South Georgia Association Newsletter

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A close encounter with Shag Rocks – taken from MY Golden Fleece in 2015

In this issue: Minutes from the SGA AGM; the origin of South Georgia; horses on South Georgia; Bob Headland awarded Morag Husband Campbell medal; South Georgia fish survey; Significant earthquake in the South Sandwich Islands; update to the Falklands Dictionary of Biography; South Georgia and SGA news.

The South Georgia goundfish survey (pages 10-11)

Horses on South Georgia (pages 8-9)

The South Georgia Association Spring Meeting and AGM will be held in person on 6th May 2022 on HQS Wellington

The South Georgia Association
Minutes of the Nineteenth Annual General Meeting
May 7th 2021 (on-line via Zoom)

The meeting was attended on-line by SGA members, including Committee members:

David Tatham (President), David Drewry (Chair), John Owen (Treasurer), John Mills (Membership Secretary), Paul Rodhouse (Events), Pat Lurcock (Website), Bill Block (Initiative Fund), Bob Burton, Dave Fletcher, Alexandra Shackleton, Bob Headland, David Rootes and Fran Prince (Secretary).

Notice was given before the AGM that with the President's approval we would roll over election of the committee for one year without the usual request for nominations from the membership.

1 WELCOME

David Drewry, Chairman welcomed all SGA members to the AGM. It had been sad to cancel the 2020 Spring meeting and AGM but SGA is pleased to be operating on-line.

2 THE MORAG HUSBAND CAMPBELL MEDAL 2021

The Chairman was pleased to announce the recipient of the medal this year as Robert K Headland, for *outstanding and sustained contributions to the history and knowledge of South Georgia and to extending the wider appreciation of the island.* The medal was presented virtually! and received with many thanks from Robert Headland.

3 MINUTES OF PREVIOUS MEETING

The minutes of the Eighteenth AGM held on 13 April 2019 will be held back to sign as a true record.

4 CHAIRMAN'S REPORT

David Drewry reported on the last year's activities of SGA. Although unable to host live events SGA has presented 4 successful Zoom meetings:

25 June 2020: Whales, Mountains and Penguins;

9 September 2020: Toothfish, Construction at KEP, Rodent monitoring;

26 November 2020: The Viola recovery, Use of Drones for monitoring, Report from GSGSSI;

25 February 2021: The A68 Iceberg at South Georgia

Numbers attending were 150-160 for the first talks rising to 360 joining from all over the world. We plan to continue these events in some way into the future. Thanks were given to Martin Collins and to BAS for use of their Zoom platform and to the group organisers. The next event will be on 20 May 2021 jointly with SGHT on the Archaeology project at South Georgia, speakers Robert Burton and Marcus Brittain.

The Committee met regularly on Zoom, thanks given to Fran Prince and all organisers. Communication continued with the membership via FaceBook, MailChimp (thanks to Sarah Greenwood) and the Newsletter (with thanks to Martin Collins, editor). Martin asked members to send him any comments regarding the newsletter. The Website had been revamped and updated by Pat Lurcock and is now very clear and accessible to use.

An important part of the SGA membership is to act as constituents of SG and SSI. SGA has interacted with GSGSSI, feeding into their new strategic framework " Protect, Sustain, Inspire". Two meetings were held with Helen Havercroft, CEO in December and April with good feedback on SG matters. There is a good link with SGA members and their real experience that can be relayed to Government. SGA was well represented at the Stakeholders meeting held in September online.

SGA noted the decommission of the BAS ship RRS *James Clarke Ross* and attended the celebration. It was sad to see her departure after such huge involvement in and around South Georgia.

5 TREASURER'S REPORT

John Owen, the Treasurer, reported on SGA finances. All had received a copy of the accounts including the audited final summary. This had not been a normal year, and the account currently stands at £30,000. The committee want to make more of the Initiative Fund. There were no questions from the meeting.

