# NOTES ON THE GANNETRIES OF SULE STACK AND SULA SGEIR.

BY

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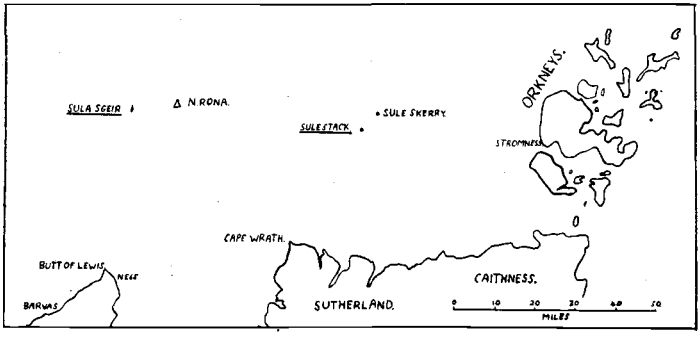
(Plate 11.)

It may be safely said that in a quarter of a century no new information has been added to our previous knowledge of the gannetry of Sule Stack, and with the exception of my notes on Sula Sgeir [10]* these same remarks apply to this latter gannetry. The reason for this is obvious when the geographical position of these two islands is considered.

There are four islands and rocks lying to the north of the Scottish mainland and the Isle of Lewis and to the west of the Orkneys, but owing to a similarity in the names of three of them a dreadful confusion has arisen. It has been stated that the late J. A. Harvie-Brown did much to straighten the position, but even in his own works it is easy to find the same place referred to under two different names, and the late Duchess of Bedford made the same type of mistake.

The names of the four islands and rocks, together with their positions, are :—

| | | | |
|---|---|---|---|
| Sule Skerry ... ... | Lat. 59°4′N. | Long. 4°24′W. |
| Sule Stack ... ... ... | Lat. 59°2′N. | Long. 4°30′W. |
| North Rona ... ... | Lat. 59°7′N. | Long. 5°49′W. |
| Sula Sgeir ... ... ... | Lat. 59°6′N. | Long. 6° 9′W. |




It will be seen from the sketch map that Sule Skerry and Sule Stack are approximately 35 miles north of the mainland of Sutherland and some 40 miles west-north-west of Stromness in Orkney to which latter point they are said to pertain. North Rona and Sula Sgeir are some 45 miles north-west of

*Figures in brackets refer to list of references at end of article.

Cape Wrath and a like distance north-east of the Butt of Lewis, and form part of the parish of Barvas in Lewis. North Rona is a fair-sized island, but Sule Skerry, Sule Stack and Sula Sgeir are little more than barren rocks.

The etymology of the words *Sule* (*Sula*), *Skerry*, *Stack* and *Sgeir* presents no difficulty. *Sule*, or *Sula*, is from the Gaelic *Sulaire*, a Gannet (*cf. Sula bassana*). *Skerry* is of Scandinavian origin, denoting a reef or rock whose base area is considerable relative to its height. *Stack*, also Scandinavian, is the opposite —a pillar of rock whose height is great compared with its base. *Sgeir* is a Gaelic word meaning a sea rock in general. Such nomenclature as *Stack of Stack and Skerry* or *Stack-Skerry* is, of course, meaningless.

Of the four places discussed, Sule Stack and Sula Sgeir are gannetries, and the object of this present paper is to review our previous information on them, and to add further notes as the result of a short visit to both in the summer of 1937. These visits were made possible by the fact that my father, Sir P. Malcolm Stewart, Bart., had chartered the steam yacht " Golden Eagle " for cruising among the Western Isles.

## Methods of Estimating Gannet Populations.

It is here necessary to discuss briefly the different methods that have been adopted for estimating Gannet populations.

In the first place the reason for counting birds is to form some idea of their relative rates of increase or decrease, and it would appear that Lockley, and others [4, 9], are correct when they state that Gannet populations should be estimated in numbers of breeding pairs. This is the factor which has the first bearing on population.

Of the methods themselves there are only two which can be described as accurate. The Direct method of physically counting the nests in the field by eye, and the Photographic method of taking a series of overlapping exposures so as to cover the whole ground, and then of counting up the nests from enlarged prints. The ingenious method of Vevers and Fisher [13] of estimating from the numbers of birds alighting in a given time, while useful, is, of course, a computation, not a count, while estimates of numbers of breeding birds from the number of nestlings known to have been taken in any one year cannot be accurate, though they may be helpful.

