

Natural History Society has also been established at Rugby, to which the senior scholars are permitted to belong, the Transactions of which are before us, containing reports of papers and meetings held during the year 1868.

Natural science is encouraged at Harrow by a voluntary examination, to which all the boys are invited, and they are placed according to their merits. There is no systematic teaching, but many of the boys make great attainments in science, and some of them have already distinguished themselves in the scientific world. There is also a Scientific Society at Harrow, which meets at fixed periods under the presidency of one of the masters. A museum has been formed, and the masters speak highly of its beneficial influence in the training of the boys. At the International College at Spring Grove, the natural sciences are made a part of the general training of the boys. Competent masters have been appointed to teach these branches of science, and Dr. Schmitz, the intelligent head-master of the school, speaks very confidently of the success of the plan.

Intermittent attempts have been made to teach natural science in various other schools throughout the kingdom, but the want of determination in the masters and encouragement on the part of parents very often lead to the entire abandonment of any sustained efforts to proceed in this course. There seems little doubt that if young men of scientific tastes would fit themselves to become teachers in schools without applying themselves to the practice of some profession, they would find ample employment for their ability in tuition. They must, however, be prepared to insist on their own terms, and times and methods of teaching, as the condition of mind of the majority of those who undertake to teach the young, whether male or female, is utterly blank as to the nature, value, or methods of teaching any branch of natural knowledge.

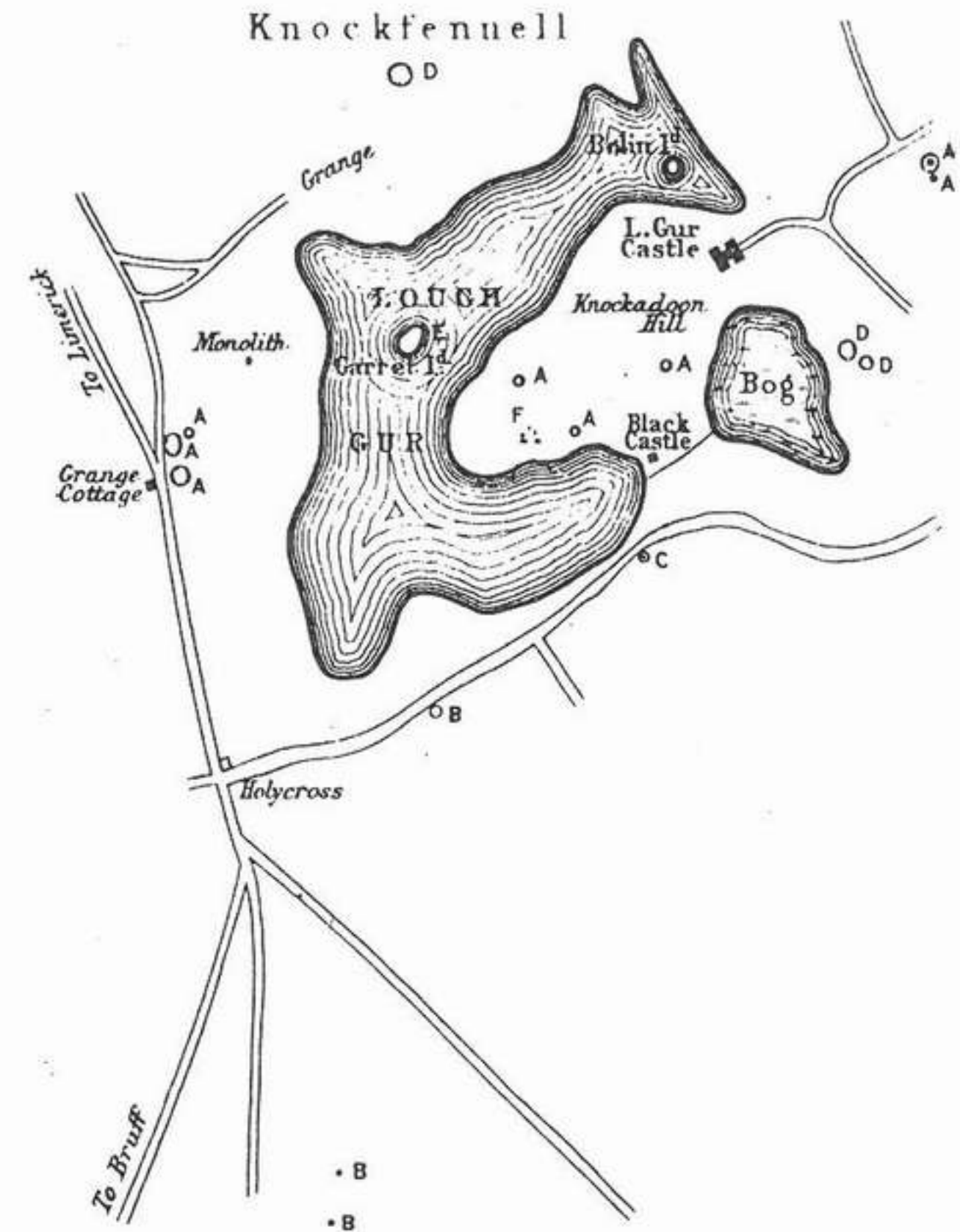
## VI. THE PRE-HISTORIC ANTIQUITIES OF AND AROUND LOUGH GUR.

