Helgoland, not merely as representatives of Belgium and Germany but for contrib-
buting notably to such success as was achieved.

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Nests and eggs of Greylag Geese in Galloway
J. G. Young

Summary
Sixty eggs in 10 nests of Greylag Geese in Galloway in 1964 were measured. Their dimensions
(average length 84.5 mm., breadth 59.2 mm.) were similar to those published for other British
eggs which tend to be smaller than eggs from continental Europe. All 10 nests were successful,
though 5 eggs failed to hatch. In a second group of nests, 6 out of 8 clutches were successful.
At least 42 goslings were reared in the first group and 28 in the second. The sites and dimensions
of the nests are described.

Introduction
In recent years Greylag Geese Anser anser have been increasing and spreading as
breeding birds in south-west Scotland. The increase is probably due largely, though
perhaps not wholly, to 'overspill' from the flourishing feral colony on the estate of the
Earl of Stair near Stranraer, Wigtown-
shire. The study area, a loch and its
environs, was first used by a single pair in
1951. In 1955 seven adults and five gos-
lings were seen on 29th June. In 1953 31
geese were counted, of which only ten or
twelve were adults. In 1957 there were 20
adults with seven broods. The breeding
stock does not seem to have increased
beyond this point, ten nests having been
found in 1963 and again in 1964. The area
is also used as a moulting place, counts of
over 150 geese in early June being not
uncommon.
This paper is concerned with the ten
nests of 1964, with the dimensions of the
60 eggs they contained, and with the
success of this and another group of nests
elsewhere in Galloway.

Nests
All the nests were built on islands. They
were built on the ground, of large twigs,
withered grasses and moss, and contained
considerable amounts of down. In two
nests examined twig by twig on different
islands there was no evidence of material
having been carried to the nest. Most of the
nests were near the water's edge. Five were
at the bases of large trees, three beside
large rocks, two in dense secondary growth
and one on open ground. In a group of four
on one island, the nearest nests were six
feet apart and the furthest forty-five feet.
The average diameter of the nests was 26
inches, with a rim of 3½ inches and a cup
2½ inches deep.

Clutch-size
Three single eggs were found deposited in
positions where there was obviously no
nest. The clutches in the ten nests were
distributed as follows:

<table>
<thead>
<tr>
<th>clutch-size</th>
<th>number of clutches</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 5 6 7 9</td>
<td>2 2 3 3 1</td>
</tr>
</tbody>
</table>

The mean clutch-size, excluding the single
eggs, was 6.0. This is rather larger than
would be expected from the note by F. C. R. Jourdain (in Witherby, Jourdain,
Ticehurst and Tucker, The Handbook of
British Birds, III, 1939) 'Eggs:—Number
variable; usually 4 to 6, occasionally 7 or 3
only, rarely 8'. Two pure white eggs were
seen in different clutches, in which the rest
of the eggs were stained. The white eggs
hatched at the same time as the other eggs
so must presumably have been incubated
for the same period.

Hatching success
All the nests were successful in producing
young. 55 of the 60 eggs (91.7%) hatched,
the five that failed to do so occurring in
five different nests. The clutch of nine in
nest VI all hatched and a brood of nine
was later seen on the loch.
There were eight nests in another group in Galloway. These were not studied in detail but it is known that two clutches failed to hatch, at least one being deserted.

**Fledging success**

The exact number of goslings that lived to fly is not known but in the principal study at least 42 were still alive on 28th June. On the same day there were at least 28 survivors from the six successful nests in the second group.

**Eggs**

The eggs were measured on 25th April, ten days before the peak of hatching. The linear measurements are summarised in Tables I and II. The mean length and breadth agree very closely with those of the collection of British eggs measured by Jourdain (Witherby, et al., 1939). From published data it seems as if British eggs tend to be smaller than those found in Europe but indistinguishable from those collected in Iceland.

The egg weights are summarised in Table II. Eggs with well-incubated embryos weigh substantially less than those of freshly-laid eggs. It seems likely that much of the relatively large differences in egg weights between clutches can be attributed to differences in the elapsed times of incubation, rather than to differences in egg volume.

**Moult**

A total of 286 birds moulted in these two areas, 75 on the main study and 211 at the second locality.

**Acknowledgements**

To ensure that the minimum amount of time was spent at the nests I had the assistance of Len Allison, James Morrison, George McMurdo and Robert T. Smith. Sir Geoffrey Hughes-Onslow gave me the history of geese in the study area. I am especially indebted to Hugh Boyd, Sir Arthur B. Duncan and Donald Watson for comments on this paper.

| Table I. Length and breadth of Greylag eggs from Galloway compared with those from elsewhere |
|----------------------------------------|----------|----------|----------|----------|----------|
| locality                 | number of eggs | length (mm) | breadth (mm) | source |
| Galloway                  | 60        | 84.5      | 59.2       | 54-64   |
| other British             | 100       | 85.32     | 68.04      | 49.5-62.5 |
| Iceland                   | 18        | 84.9      | 58.7       | 53-63   |
| Norway                    | ?         | 80-92     | 58 mode    | 53-62   |
| Denmark                   | 29        | 90.7      | 61.1       | 57-64   |
| Russia                    | 51        | 88.2      | 60.3       | 53.5-68.5 |

Sources:

(1) F. C. R. Jourdain, in Witherby et al., 1939.  
(2) G. Timmermann, 1938, Die Vogel Islands; P. Nielsen, 1919, Ornith Tids. 13: 33-79.  
(3) E. L. Schioler, 1925, Danmarks Fugle, I.  
(4) S. Alpheraky, 1905, The Geese of Europe and Asia.

| Table II. Differences between clutches in the dimensions and weights of Greylag eggs |
|----------------------------------------|----------|----------|----------|
| nest       | no. of eggs | mean length | mean breadth | mean weight |
| I          | 7          | 87.3      | 60.7      | 145.9     |
| II         | 7          | 84.4      | 57.1      | 148.7     |
| III        | 6          | 80.8      | 60.3      | 133.0     |
| IV         | 6          | 83.8      | 58.8      | 147.7     |
| V          | 5          | 84.4      | 55.6      | 149.5     |
| VI         | 9          | 84.1      | 57.8      | 147.6     |
| VII        | 4          | 86.0      | 62.3      | 168.5     |
| VIII       | 7          | 87.9      | 60.7      | 163.0     |
| IX         | 5          | 84.2      | 59.4      | 153.6     |
| X          | 4          | 81.8      | 59.5      | 133.9     |

Total 60 84.5 59.2 148.9

range of individual egg weights 122-172 gms.