Is it, therefore, possible to estimate accurately pairs of breeding Gannets except under extremely favourable circumstances ? The answer is that it is impossible.

On the Bass Rock [8] and Ailsa Craig [13] the Direct method has been adopted successfully. Both these places are easily accessible and time is therefore of no object. The Bass Rock is also small, and though Ailsa Craig is larger the Gannets nest entirely on ledges in the vertical columnar cliffs of the western side and all the nests can be seen from the shore or off-shore in a boat. At Grassholm [9] the Photographic method has been employed, and this island, too, is more or less accessible.

The cases of Sule Stack and Sula Sgeir, and indeed also Borreray and Stacs Lii and Armin of St. Kilda, are entirely different. These islands are situated in the middle of the open western ocean, tens of miles from civilization, and subjected to the full force of the Atlantic swell. The chartering of a suitable boat is a great expense, and even then the chance of a landing is only possible in the very finest of weather, and in the case of Sule Stack extremely remote. Time, therefore, is the essential factor and rules out any question of Direct counting. As for the Photographic method, this is also hard to operate as the Gannets are not only confined to the steep cliffs but nest also on the flattish top of the rocks. When ashore it is often impossible to take the cliff sections, while it is likewise difficult to photograph the top of the rock from the sea as it may be dead ground. Difficulties also arise in taking the cliffs from the sea as the swell not only unduly moves the camera but also prevents a small boat being rowed within a suitable distance. In addition the most suitable time to attempt to visit these places is in July or August when the swell is likely to be lowest, but by then the nestlings are easily conspicuous and confuse the issue.

From these general remarks it will be seen that it is impossible to obtain any direct count of pairs of breeding Gannets at Sule Stack and Sula Sgeir, and extremely difficult even to obtain a rough estimate. The figures mentioned in the following pages may possibly be of some help in solving the question, but at the most they can be little more than very rough estimates.

## Sule Stack.

Topographically Sule Stack is nothing more than a high rounded lump of hornblende gneiss [12], 120 to 130 feet in height and of perhaps six acres in area. It is entirely devoid of any form of vegetation, but covered with white guano. It is oval in shape, orientated approximately north-north-east and south-south-west, and is divided into two portions by a narrow gully. It is this gully that makes landing so difficult,

as the swell, which is always severe round Sule Stack, rushes through between the two portions of the rock with the result that even on the east side there is little shelter. It was this gully that prevented the Duchess of Bedford from landing [2]. Of the two portions the northern is the higher as well as the larger. With the exception of the west side, which is precipitous, the whole rock is rounded so as to permit climbing in most places. The two photographs reproduced here, by kind permission of Canon J. V. Bullard, were taken while I was on the island. Other good photographs of Sule Stack have been published by the Duchess of Bedford [2].

Gurney's book [5] is so well known that I have no intention of repeating the early history of this gannetry that is contained therein. A few remarks are, however, necessary on the visits of Harvie-Brown and the Duchess of Bedford.