By PROFESSOR HARKNESS, F.R.S.

(With a Sketch-Map.)

At the distance of about 3 miles north of the town of Bruff, Co. Limerick, is an irregularly formed sheet of water known as Lough Gur. Including its islands and the district immediately surrounding it, this lake has been one of the most prolific sources of pre-historic remains in Ireland.

Near its margins there are several stone, and stone and earth circles, and from the abundance of remains of this character the lake has derived its name, which is, according to the statement of



- A. Stone, and Stone and Earth Circles.
- B. Cromlechs.
- C. Cist.
- D. Remains of Stone Forts.
- E. Crannoge.
- F. Remains of Hut Enclosures?

SKETCH MAP OF LOUGH GUR  
AND THE  
SURROUNDING COUNTRY.

Scale Two Inches to the Mile

from: Quarterly Journal of Science 1869.



Mr. John Fitzgerald, who is resident near it and who has a thorough knowledge of the Irish language, a corruption of Lough Cirgor, or the lake of the stone circles.

The most perfect of these circles is near the west side of the lake and close to Grange Cottage. This owes its perfection to Mr. John Fitzgerald, who has preserved it with most zealous care, and whose great interest in the pre-historic remains of the neighbourhood of Lough Gur has enabled him to recognize every spot near its margins where relics of this kind occur.

This fine circle is about 150 feet in diameter.\* Internally it is made up of large blocks of conglomerate and limestone, the former being generally of greater size than the latter, and one of which, on the north-east side of the circle, is about 9 feet high, by 4 feet in thickness, and 6 feet in breadth. There are about sixty of these upright blocks of conglomerate and limestone, and these make up the inner portion of the circle.

Outside this circle of stones, and supported by it, is an earthen rampart, which at its crest is about 9 feet higher than the ground surrounding it. This rampart has a gentle curve outwards, except at one spot, and its base is about 34 feet wide. On the E.N.E. side of the circle a passage has recently been discovered by Mr. Fitzgerald, leading into the enclosed portion. This passage, which is about 2 feet wide, has the sides lined with flagstones. The area within the circle is considerably higher than the surface of the ground which surrounds it, and this area has been raised by artificial means, its level being less than 4 feet below the crest of the rampart.

A short distance northwards from this fine circle the remains of another are seen. This second one is entirely composed of blocks of stone. An old road runs through the western side of this second circle, the portions which remain are, however, sufficient to afford a knowledge of its original size. Its diameter is larger than the fine stone and earth circle at Grange Cottage, being 170 feet. Almost immediately adjoining this larger imperfect circle, and on its N.E. side, there is another, which is also composed solely of blocks of stone. This is a small circle, and is still very perfect. It consists of fourteen large irregularly shaped masses of rock, which have a squarer outline than the blocks forming the other circles. The diameter of this circle is only 55 feet.