6 SGA INITIATIVE FUND

Bill Block reminded members of the Initiative Fund that supports projects to stimulate awareness and support of South Georgia and the South Sandwich Islands. The funds were good in SGA just now. 11 grants have been awarded over 14 years, helping with Habitat restoration project, archaeology project, publication of Antarctic Magistrate: the life of Edward Beverage Binnie. Members were encouraged to spread the word about the fund, the application is a simple form on line and may be submitted to Bill Block at any time of the year.

7 REPORT OF SOUTH GEORGIA AFFAIRS FROM COMMISSIONER NIGEL PHILLIPS

The Commissioner reported on the effect of Covid on GSGSSI, the main impact being drop in tourism with income less than £1000 in 2021. He suspects next season will also be supressed. South Georgia is free of the virus, thanks to an "abundance of caution", and thanks were given to Steve Brown for huge logistics effort. Work continued with the KEP wharf construction, with more quarantining and lead times. They were grateful to the BAS construction team with the work completed ahead of time and within budget. KEP is now ready to receive the RRS Sir David Attenborough. The build team is revamping KEP and the museum, and re-fencing Grytviken Cemetery with oak fencing cured since 2019, coinciding with 100th anniversary of the death of Shackleton. Also work to stabilise Sir Ernest's grave (that has become over-soaked in whiskey!), and to rebuild and restore other graveyards. GSGSSI is very grateful to the UK Government's Blue Belt programme, supporting UK Overseas Territories with protection and sustainable management of their marine environment, and Darwin Plus environment funding for UK OTs.

FCDO grant funding has continued. Work on the Micro-dam at Bore Valley is hoped to provide 100% renewable energy and therefore no further fuel import to the Museum. The Fishing season took place in austral 2020 and GSGSSI were pleased to report that not one conservation measure was compromised. Licence inspections took place at Stanley rather than at sea.

In September a new South Georgia visitors film was produced, narrated by Sir David Attenborough free of charge. It referred to the resilience of nature and South Georgia being "an ecosystem in recovery". It was important and rewarding to get a testimony of getting things right from Sir David Attenborough.

GSGSSI Strategic framework "Protect, Sustain, Inspire" has been released following massive consultation. They now have to deliver on it. GSGSSI celebrated the inaugural Polar Pride Day on 18 November, using Twitter feeds to support diversity in Polar Science.

SGHT Artists Competition to create a site-specific installation at Grytviken whaling plan was won by Michael Visocchi for his work 'Commensalis – the Spirit Tables of South Georgia.

The Commissioner finished his report by paying tribute to Helen Havercroft, who will be leaving her post in August. She had been the driving force behind "Protect, Sustain, Inspire" and had been a fantastic CEO for GSGSSI.

The Chairman thanked the Commissioner for his report and also added thanks and good wishes to Helen from SGA.

8 REPORT FROM PROFESSOR DAME JANE FRANCIS, DIRECTOR OF BAS

Dame Jane provided an update on aspects of BAS science at South Georgia. Jane noted that Laura Gerrish had talked to SGA about the A68 iceberg, which had broken up in March. Funding from NERC and time on research ship, RRS James Cook, had allowed data to be collected from gliders on temperature and salinity around the South Georgia. Norman Ratcliffe at BAS led work to track king penguins in areas where A68 might have been grounded, tracking foraging trips in 3D (location and depth) up to 350km away from South Georgia. Had the berg grounded this could have impacted on the king penguin breeding success. Ultimately the giant berg broke up to the SE of South Georgia and penguin foraging was not disrupted. Data from the gliders is still being analysed to determine impacts on regional oceanography. The BAS / BAM construction team successfully completed the KEP wharf, and then managed to get people back home, via ship from Stanley as there were no flights operating.

The 2020/21 season planned in a Covid world. No science had taken place apart from monitoring at Bird Island and KEP. Other work included the Western Core Box survey from the RRS James Cook. Jane updated the SGA on the outcome of the Wild Water Whale Survey on R/V Braveheart in Jan-Feb 2020. The southern right whale "Braveheart" was tracked from South Georgia up to Brazil via Argentina and Uruguay. The survey recorded 55 blue whales and 790 humpbacks around South Georgia in 23 days, providing evidence of the recovery of whale populations.