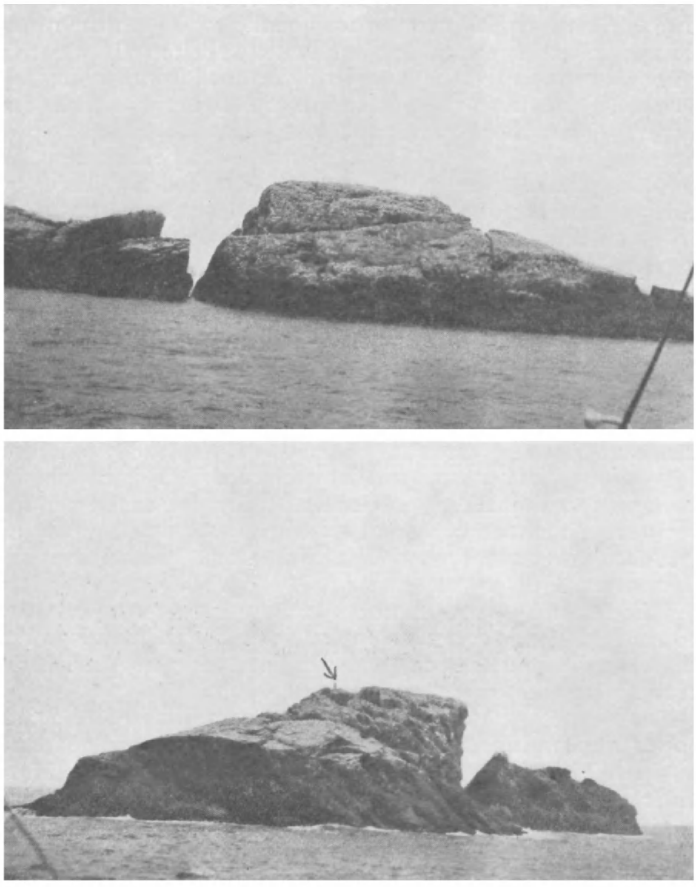
Harvie-Brown, who considered Sule Stack to be " certainly one of the most inaccessible of all our Scottish islets", made three unsuccessful attempts to land, in July, 1887, on June 29th, 1889, and on a further occasion. He cautiously abstained from making an estimate, but remarked on the very large number of immature birds, due possibly to the fact that this gannetry was less robbed of eggs and nestlings than others [3, 5].

This feature of the numbers of immature birds was also noticed by Professor Newton and Mr. A. H. Evans when they were near the rock, but did not land, on June 28th, 1890 [5].

The Duchess of Bedford also paid three visits to Sule Stack on May 17th, June 19th and 22nd, 1914, but could not land [2, 6]. She likewise remarked on the large number of immature birds and stated that in places they amounted to one bird in six. As to numbers, she " counted the birds before many of them rose on a portion of the rock which was most thickly occupied ", and in her opinion there were from 5,000 to 6,000 at the time of her visit. She considered also that the birds nested only on the upper third of the northern portion of Sule Stack, and on a small point of rock on the southern portion.

From the foregoing it would seem that my landing on the eastern side of the northern portion of Sule Stack on the morning of July 31st, 1937, was no mean feat. Indeed, it would appear that it was many years since anyone had actually landed, save perhaps a few fishermen. This landing was possible only because of the exceptional fine weather.

Immediately on landing a very large number of Gannets left the rock and did not return until an hour or so later



UPPER—Sule Stack (east side). July 31st, 1937.
LOWER—Sule Stack (from the north-west).
July 31st, 1937. The arrow indicates the writer.
(*Photographed by* J. V. Bullard.)

when I left. An enlarged photograph taken while I was actually on the rock shows at least 1,200 Gannets in the air and in the immediate vicinity of the rock. As it is most unusual for more than one adult to be in attendance on the nestling at any one time, it seems probable that many of these were the immature birds so frequently mentioned by previous writers. The reason why the large number of immature birds was not so obvious to me as to others is no doubt due to the fact that previous recorders did not actually land on Sule Stack. It is my experience that it is considerably easier to approach and observe a bird on an island from the water. Directly a landing is made, birds will leave the island even though the observer is farther away.

One of the points that struck me most was the big variation in age of the different nestlings. At the date of my visit there were nestlings still without down, while the wing-feathers of only a third had begun to shoot. It would seem, therefore, that nesting had begun very late this year.

As to the area of Sule Stack covered by nesting Gannets, I am in general agreement with the Duchess of Bedford [2, 6], though perhaps it is more correct to state that the Gannets nest on the upper half, rather than the upper third, of the northern portion. All the available nesting sites on this portion are occupied, as it is inconceivable that the Gannets could nest lower down for fear of the sea, and the western cliffs provide no ledges suitable. As for the southern portion, there are, indeed, few nests. As mentioned later, 118 pairs are estimated for this portion—probably an over-estimate.

The actual method attempted in estimating the number of breeding pairs was to obtain photographs of all the Gannets visible by means of overlapping exposures, so that afterwards prints could be joined up and correlated. The difficulties, however, were enormous and some of the major ones are worth recording.

1. Owing to the lack of distinctive physical features, it was impossible to join up any two photographs not actually taken from the same point.

2. As the whole rock was covered by Gannets it was impossible to get both the birds in the foreground and also those in the background in focus.