A short distance N.W. of these three circles, and in a field adjoining the Limerick high-road, there are other traces of pre-historic remains. These occur in the form of a few large blocks of stone arranged in a double row. They may have originally formed,

\* For this, and the other measurements of the pre-historic remains around Lough Gur, I am indebted to Mr. Fitzgerald.



the western side of the large imperfect circle, having been removed from thence when the road was being made. There is also in the same field a large cup-shaped depression about 210 paces in diameter, but whether this is a natural or an artificial production there is not sufficient evidence at present to determine.

The eastern side of Lough Gur is margined by a very irregular outline, and the surface here is much bolder than on the western shore. Before the surface of the waters of the lake was reduced to its present level, a large island, about half the size of the lake, occupied the eastern side. This was, however, separated from the mainland only by shallow water in a narrow channel and boggy ground; it now forms a peninsula, and is known as Knockadoon Hill, the summit of which rises about 200 feet above the level of the lake, and the sides of which exhibit several bold rocky escarpments.

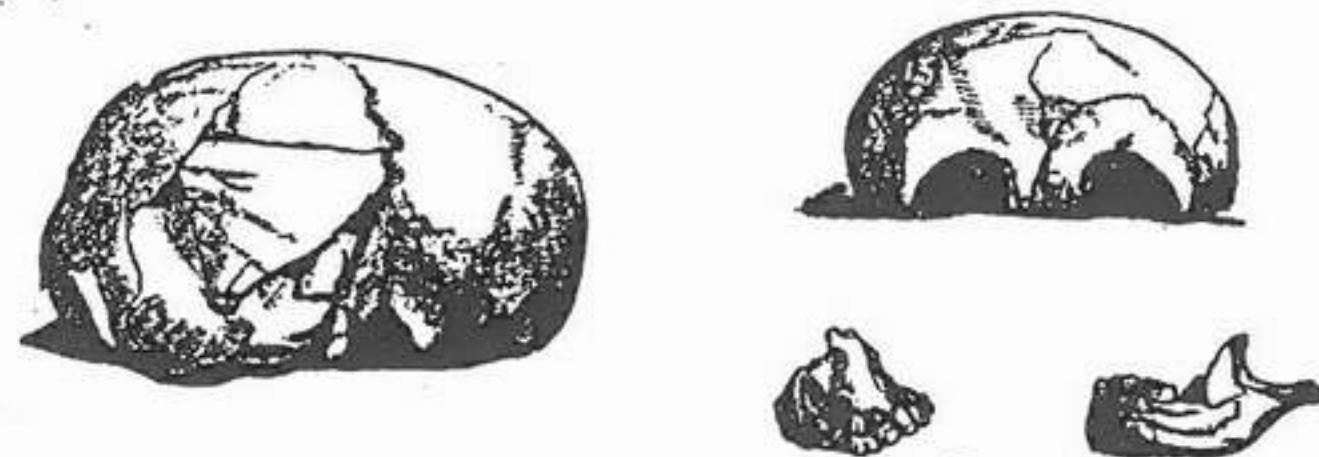
On the west side of Knockadoon, about 34 perches from the border of the lake, another stone and earth circle is seen. This, which is about 90 feet in diameter, is made up of a double ring of upright flaggy limestone blocks which have been obtained in the immediate neighbourhood, and which, when contrasted with the blocks forming the circles on the western side of the lake, are of small size. The interval between the outer and the inner row of flagstones is about 4 feet. The flags, as in the case of the large stone and earth circle at Grange Cottage, are placed very near each other, and the interval between the two rows is partially filled in with earth. Inside this circle are several detached blocks of rock of comparatively small proportions.

