

"Megaceros Hibernicus" in Peat

My friend, Dr. Leith Adams, has given it as his opinion that the Irish elk is only found in the clay or marl under the peat, while I contended that some of them occur in the peat, this opinion being formed from reports of finds in the counties of Limerick, Carlow, and Wexford, also from the colour and appearance of the bones; still I could not be positive, as I had not myself seen the bones raised out of the peat. Last week, however, I heard from Capt. Woodruff, Kilowen Inch, Co. Wexford, that he had found an elk's head in the peat, and I went to see it. It was lying on its back altogether in the peat, except some of the points of the horns. The portions in the clay under the peat were quite hard, while those in the peat were soft, but became quite hard a short time after they were taken out.

The "Elk Hole" at Kilowen is a very remarkable place, because, although very small, not 200 yards in diameter, yet at the present time the remains of over ten skeletons of elks have been taken out of it; while in the undisturbed portion of the bog there are probably other skeletons. A few miles to the south-west of Kilowen there is the small bog of Axe, in which the remains of the *C. megaceros* has also been found.

OVoca, July 8

G. H. KINAHAN

Perception of Colour

HAPPENING to be reading out of doors, while the sun was shining on my book, I noticed that patches of weed on the lawn appeared peculiarly conspicuous in their difference of tint from the grass. The same patches of weed close-cropped to the level of the grass were ordinarily scarcely observable from difference of colour. Now, as I looked up from my book—my eyes dazzled with the glare—they appeared to me to have a strong blue tint. My attention thus being drawn to the point, I extended my observations, with the following results, which, if new, will doubtless prove interesting to some of your readers. I found that if the eye was exposed for two or three minutes to the action of a very strong light, by looking at a sheet of white paper, while bright sunshine fell on it, the capacity of the eye for perception of colour was curiously modified, under certain conditions. For example: if, on the instant after the exposure of the eye to strong light, as described—solarisation I will call it—flowers of various colours, placed in a shady part of a room were examined, a pink rose appeared the colour of lavender; dark crimson Sweet William, almost black; magenta Snapdragon, indigo; scarlet Poppy, orange; the eye was, in fact, red-blind. After a minute or two, the eye recovered its normal sensibility to red, and the flowers assumed their natural colour.

In order to ascertain that the mal-perception of colour, under the conditions described, was due to the action of strong light on the eye, and not to any other circumstance, I repeated the experiment, allowing the solarisation to take place on one eye only, the other eye being kept shut until the moment of making the observation. I then found, as before, that the solarised eye was red-blind to objects in a subdued light for a minute or two after solarisation, but sensitive to blue, and in less degree to yellow, while the non-solarised eye was perfectly normal in its perception of all the colours. By alternately closing and opening the solarised and non-solarised eye, the difference in colours perceived by the two eyes was extremely striking—the rose was, as seen by one eye, pink, by the other eye, blue. It must be remembered that the effects described were produced when the flowers were observed in a room not strongly lighted.

When a corresponding experiment was made with the flowers in the sunshine instead of in the shade, it was found that a reverse effect was produced—that every colour, and red particular, was intenser to the solarised eye than to the non-solarised eye—as was readily seen by alternately shutting and opening them. To the solarised eye a red rose-bud was deep red, to the other eye light red. The red of the poppy was deeper and more vivid to the solarised eye. A calceolaria was orange chrome to the solarised eye, lemon chrome to the non-solarised eye. A viola was dark violet to the solarised eye, a colder tone of blue to the non-solarised eye.

I found that after the insensibility to dimly lighted red and orange (the effect of solarisation) had worn off, a reverse condition succeeded, for example, venetian red, which was a dirty brown, as seen the instant after solarisation, appeared gradually to change to a full vermillion. I found also that portions of the solarised eye that had escaped the solarising action behaved like

the non-solarised eye. I leave the explanation of these slight observations to those within whose special field of study the naturally fall, only remarking that the power of the eye fatigued by solarisation to perceive blue light, and light of no other colour, under the conditions described, seems to suggest that the eye, like almost all matter sensitive to light, is more sensitive to blue rays than rays of lower refrangibility.

Lancing, July 10

J. W. SWAN

WATER-JET PROPELLERS

VERY early in the history of steam navigation, attempts were made to employ the "hydraulic" or "water-jet" propeller. About 1782 Rumsey began to work in this direction, using a steam-engine to force water out at the stern of a boat, the inlet being at the bow. His experiments are said to have extended over twenty years, but led to no practical result. Another American, named Livingston, applied the same principle of propulsion in a different manner. A horizontal wheel, or turbine, was placed in the bottom of the boat, near the middle of the length, the water was admitted from beneath it, and expelled from the periphery of the wheel through an opening at the after part of the boat. In 1798 a monopoly was granted to Livingston for twenty years by the State of New York, on condition that within a given period he produced a vessel capable of attaining the speed of four miles an hour. This condition was not fulfilled, and, as is well known, the first successful steamers built in this country or abroad were propelled by paddle wheels. This form of propeller alone was employed for nearly forty years, during which period steam-ships increased greatly in numbers, size, and speed, proving themselves well adapted not merely for service on inland and coasting navigation, but also for ocean voyages. Just when the Transatlantic steam service had been successfully commenced by the *Great Western* and *Sirius*, both paddle steamers, the screw-propeller began to threaten the supremacy of the paddle-wheel; and the success of the *Archimedes* in 1840 led to the adoption of the screw in the *Great Britain*, as well as the construction of the screw sloop *Rattler* for the Royal Navy. Soon after came a revival of the water-jet propeller by the Messrs. Ruthven of Edinburgh. In 1843 their first vessel was tried, attaining a speed of about seven miles an hour. Ten years later a fishing-vessel was built on the same principle, and exceeded nine miles an hour. Several other river steamers and small craft were constructed with jet-propellers in the period 1853-65, but they were all comparatively slow, and the plan did not grow into favour either as a substitute for the paddle-wheel or the screw.

There were certain features in the jet-propeller which recommended it to the judgment of many naval officers who had witnessed the trials of vessels so fitted; their influence led the Admiralty in 1865 to order the construction of a small armoured vessel, appropriately named the *Waterwitch*, which was to be fitted with Ruthven's propeller. Admiral Sir George Eliot was one of the principal advocates of a trial of the new system, in which he has always continued to take a great interest. In the German navy, trials of the Ruthven system have also been made on a small vessel named the *Rival*, and experiments of a similar nature have been made in Sweden. At the present time Messrs. Thornycroft are building for the Admiralty a torpedo-boat, to be propelled by water-jets, the trials of which are awaited with interest, since they will furnish another comparison between the performances of the hydraulic propeller and the screw.

The Ruthven system agrees in its main features with the proposal made by Livingston forty years earlier. As an example the arrangements of the *Waterwitch* may be briefly described. Openings are made in the bottom of the ship amidships, to admit the water into a powerful centrifugal pump or turbine, the axis of which is vertical.