3. Owing to the roundness of Sule Stack, any photograph gave an almost infinite number of birds in the background.

4. The rock being covered with excreta, distant birds did not stand out well against the white background.

5. It is only possible to distinguish between adults and nestlings in the foreground of the photographs, where indeed the adults have often been frightened away.

Actually from 28 photographs it was possible to count 3,645 Gannets, of which number only 804 were definitely distinguished as nestlings. There can be little doubt but that some of the birds appeared in more than one photograph, but where this could be definitely ascertained they were only counted once.

The first problem is to estimate how many of the 3,645 birds were nestlings. 804 are known to have been but there must, of course, have been many others. On careful consideration I do not think that more than a third of the nestlings would be likely to appear in the photographs. The nestlings are smaller than the adult—it will be remembered that some had not yet grown their down, and are inclined to be hidden in a cleft in the rock, and also by the parent. A large number of the birds in the background of the photographs could only be counted by their necks; the nestlings sitting less upright would not be visible. If then this assumption that only a third of the nestlings appear in the photographs is correct, the original number of birds counted, 3,645, can be resolved into 2,734 adults and 911 nestlings.

It is obvious that it was impossible to photograph all the nests on Sule Stack, and the second problem is to estimate the number of nests that have not been accounted for. On Grassholm in 1924 Acland and Salmon [1] estimated the breeding pairs of Gannets from only four of the five photographs they took of the colony. They considered that an addition of only 20 per cent. was necessary to account for the nests now shown on their photographs. At Sule Stack I took 28 photographs, but decided to add 25 per cent. to allow for the nests not shown. This should be on the safe side. The total of breeding pairs is now brought up to 3,418 or roughly 3,500.

This figure of 3,418 pairs includes 118 pairs (125 birds counted=94 adults and 31 nestlings: add 24 for hidden birds=118) estimated for the southern portion—probably an over-estimate. The Duchess of Bedford also noticed the small number of Gannets here, and this is no doubt accounted for by the fact that the southern portion is by no means as high or as large as the northern.

I am by no means satisfied with these results, which owing to the two unknown factors—the number of nestlings in the photographs, and the proportion that the total number of nesting pairs photographed bears to the whole breeding population—cannot be considered in any way trustworthy.

It might appear that this figure of approximately 3,500

breeding pairs means a decrease in the Gannet population of Sule Stack, but there is no reason to assume this. Gannets generally seem to be on the increase, and it is not thought that any nestlings have been taken for food for many years. There is a general tendency to over-estimate large numbers of birds and it is difficult to make out whether previous writers included immature birds in their figures.

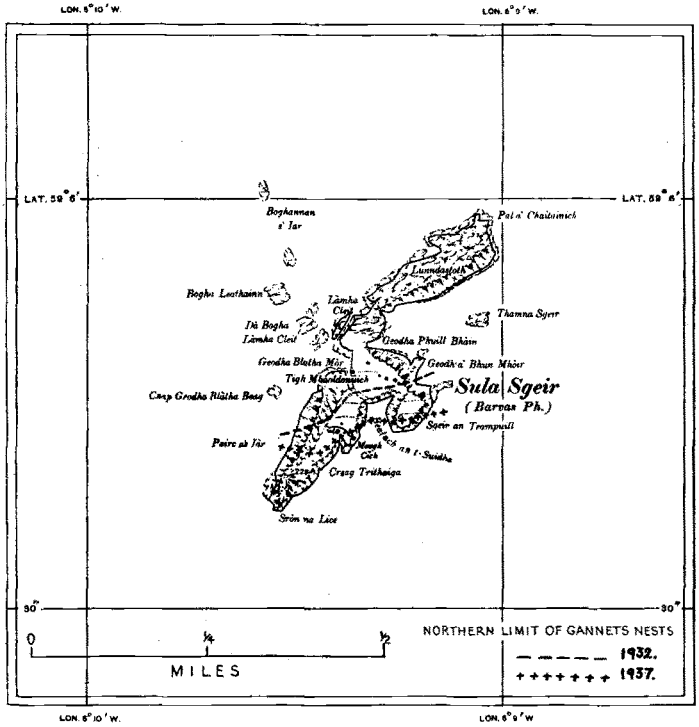
The Duchess of Bedford [2] referred to the large number of Kittiwakes and Guillemots that confused the issue, but the present writer saw only a few Guillemots and no Kittiwakes at all. Possibly the Kittiwakes have abandoned Sule Stack for North Rona and Sula Sgeir where there is a large increase [11].