Another double stone circle filled in with earth occurs on the south side of Knockadoon, about 15 perches from the shore of the lake. This is somewhat smaller in size than the one just alluded to. It also has several detached blocks in the area enclosed by it. One of these, near the N.E. side, is a flaggy mass placed on its end in the ground, and being about 3 feet high, forms a small monolith. The antiquity of this monolith is well indicated by the weathered state of its surface, which is deeply eroded by atmospheric action. Mr. Day, F.S.A., Mr. Fitzgerald, and myself opened the ground immediately west of this monolith, and at the depth of little more than a foot from the surface discovered human bones. These consisted of fragments of ribs, fragments of bones of the arms, a nearly perfect lower jaw, a portion of the upper jaw, the frontal and parietal bones of the skull very nearly entire, with the temporal and occipital bones in a less perfect state. These bones had belonged all to one individual, a young person of from six to eight years of age. The bones of the head exhibited features of an interesting nature, and the lower jaw had also peculiar characters.

As regards the latter, these consist of its great thickness, especially where the molars are inserted; the form of the malar angle,

which is very obtuse, being  $143^\circ$ , and the relation of the condyle to the coronoid process, which are much removed from each other, giving to the hind portion of the jaw a form which belongs to a very aged individual, or to that of an infant, rather than a young person. The upper jaw is very prognathic in its outline; and this circumstance may have had some influence in giving to the lower jaw its singular modifications.

The form of the skull is strongly platybragmate, being broad and short, with the upper portion singularly flattened. Its greatest



Human Skull and Lower Jaw, discovered near Monolith, Lough Gur.

length is about  $6\frac{1}{2}$  inches; and its greatest breadth, which is from the centre of the parietal bones, is about  $5\frac{1}{2}$  inches. The width of the frontal bone is about  $4\frac{1}{2}$  inches; and the circumference of the skull measured from the frontal sinus by the juncture of the sagittal with the occipital suture is about 18 inches. The frontal bone is peculiar in form. A line drawn along its ascending portion, and meeting another drawn along the flat upper surface of the skull, would form a right angle. The ascending portion of the frontal bone is about  $1\frac{1}{2}$  inch high, and, curving rapidly over upwards for about an inch, meets the flattened surface of the head. The orbits have the upper portions small, with a very rounded outline. The bones of the skull are also very thin.

With these human bones a small fragment of the antler of a stag, about  $1\frac{1}{2}$  inch long and  $\frac{3}{4}$  of an inch in breadth, was found. Surrounding the monolith which marked this burial-place was a rude circle of small stones, about 8 feet in diameter.

A few yards west from the monolith in this circle, is a small patch, enclosed, also by a rude ring of small stones. This has an elevation of about 9 inches above the ordinary level of the surface, continued within this stone and earth circle. On opening this patch, and at the distance of about 18 inches beneath the surface a stone cist was discovered. The sides of the cist were composed of limestone flags, and the ends were also formed of the same materials. A flag of the same kind also covered the cist. This covering did not however extend over the whole of the chamber formed by the flags, the portion in which the lower extremities had reposed was uncovered. This, however, may have resulted from



stones breaking the lid, as above the cist several pieces of rock were found. The lower portion of the cist was formed of small portions of flaggy limestones, which had been arranged with considerable care, in the form of a pavement when the cist was being made.

Several fragments of human bones were met with in this cist. These consisted of fragments of ribs, a portion of a femur, two os calces, a portion of a lower jaw, and other fragments. The portion of the lower jaw had appertained to a young person of from six to eight years of age, and one of the os calces seems referable to the same individual. The other os calcis appears to have belonged to a nearly, if not quite, full-grown person; and the fragment of the femur, which had the epiphyses fully united, seems also to have formed part of the skeleton of an adult. The length and thickness of the thigh bone when compared with the corresponding bone of the skeleton of a modern full grown individual indicate a person of small stature.

The length of the cist also points out the small size of the body which had occupied it. This was not more than 4 feet 2 inches long; and as its depth did not exceed 18 inches, it is not probable that the body was buried in a crouching position.