The use of drones has proved an efficient method of surveying, with no disturbance, zero carbon, and more accurate counting. Elephant seals were surveyed at KEP, St Andrews Bay & Hound Bay; gentoo penguins at Maiviken; fur seals at Maiviken; Weddell seals at Larsen Harbour, wandering albatross at Bay of Isles; and whales in Cumberland Bay.

The RRS *Sir David Attenborough* is back in the shipyard and will be in London for COP in November. She will be used for the 2021/22 season just for logistics to supply stations, from Stanley to Bird Island, KEP, Rothera to pick up staff, and support the Thwaites Project on the Antarctic Peninsula.

The Chairman thanked Dame Jane Francis for the interesting summary from BAS. It will be exciting to see results of studies. On behalf of SGA he congratulated Jane and her colleague at BAS Richard Horne on their election as Fellows of the Royal Society.

9 REPORT FROM SOUTH GEORGIA HERITAGE TRUST, ALISON NEIL (CEO) and NICK PRENTICE (CHAIRMAN)

Alison reported on the successful candidate of the Artist Competition, Michael Visocchi, who has been commissioned to build the installation at Grytviken. The aim is to highlight visitor experience.

School curriculum material has been issued to 800 schools in UK and Overseas Territories.

Joint talks with SGA and UKAHT have been taking place.

Dundee University is producing an interactive South Georgia app.

The Shackleton Anniversary programme is underway.

Work taking place on the interpretation of the Main Store with plans to open up to visitors.

SGHT has supported the BAS Whale project and the RSPB/Birdlife International Albatross project.

9 ANY OTHER BUSINESS

There was no other business

The Chairman thanked all the committee, speakers and SGA members for attending

The meeting was followed by a talk from Abigail Lees, Natural History Unit BBC and presentation of film footage from BBC's Seven Worlds, One Planet "The Impact of Changing Weather on Grey-headed Albatross Chicks at Bird Island"

Fran Prince, Secretary,
12 May 2021

Where did South Georgia come from?

Phil Stone, on behalf of Ian Dalziel, David Macdonald, Bryan Storey and himself

Have you ever wondered why South Georgia is where it is? The mountainous, glaciated island is the crest of one of the most isolated fragments of continental crust on Earth, located approximately 1700 kilometres east of the southern termination of the Andean Cordillera of South America. Despite that separation, there are compelling similarities between the geology of the two regions that argue for an originally much closer relationship. Conversely, the lack of a clear mechanism that would displace South Georgia over such a large distance, and recent regional modelling of marine geophysical data, have been cited as reasons to reject that relationship in preference to an origin for South Georgia close to the Maurice Ewing Bank, at the eastern tip of the Falkland Plateau. So, what is going on? It seemed to some of us who had contributed to the geological survey of South Georgia back in the 1970s that a re-examination of the evidence was called for, either to reinforce or amend the correlations with southern South America. The result was an emphatic confirmation of the Andean connection.