## SULA SGEIR.

I landed on Sula Sgeir on the morning of August 5th, 1937. This was my second visit as I stayed on the rock for some 36 hours on July 23rd to 24th, 1932 [10]. The ground was not therefore new to me. Sula Sgeir is a much larger island, or rock, than Sule Stack and extends to some 30 acres. The fact that it has been surveyed on the six-inch scale is a considerable advantage and much facilitates the counting and marking of the nesting sites occupied by the Gannets. The cliffs of Sula Sgeir are much steeper than those of Sule Stack, indeed, it is only possible to climb the rocks at the central narrow neck of rock where the landing was made. The Gannets which occupy only the most southern portion nest both on ledges in the cliffs and on the top of the rock.

When at Sula Sgeir in 1932 I did not attempt any accurate estimate of the Gannet population, but stated that I considered there to be about 6,500 adults which Lockley construed as about 5,000 breeding pairs [4]. I did, however, draw a line on the map to indicate the northern limit of the nesting area. This map is reproduced here with a further line drawn to show the area occupied in 1937. It is not easy to draw these lines accurately, but every care was taken to obtain as correct a drawing as possible. A feature that is marked on the map and which may help other observers is the broken down dry-stone dyke that runs across the top of the island. It will at once be seen from the map that the area occupied has greatly diminished, and is now only some four or five acres as compared with nine or ten in 1932. The reasons for this apparent decrease will be discussed later.

The same procedure was adopted at Sula Sgeir as at Sule Stack, and from a series of 28 photographs the following results were obtained.




MAP OF SULA SGEIR.

(*Reproduced from the Ordnance Survey with the sanction of the Controller of H.M. Stationery Office.*)

| AREA (See Map). | *Total number of Gannets counted.* | *Nestlings. (Included in Total).* |
|---|---|---|
| Sgeir an Teampuill ... ... ... | 542 | 50 |
| Meagh Cich and Creag Trithaiga ... | 2,163 | 201 |
| Pairc as Iar ... ... ... ... | 1,090 | 291 |
| (South end near summit) ... ... | 92 | 36 |
| Sron na Lice, or Solan's Rock ... | 826 | 22 |
| Total Area ... ... ... ... | 4,713 | 600 |

Concerning these figures a word of caution is needed. The varying percentage of Gannets ascertained as nestlings to the total number of birds counted, bears no relation to the numbers of immature or non-breeding birds. It is due entirely

to the varying distance at which the photographs were taken. The number of immature birds was extremely small. Very few Gannets were disturbed, and only a small number were flying over the colony.

Again working on the assumption that only a third of the nestlings were visible, the total number of breeding pairs would be 3,535.

For Sule Stack I have considered that an addition of 25 per cent. would account for the nests not shown on the photographs. At Sula Sgeir there were more cliff sections than at Sule Stack and it was possible to take more cross-bearing photographs by reason of the number of projecting spurs of rock. The result is that I feel much more confident of the photographic results, and think that it will be on the generous side to add the same figure of 25 per cent. This, then, brings the total number of breeding pairs to 4,418, or roughly 4,500, divided as under.

| | | | |
|---|---|---|---|
| Sgeir an Teampuill | 508 | (South end near summit) | 86 |
| Meagh Cich and Creag Trithaiga ... | 2,028 | Sron na Lice, or Solan's Rock .. | 774 |
| Pairc as Iar ... | 1,022 | | |

Before proceeding to discuss this apparent decrease in the numbers of Sula Sgeir Gannets, there is one point worth noting. When Harvie-Brown was at Sula Sgeir on June 20th, 1887, Mr. Norrie took a photograph that was reproduced in Gurney's book under the title "Solan's Rock, Sulisgeir". This rock is marked on the map as Sron na Lice. From Norrie's photograph I was able to count only some 100 Gannets, a very small number, due no doubt to the fact that the Lewismen had taken a large number of Gannets and eggs just prior to his visit. A similar photograph taken by me in 1932 showed some 452 Gannets, while of the 826 in the photograph of 1937 about 541 cover the identical area of the other two photographs.