The remains in this cist had been to some extent disturbed; but this had resulted from the burrowing of rabbits, the bones of which were found along with the human remains. Associated with these there occurred also fragments of the bones of swine. A portion of the right side of the upper jaw of this animal contained in the cist exhibited the last molar tooth, which was of a large size. The condition of this fragment indicated that it had long been buried; its state being similar to that of the human bones, and altogether different from the rabbits' bones, which have a very recent aspect.

Among the bony fragments of this cist were two upper incisor human teeth of rather a large size, and having the cutting surfaces considerably worn.

The two bodies in this stone and earth circle seem to have been placed originally in a north and south direction, the heads being towards the latter.

It would be premature, from these human remains, to draw any general conclusions as to the characters of the race which at an early period inhabited the shores of Lough Gur; and which buried its dead within the circles so abundant near this lake. Further evidence will probably be obtained from some of the other circles. So far, however, as these human remains enable us to judge, they tell us of a broad-headed people, with small eyes and of short stature, approximating more nearly to the present Fins and Laps than to any other race of men. And this circumstance is in accordance with many of the conclusions which have been arrived at concerning the pre-historic races of other countries.

Another small stone and earth circle occurs on the east side of Knockadoon Hill, at the distance of about 60 perches to the N.E. of the one just referred to. This, however, is in an imperfect condition.

Below the circle from whence the human remains were obtained, and to the west of this, about 35 perches, on the margin of the lake, there are several irregular-shaped small patches of ground enclosed by blocks of rock. One of these, which has an oblong form, is about 30 feet long by 18 broad. These enclosures occur in a small dell. They are the results of human labour, and have probably surrounded the huts of the ancient inhabitants of this shore of Lough Gur.

At the distance of about half-a-mile N.E. from Knockadoon Hill, on the farm of Ballycullen, a very large stone and earth circle is seen. It is about 155 feet in diameter; and this circle, both on its outer and its inner side, is composed of large upright blocks having earth in the interspace, the width of the circle being about 14 feet. In size this circle slightly exceeds the very perfect one at Grange Cottage. It is not, however, in so good a state of preservation, and has an earth fence intersecting it. It encloses within it another circle of the same character, which is about 49 feet in diameter, and which occupies a central position in the area embraced by the larger circle.

A few yards beyond the southern margin of the large circle another small one occurs. Its diameter is 35 feet; it is composed of flagstones, which touch each other. The area enclosed by this circle is raised to the height of about 3 feet above the surface of the adjoining ground. In this circumstance this small circle is analogous to the large one at Grange Cottage. The elevation of its interior has probably resulted from the falling down of a tumulus enclosed by the ring of flagstones. In the case of the raising of the level in the large circle several tumuli may have combined to produce this. In some instances these tumuli have probably fallen down from natural causes, but in many cases they have been destroyed by the hand of man under the impression that beneath them were buried hidden treasures.

That these several stones, and stone and earth circles near Lough Gur enclosed the places of sepulture of an early race is rendered probable, not only by the occurrence of human bones in them, but also by the circumstance that similar circles, which are found in other countries, afford evidence supporting the same inference. Local traditions have assigned them to a very different origin. By some they are regarded as Druid Temples; but this mode of disposing of their origin is of recent introduction into Ireland, and in general the peasantry look upon them as ancient fortifications. None of them bear a name indicative of a burial-place, and as there are no ideas prevalent that such is their nature,



they have probably belonged to a race of men antecedent to that from whence the Celtic population of Ireland has had its origin.

In a field a short distance to the north of the circles of Ballycullen, many stone cists containing human bones have been found. In this field there are at present no remains of circles. It is, however, probable that these did formerly here exist, and that their stones have been taken away for building cottages, several of which are near this spot.

Besides circles of stone, and of stone and earth, the neighbourhood of Lough Gur also contains the remains of Cromlechs. One of these is seen on the south side of the lake, at the distance of about a third of a mile E.N.E. of Holycross, which is on the Limerick high-road; and two others occur at the distance of about three-quarters of a mile south of this spot. These Cromlechs are locally known as "Giants' Graves."