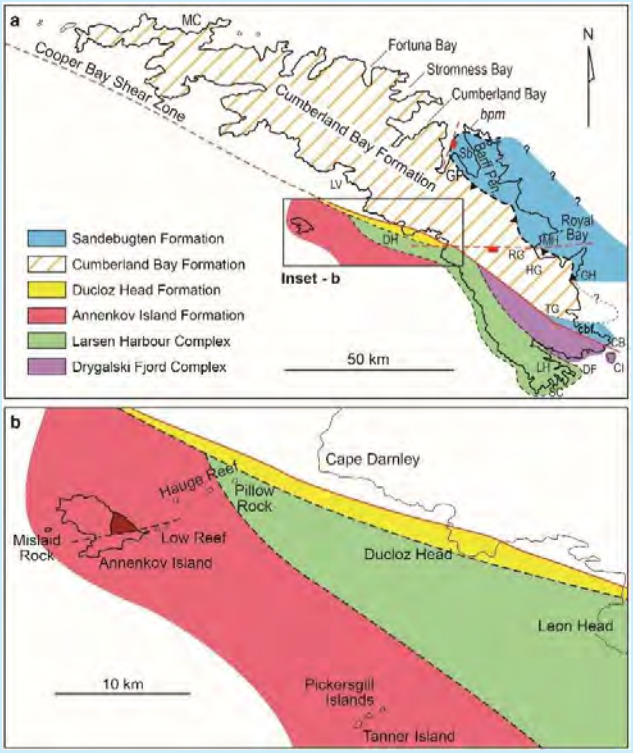

Figure 1. A simplified geological map of South Georgia.

a. Geology of the main island. Stratigraphical codes in italics: bpm Barff Point Member of the *Cumberland Bay Formation*, cbf *Cooper Bay Formation*. Faults shown as red broken lines.
Place Names: CB Cooper Bay; CI Cooper Island; DF Drygalski Fjord; DH Ducloz Head; GH Gold Harbour; GP Greene Peninsula; HG Hindle Glacier; LH Larsen Harbour; LV Larvik; MC Macdonald Cove; MH Moltke Harbour; RG Ross Glacier; Sb Sandebugten; SC Smaaland Cove; TG Twitcher Glacier.

b. Geology of the Annenkov Island area plus other offshore islands and adjacent area of South Georgia; the darker red area on Annenkov Island is the outcrop of the Lower Tuff Member of the Annenkov Island Formation; all other areas of Annenkov Island plus Mislaid Rock and Low Reef are underlain by the Upper Breccia Member.

Geological exploration in South Georgia

Most oceanic islands are volcanic, actively or relatively recently so, and early visitors probably assumed that would be the case with South Georgia. One such, Heinrich Klutschak, rather let his expectations run ahead of his observations and in 1881 described "a range of once mighty but now extinct volcanoes … cone-shaped peaks and great beds of lava." In fact, the island is primarily composed of Cretaceous sedimentary rocks, sandstone and mudstone that once filled a depositional basin created between an ancient continental margin and an offshore arc of volcanic islands – a 'marginal basin' – about 120 to 150 million years ago. The floor of the basin was formed partly by stretched continental crust and partly by the oceanic crust that formed as the basin expanded, and fragments of this assemblage are preserved in the SE of the island (Figure 1).

The teasing-out of South Georgia's geological history took time. Early, piecemeal contributions were made by passing expeditions with a primary focus further south, and the first attempt at a comprehensive overview was the 1911 survey by the Scottish geologist David Ferguson at the behest of the Salvesen whaling company. The modern synthesis was initiated in the 1950s by Alec Trendall during the South Georgia Survey Expeditions, and then more fully developed by an extensive programme of geological investigation in the 1970s by the British Antarctic Survey, with some specialist input from geologists with Patagonian experience funded by the US Antarctic Research Program.

The remnants of the continental margin and marginal basin floor at the SE end of South Georgia form the mountains of the Salvesen Range. The continental rocks comprise gneiss and metasedimentary rocks intruded by gabbro and granite and are known as the *Drygalski Fjord Complex*; they are cut by many dolerite dykes that were intruded as the continental margin was stretched (Figure 2). The oceanic components from the floor of the basin that then opened, forming the *Larsen Harbour Complex*, are gabbros, abundant dolerite dykes, basaltic lavas (Figure 3) and volcaniclastic rocks collectively known as an 'ophiolite'. From the oceanward side of the marginal basin, the remains of a volcanic arc are preserved on the SW coast at

Ducloz Head, and on Hauge Reef, Annenkov Island and the Pickersgill Islands. Volcanic tuff and volcaniclastic breccias form the *Ducloz Head* and *Annenkov Island formations*; the latter contains a fossil assemblage that confirms the age of the strata (Figure 4). A major tectonic fault seen onshore between Cooper Bay and Ducloz Head, the *Cooper Bay Shear Zone*, separates these dominantly igneous rock assemblages from the sandstone successions that make up the greater part of South Georgia.

