic appearance, the rotation being in an opposite direction to the hands of a watch. (It is to be remembered, that the drawing gives the appearance of a projection, and is therefore the reverse of a view by direct vision.) The north-west half of the spot did not show any such rotational tendency. F. W. VERY.

Allegheny, Aug. 20, 1883.

The right whale of the North Atlantic.

I am sufficiently impressed by the utter absurdity of occupying your valuable pages in discussing non-essentials; yet I am called upon by your critic to clear up two points remaining, both of which in any case hardly deserve serious notice. I will endeavor to close this correspondence by stating the facts.

Referring to Scoresby's pictures of the Greenland whale, I was led to attribute to the first or earlier one another authorship, from seeing in it so much error and exaggeration; and this because I had just read in Scoresby's book the following (Arct. reg., vol. i. p. 447. 1820): "I have confined my engravings, as well as my descriptions, to those animals that have come immediately under my own examination, or have been sketched by persons on whose accuracy and faithfulness I could fully depend; while drawings that I have met with, when the least doubtful, have been altogether rejected."

His second figure being so nearly correct, having evidently been carefully drawn from an entirely different and natural study of the animal, it was easy to assume, that, having first taken at second-hand an ill-considered sketch, he promptly replaced it by a better one. In this view it should not be assumed that we had any thing but the kindliest motives in thus speaking of this most eminent and valued man's work. In Scoresby's 'Arctic regions' (ed. 1820) the second figure of the Greenland whale appears. The caudal region, including the flukes, is entirely redrawn, showing the various elements that make up the beauty of those parts, as the carinae, etc. The other features, unfortunately, are not improved; yet more unfortunate is the fact that the earlier figure, with all its imperfections, has come down to us in most of the more important works.

With reference to the corrections of Scoresby's figures, we may point to an old work in the library of the American museum, which, by the way, is not noticed in Mr. Allen's bibliography; namely, "Histoire des pêches, des découvertes et des établissemens des Hollandois dans les mers du Nord, etc. Par Le C. Bernard DeReste. Tome premier. A Paris, 1801." This is an octavo volume, devoted almost entirely to cetaceans, and has large copper-plate engravings, one of which contains a right whale labelled B. franche, and another the sperm whale.