On the south-east side of Lough Gur, a short distance from the ruin known as Black Castle, there is a stone cist of considerable size made up of large slabs of flaggy limestone. This, which is also known as a giant's grave, is 16 feet 8 inch. in length, 5 feet 5 inch. wide, and 2 feet 2 inch. high. Its covering still to a considerable extent remains, and consists of large heavy limestone flags. The object for which this was designed was most probably like that of the cromlechs, namely, for a place of sepulture.\*

There is also on the western side of Lough Gur, near Grange, a very fine monolith. It consists of a mass of conglomerate, and is about 12 feet high by 7 feet broad, and from 3 to 4 feet in width. Its north-west side is flat, but its other sides are irregular in shape. It leans somewhat towards the S.E., and on this side, close to its base, the limestone is seen *in situ*. There are no carvings nor marks of any kind visible on this monolith.

The numerous stone erections already referred to do not exhaust the pre-historic remains of the neighbourhood of Lough Gur. On the summit of Knockfennell, a hill which rises above the northern shores of the lake, there are traces of a building made of large flat blocks of stone which had a circular outline, the diameter of which is about 42 paces. Traces of similar erections, which are even more distinct than that of Knockfennell, can also be seen on the summit of another hill, which is on the eastern side of a bog between this hill and Knockadoon. Here two circular stone erections can be detected, the most perfect of which is 142 feet in diameter.

\* Local tradition has given to this cist, and to many others of the same kind, the Irish name of *Leabthacha Dhiarmada is Ghrainne*, or of the beds of Diarmaid and Grainne. The story of these individuals belongs to the mythical period of Irish history. The former is represented as the companion of Finn Mac Cumhaill, and the latter, a daughter of the monarch Cormac Mac Art, who, in order to escape being made the wife of Finn in his old age, eloped with Diarmaid, his young and handsome follower.

It consists of a wall in some portions about 4 feet in height and about 11 feet in thickness, composed of large masses of rock laid regularly one upon the other, and in the interior backed up by a great accumulation of smaller broken fragments of limestone; the latter being probably designed to produce a level surface immediately within the wall. The other circular erection, which is only a short distance from the one just alluded to, has a diameter of 138 feet, and is in a less perfect state.

These circular erections of stone, which occur on the hill-tops overlooking Lough Gur, have no mortar in connection with them. They appear to have been of the same character as the Staigue Fort in the Co. Kerry, and they probably formed strongholds. The positions in which they have been placed near Lough Gur have great natural capabilities for defence, and afford views over a large tract of country.

Although the race which erected the circular stone strongholds seems to have had no knowledge of the use of mortar, the builders of these strongholds appear to be referable to a period more recent than the constructors of the circles and other sepulchral remains which have been previously referred to.

Besides the numerous pre-historic remains which occur in the neighbourhood of Lough Gur, the lake itself also affords objects of antiquity of a similar character. Around Garrets Island, which is near the centre of the lake, and particularly towards its southern side, are to be seen many upright piles, especially when the surface of the lake is low. Garrets Island itself seems to be an artificial production, for the surface of it, which is only slightly elevated above that of the lake, is made up of broken fragments of rock, and these fragments are likewise seen extending from its shores into the water of the lake. Previous to the lowering of the lake's surface, which took place about thirty years ago, a large part of this island was under water; the only portion at that time visible was occupied by the ruins of a small castle or tower, which had probably been built by one of the Earls of Desmond. It is doubtful whether even this portion is not an artificial production; but in consequence of the rubbish from the fallen walls of this building, the surface which supports it cannot be seen, and there are circumstances connected with it which lead to the conclusion that it is not a natural surface.

At the time when the level of the lake was lowered, and the area of the island increased, the land laid bare was found to be covered with an enormous accumulation of bones. More than a hundred cart-loads of these bones were removed and sold to the dealers in such articles. For many years subsequent to the lowering of the surface of the lake, this spot continued to be a very prolific source of bones, for during the potato famine, the poor of the town of Bruff, when the water was low, obtained a scanty livelihood by collecting and selling bones from this locality.