Gurney [5] put the Gannet population of Sula Sgeir at 8,000. In 1932 I mentioned 6,500 subsequently altered by Lockley [4] to 5,000. Now the figure appears to be lower still, about 4,500. It is obvious therefore that there has been a big decrease in numbers. This is evidenced by the fact that the breeding ground has been reduced nearly 50 per cent. in the last five years, though possibly this is partly due to the birds packing tighter on some of the more inaccessible places such as Sron na Lice (Solan's Rock). One does not have to look far for the reason. Sula Sgeir is now probably the only

British gannetry where a large number of nestlings are taken each year as they have a supposed food value.

Most years in the early days of September—the Wild Birds Protection Acts unfortunately only protect the Gannets till August 1st—a party of men from the district of Ness in the Island of Lewis have nothing better to do than to undertake the unpleasant voyage to Sula Sgeir and stay there a few days, taking all the gugas, or nestling Gannets, they can. These are taken back with them and eaten. Not even the most grumbling Lewisman can complain of a food shortage, and this annual venture is nothing short of an unnecessary destruction of bird-life. The following is a list of the numbers of Gannets taken annually in recent years, and I am pleased to have this chance to publish the figures so that the public interested in bird-life can know what goes on in this remote part of Scotland.

GANNETS TAKEN AT SULA SGEIR.

| *Date.* | *Number.* | *Remarks.* |
|---|---|---|
| 1884 ... ... | 2,800 | Taken in 3 days. |
| 1898 ... ... | 2,500 | |
| 1915 ... ... | 1,100 | |
| (During the war shell-fire practice by warships made a large number of Gannets desert Sula Sgeir.) | | |
| 1931 ... ... | 2,000 | |
| 1933 ... ... | 2,000 | |
| 1934 ... ... | 1,400 | Illness curtailed visit ! |
| 1935 ... ... | — | No visit owing to bad weather. |
| 1936 ... ... | 2,060 | Work of 9 men in 14 days. |
| 1937 ... ... | *c.* 2,000 | Exact figures not forthcoming. |

It would seem that an average year's taking is about 2,000 ; small wonder then that this gannetry, at one time one of the largest, is gradually being exterminated. Unfortunately there seems little one can do to stop this destruction. The proprietor has been appealed to, and it is hoped that he will have sufficient interest in the matter to intervene. The only action that could really be relied on to put an end to the slaughter would be to speed up the passage through Parliament of the Wild Birds Protection (Scotland) Bill. Once this Bill is on the Statute Book it will be illegal to take wild birds at any time during the year. No doubt with a maximum fine of five pounds per bird the Lewismen will think Gannet an extravagant luxury.

## COMPARISON OF THE TWO GANNETRIES AND CONCLUDING REMARKS.

It is almost impossible to compare directly the two gannetries of Sule Stack and Sula Sgeir. Their differences are

great. Sule Stack is just a small sea rock and generally speaking the whole of it provides nesting sites. Sula Sgeir on the other hand is considerably larger and here the Gannets only nest on the extreme southernmost parts. At Sule Stack the Gannets nest in a concentrated area, while at Sula Sgeir the area, though complete as a whole, can be split up into different portions owing to the nature of the ground.

On first considerations one might be tempted to consider Sule Stack as the larger of the two gannetries, as if one lands there it is impossible to move a yard without displacing a nestling or frightening away an adult. One is surrounded by Gannets. On Sula Sgeir there is little need to walk among the Gannets as they can be approached and photographed from the non-nesting part of the island. The cliffs, too, are sheer, and a considerable number nest on ledges that are inaccessible except to an experienced climber with ropes. There can, however, be no doubt that Sula Sgeir is the larger gannetry of the two. This has been the opinion of all authorities and is amply borne out by my photographs.

Before concluding I wish to state that for the various reasons mentioned in this article I am far from satisfied with my figures, which, of course, can only be accepted as rough estimates. I would, however, like to state that in my opinion the results obtained for Sula Sgeir are likely to be the more accurate of the two. Without being unduly pessimistic I see little chance of better results being obtained for Sule Stack owing to the enormous difficulties of approach and landing. While the prospect of obtaining an accurate *count* at Sula Sgeir is possibly a little more hopeful, there are probably not many who will have the opportunities of landing and also sufficient time and good weather at their disposal to examine minutely the cliffs from a small boat.