There are two distinct types of sandstone, with markedly different compositions. The more widespread type, which forms the Allardyce Range (Figure 5), was created by sediment eroded from the volcanic side of the depositional basin and makes up the *Cumberland Bay Formation*. The contrasting sandstone type, seen along the north-east coast of South Georgia between Godthul and Gold Harbour, and between Wirik Bay and Cooper Bay, has a composition dominated by quartz grains. These quartz-rich sandstones contain negligible material eroded from the volcanic arc and were largely derived from the continental side of the depositional basin; they make up the *Sandebugten* and *Cooper Bay* formations. Although both were deposited at much the same time in the Cretaceous period, the sandstone formations were deformed in different fashions when the marginal basin closed and the volcanic arc moved back towards the continent. In the process, the *Cumberland Bay Formation* was forced up towards the NE so that it overrode the *Sandebugten Formation*, and a major tectonic thrust plane now separates the two sandstone types.

Fig.2. Dolerite dykes cutting layered gabbro of the Drygalski Fjord Complex on the NE coast of Drygalski Fjord. Image by Bryan Storey.

Fig. 3. Lava from the Larsen Harbour Complex seen on Pillow Rock, one of the islets of the Hauge Reef. The 'pillow' shape is characteristic of submarine eruption. Image by Geoff Tanner.

Geological exploration in the southern Andes

As work progressed in South Georgia, a geological understanding of the southern Andes was also established. Early work contemporary with that of Ferguson on South Georgia noted the close similarity in age and composition of the *Cumberland Bay Formation* sandstones and the *Yahgan Formation* sandstones of Tierra del Fuego. That correlation was then enhanced in the 1960s by the geological survey work of Rudy Katz and colleagues from Chile's Empresa Nacional del Petróleo. Katz went on to describe a regional interpretation that incorporated the basalt lavas of the Patagonian '*Rocas Verdes*' belt as the uplifted floor of a marginal basin. The similarities with South Georgia were strengthening and were further enhanced during expeditions to the Patagonian region, led by US geologists, that confirmed the '*Rocas Verdes*' as fragments of the floor of a former small ocean basin – an ophiolite complex – that had formed, between the Andean continental margin and an offshore volcanic arc. The similarities to the story emerging from South Georgia were striking.

The Andean 'marginal basin' rock assemblage sweeps around to the south of Tierra del Fuego but then is abruptly terminated at a submarine escarpment forming the continental margin immediately east of Cape Horn. This was the original location of South Georgia. It provides an exact match for the geology immediately south of the Beagle Channel that is truncated at the submarine escarpment. Not only do the rock units and tectonic history of South Georgia correlate in every significant respect with those of the Andean Pacific hinterland, exact matches for sources of the sedimentary strata forming much of the island – the *Cumberland Bay* and *Sandebugten formations* – occur in the easternmost extremity of the Andean Cordillera.

Fig. 4. Fossils collected from Annenkov Island in 1954 by Alec Trendall: upper) the partial impression of a large ammonite; lower) the impression of a pair of linked bivalve shells. British Geological Survey images P532005 and P532007 ©BGS/UKRI.

Figure 5. The SW coast of South Georgia at Cape Darnley where the sandstone beds of the Cumberland Bay Formation form steep, ice-bound cliffs plunging dramatically to the sea from the heights of the Allardyce Range; the R.V. Nathaniel B. Palmer in the foreground. Image by Nicholas Bayou.

