

I could; but long before I could get to where I had seen the ice, the whole lake as far as my view extended was open water. This almost instantaneous disappearance of a body of ice more than a foot in thickness can only take place in perfectly still weather. If there is any wind it breaks up, and the fragments are driven up against the ice which still holds together, and into the shores, where the rapidity with which it melts is not so striking. I never was fortunate enough to be actually in at the death.

"There are also some curious facts connected with the air-holes which form themselves during winter. There are often particular spots where partial openings in the ice will be formed every winter. These I conceive to arise from warm springs, and to have no connection with air-holes properly so called, which are not confined to any particular locality, but may appear anywhere. There is always a good deal of air under ice, and you may often see it scattered about in small bubbles when the ice is thin. It is probably air excluded in the process of crystallisation, and when there is added to it sundry gases formed from decaying matter in the water, it amounts during the winter to a considerable quantity. Such collections of air, like the bubble in a spirit-level, are in a very uneasy condition, and are rapidly transferred from one place to another on any casual disturbance of the level, giving rise to one of the numerous noises which are always more or less heard on a lake covered with ice—at least, we used always to attribute to this cause a peculiar groaning sound which was very common. Now, if there should be any casual inequality in the lower surface of the ice, the air will naturally collect there, and if it is above 32° F, which in so far as it consists of evolved gas it probably will be, the receptacle will be increased by thawing. A dome-shaped cavity will thus be gradually formed, which will finally reach the surface; air will escape from below, and the surface-water, of which there is almost always more or less after the snow has fallen, will run down from above, wearing the little jagged channels which are characteristic of air-holes. The whole thing will then after a while freeze up again, leaving an indication of where the air-hole has been in the different colour of the freshly-formed ice. I have tried several such air-holes with an axe when first formed, and have always found them to lead to such a dome-shaped cavity. I remember on one occasion an otter frequenting a large air-hole which remained open for some time, and which must have been from a mile and a half to two miles distant from the nearest open water. How did he reach it? for no otter can travel that distance under water without access to air. The Indians say that they will go to greater distances still under the ice, and that they always find air there. It is likely enough that there may be many such dome-shaped cavities, which have not yet reached, and may never reach, the surface as air-holes, but one would imagine the air they contain to be not of the most wholesome character. However, this otter did frequent that air-hole for about a week, which it certainly did not reach by travelling on the ice, and though it had few chances of breathing there, in the daytime at any rate, it contrived during that period to elude the snares of a white man and an Indian, who wasted a good deal of time in looking after it.

So far, the process of the formation of air-holes, if I am right in my explanation, is intelligible enough; but sometimes they are formed in a manner which is difficult to account for. Upon one occasion I had crossed the lake to a friend's house, about four miles off, and we had determined to start together next morning to our nearest town, but I had to go home first. I first went over by daylight, when there certainly was nothing unusual in the appearance of the ice, which might be four or five inches thick at the time, with a slight sprinkling of wet snow on it. I returned home about eleven at night, and, as it was bright starlight, with only a few floating clouds, I should have noticed any change; but I came straight across, and saw nothing to attract attention. But when I crossed again at daylight in the morning, in one part of the lake the whole surface was covered with air-holes—there must have been hundreds of them. At first I gave them rather a wide berth, but, on approaching one to examine it, I found it frozen up again, the clear ice in the hole, with very slight indications of the characteristic jagged edges, being the only sign that there had been an open air-hole there during the night. I had no axe with me to try whether they were connected with any cavity, but the appearance was as if holes of from two to five or six inches in diameter had been punched through the ice. Of course, we attributed it to electricity, as people will do anything which they do not otherwise understand, and I have never been able to give any more intelligible explanation

of the phenomenon. There certainly had been some faint sheet lightning that night, a very unusual thing in winter; but what connection, if any, there may have been between the two things, I cannot tell.

"Ottawa, Sept. 15"

"JOHN LANGTON

#### The Difficulties of Natural Selection

I FIND, on looking again at Mr. Bennett's article, that I have misrepresented him on one point, for which I beg to apologise. On his supposition, that the first twenty possible steps on the road to mimicry are absolutely useless, his argument will have some weight. This supposition, however, is entirely unsupported by facts. Very large variations of colour are exceedingly common in butterflies; and when such variations are in the right direction, they must in some cases be useful. I believe myself that far less than fifty, or even twenty, steps of variation would in some cases produce very good mimicry.

ALFRED R. WALLACE

#### Cave-paintings by Bushmen

My friend, Mr. George W. Stow, of Queenstown, South Africa, refers in a letter to the interesting subject of the old cave-paintings by the Bushmen, as follows: "During the last three years I have been making pilgrimages to the various old Bushman caves among the mountains in this part of the colony and Kaffraria; and, as their paintings are becoming obliterated very fast, it struck me that it would be well to make copies of them before these interesting relics of an almost extinct race are entirely destroyed. This gave rise to an idea in my mind of collecting materials enough to compile a history of the manners and customs of the Bushmen, as depicted by themselves. I have, fortunately, been able to procure many fac-simile copies of hunting scenes, dances, fightings, &c., showing the modes of warfare, the chase, weapons, disguises, &c. This promises to be a collection of very great interest. In some places it is astonishing to what a degree of perfection some of the wild artists had arrived. I have found three different series of paintings, one over the other; and, as the most recent must be upwards of fifty years old, the undermost are most probably very ancient. The colours are very permanent, and would last for ages if not wantonly obliterated. Unfortunately, the Kaffir herds and others are constantly destroying them, and, by the time another generation has passed, few remains of them will be left."

The pigments used in the caves were derived from ochreous concretions abounding in some of the sandstones of the Karoo series of the interior of South Africa, as in the Rhenosterberg, Stormberg, and elsewhere. These concretions, when broken open, supplied the natives with paint-pots, and from among the several colours of yellows, browns, reds, &c., the chocolate was selected for painting the human form in the caves.

T. RUPERT JONES

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#### A Rare Fish

A SPECIMEN of the Silvery Hair-tail (*Trichinurus lepturus*) was taken this morning at Seaton. It measures 2 feet 2 inches in length, and is in very good preservation, being only slightly injured on one side of the head. A specimen from the Collection of the late Mr. F. W. L. Ross, in this museum, is about the same size, and was taken on 6th August, 1852, off the Start Point, Devon. The recorded instances in which this remarkable fish has occurred on the British coasts are very few, and the specimens obtained have generally been much injured. The present specimen was brought to me to name by Mr. Frank Gosden, of the West of England Fish and Game Company, Queen Street, Exeter.

W. S. M. D'URBAN, Curator

Devon and Exeter Albert Memorial Museum,  
Queen Street, Exeter, December 3

#### The *Ceratodus Forsteri*

I AM much obliged to Dr. Sclater for his remarks on the new fish discovered by me as *Ceratodus forsteri*, and I take this opportunity to inform your readers who may feel interested in this matter, that I spoke of the animal as an amphibian, principally because it is in the habit of leaving the water during the night. The works to which Dr. Sclater refers me are not at my command, and I adopted the generic term of *Ceratodus* because