The bones procured here consisted of the remains of *Bos longifrons*, the heads of which almost all exhibited a fractured front, produced by the blow which had killed them. Bones of the pig and goat were also found, the heads of which were likewise marked by broken frontal portions. Together with these were the bones and antlers of the stag, and some skulls, jaws, and other bones of a dog of a large size, and with an elongated muzzle. These dogs seem to have belonged to a race which was the progenitor of the now extinct rough-haired Irish greyhound. A few human remains were found along with the other bones. Some of these consisted of lower jaws, generally of a large size, and a heavy outline.

Besides bones, this island has been a very prolific source of stone implements in the form of polished celts. It has also yielded great quantities of bone pins and piercers. Stone discs about 3 inches in diameter and  $\frac{1}{2}$  an inch in thickness, beautifully rounded in outline, and with finely smoothed surfaces, have also been among its products. Similar discs have been obtained in other parts of Ireland in connection with Crannoges. For what purpose they served it is difficult to conceive, and nothing analogous to them has been found among the remains of the pile-dwellings of Switzerland.

Judging from its nature and the character of the several kinds of remains which Garrets Island has afforded, there is every reason for concluding that this island is the relic of a large Crannoge. History contains no authentic records of this, although some of the Irish Crannoges were occupied so late as the seventeenth century.

The portion of country around Lough Gur had been long in possession of the Desmonds before their forfeiture in the reign of Elizabeth; and the occupation of the Lough Gur crannoge must have been antecedent to the Desmond possession. That this crannoge of Lough Gur is of an ancient date, is proved by the implements which have been derived from it. Very few iron weapons have been obtained in it. Bronze celts of either the socketed or winged type, are rare in connection with it. The earlier and simpler form of bronze celt has been more frequently procured from it; and pure copper celts, the earliest form of metal, implements have been among the products of this Crannoge. These copper celts are of a ruder type than the earliest form of bronze weapons of the same character, and in outline they approximate more nearly to the antecedent stone celts.

It is, however, for stone implements that the Crannoge of Lough Gur is famous, and of these many may be seen in the Museum of the Royal Irish Academy, in some of the public museums of England, and also in several private collections.

## NOTICES OF SCIENTIFIC WORKS.

### THE POLAR WORLD.\*

THE distribution of animal and vegetable life upon the surface of our globe is regulated, with remarkable exactness, by the quantity of sunshine which falls upon each parallel of latitude. In other words, the measure of solar energy which, as luminous, or calorific, or chemical force—to say nothing of electrical power—becomes active upon any spot of Earth, determines, not merely the life which shall exist upon that spot, but the variety of that life, be it vegetable or animal.

In the tropics, where

“— The long sunny lapse of a summer-day's light  
Shining on, shining on, by no shadow made tender,”

quickens the circulation of those fluids which are the life-stream of plant and animal alike, we find an exuberance of vitality. The vegetable world assumes a gigantic character, and bursts into flowers and fruits, in which nature's chemistry has produced the deepest dyes and the most luscious juices. The animal world also revels in an excess of life, and every passion is stimulated to the utmost by the influence of radiant forces, which are the beginning and the end of organized being. There men are

“Souls made of fire, and children of the sun  
With whom revenge is virtue.”

In the temperate zones all nature assumes a milder aspect; trees and shrubs, flowers and fruits, animals and man, are in the enjoyment of a more subdued existence; and every phenomenon, whether physical or physiological, is marked by the weaker influence of the solar power. As we advance towards the arctic or antarctic zones we find a gradual decline in the manifestations of vital power, and every organized creation assumes a peculiar character, which strikingly marks the struggle for existence under the difficulties of a diminishing quantity of light and heat. At last we arrive at a region where vegetable life appears limited to the reindeer-moss, and animal existence is restricted to such creatures as can make a snow cave their home, and support the heat necessary for life, by gorging themselves with fuel, in the shape of masses of fat, washed into their stomachs with large draughts of animal oil.

\* ‘The Polar World; a Popular Description of Man and Nature in the Arctic and Antarctic Regions of the Globe.’ By Dr. G. Hartwig. Longmans, Green, & Co. 1869.