## SUMMARY.

The geographical position of Sule Stack and Sula Sgeir is explained, and certain points concerning their nomenclature are elucidated. A description of Sule Stack is given together with the observations of certain naturalists on this gannetry. The difficulties of the writer in estimating the number of Gannets as the result of his visit on July 31st, 1937, are mentioned, together with his methods of arriving at an estimate of approximately 3,500 breeding pairs. The decrease in area occupied by nesting Gannets at Sula Sgeir is recorded, and an estimate of approximately 4,500 breeding pairs, divided into five groups, is given as the result of the writer's visit on

August 5th, 1937. Notes are made on the photographs of Sron na Lice or Solan's Rock taken in 1887, 1932 and 1937.

The decrease in Gannets at Sula Sgeir is accounted for by the annual practice of taking the nestlings. In this connexion figures are given and show that about 2,000 nestlings are taken each year. This practice is condemned, and a plea is made for the Wild Birds Protection (Scotland) Bill. Reasons are given for the difficulties of a direct comparison of the numbers of Gannets at Sule Stack and Sula Sgeir. The writer's concluding remarks and the prospects of obtaining a more satisfactory census at a later date.

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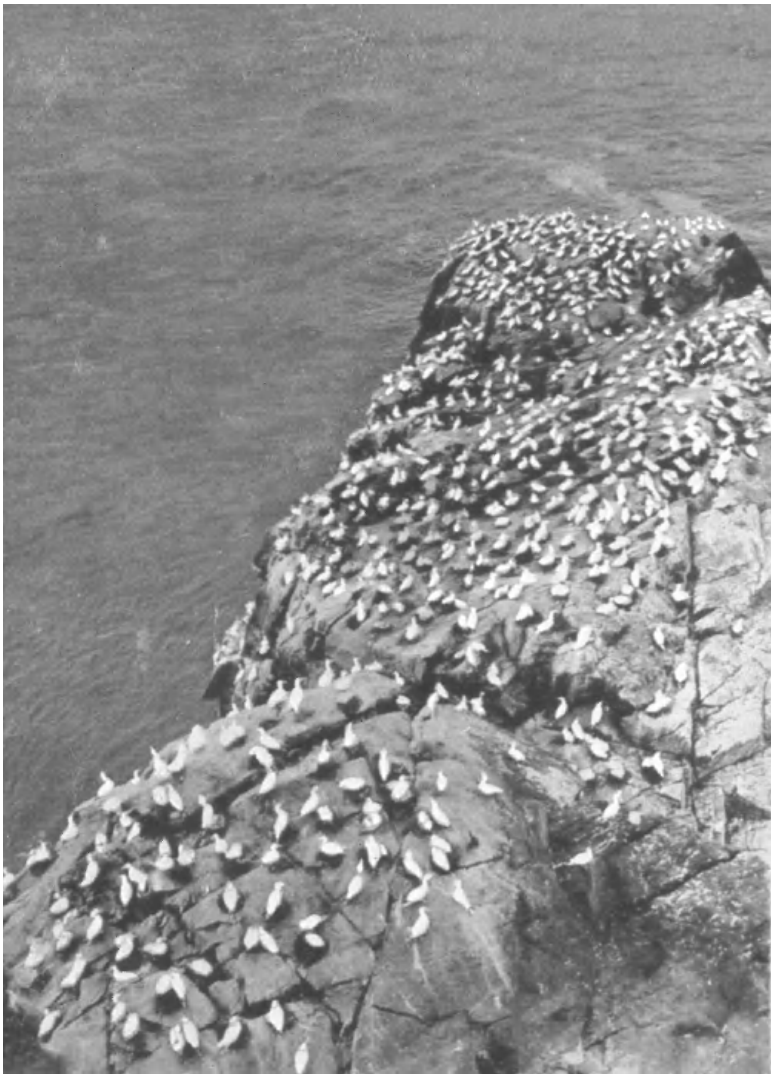

Sron na Lice or Solan's Rock. Sula Sgeir. August 5th, 1937.
(*Photographed by* Malcolm Stewart.)