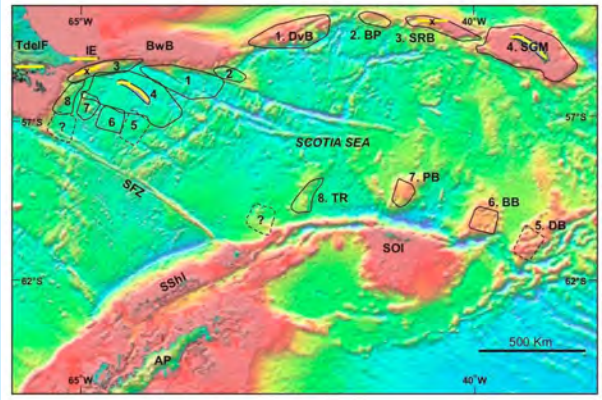

Figure 6. Satellite-altimetry derived gravity image of the Scotia Arc showing the present and palinspastically restored positions of the South Georgia microcontinent and other former fragments of the southernmost Andean Cordillera in the Late Cretaceous, ca 90 Ma.

Continental drift and plate tectonics

As the links between South Georgia and Tierra del Fuego became increasingly apparent, ideas of continental drift afforded a means by which the two regions could have been separated and the Scotia Arc formed. Early suggestions envisaged Pacific Ocean crust breaking through an Andes – Antarctic Peninsula landmass as it drifted westwards, but this was in the early 1960s and at that time continental drift was mostly dismissed as implausible. Not long after, everything changed, and the recognition of plate tectonics revolutionised ideas of ocean basin origins and continental movement. This, and rapid advances in offshore technology, promoted investigations into the origins of the Scotia Sea, and it proved to be a much more complicated story than had been expected, with some of the expansion of the Scotia Sea shown to be the result of independent, internal seafloor spreading. This could explain some of the eastward movement of South Georgia, but by no means all of it, whilst the clearer delineation of the various submarine banks added to the complexity of the continental fragments that had to be accommodated in our reconstruction (Figure 6).

The uncertainties in this regional picture encouraged different interpretations of South Georgia's origins, driven by the increasing quantity of geophysical data generated by offshore surveys in and around the Scotia Sea. The compelling evidence for the Andean connection faded into the background and, when inconvenient, was disregarded. Nevertheless, our re-examination of the geological evidence resulted in an emphatic confirmation of the Andean connection, with recently acquired data strengthening and extending the correlations and affirming the sediment sources that had been previously proposed; the suggested alternatives were eliminated. It was even possible to accommodate the Shag Rocks continental block in the expanded scheme.

The remaining problem is the mechanism for completing South Georgia's eastward escape from the southern Andes, a process completed over about the last 40 million years. Transport within the plexus of transcurrent faults that make up the North Scotia Ridge transform zone seems most likely, but consideration of the evolving geography of the Scotia Arc raises an additional, intriguing issue: the position of the various continental blocks at any given time would have influenced the pattern of deep ocean currents. The effect of submarine topography on the developing Antarctic Circumpolar Current would have been of particular importance as this would have ramifications for the growth of the Antarctic icecap, and hence for global climate.

For the complete conclusions …

Our review of South Georgia's geological relationships, tectonic wanderings, and oceanographical influences ("South Georgia microcontinent: Displaced fragment of the southernmost Andes") has now been published in the scientific journal *Earth-Science Reviews* (2021, volume 220, article 103671). For more details on any aspect of the story, please feel free to get in touch with the authors:

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Horses on South Georgia

By Bob Burton

Bob Headland has listed 15 species of exotic mammals (SGA NL 18.8) that have spent time on South Georgia. They were introduced for a number of reasons. There were pets that included a vervet monkey and guinea pigs as well the more usual cats and dogs; animals to eat like pigs, cattle, sheep and rabbits; and accidental imports like rats and mice. Some ran wild and became established like rats, mice and reindeer, now thankfully exterminated; others died out. These included horses.

The first horses arrived in 1905. Ernest Swinhoe, an English farmer who had settled in Chile, established the South Georgia Exploration Company. The company bought a lease on South Georgia for £1 from the Falkland Islands Government to investigate the possibilities for farming and to carry out sealing. On arrival in King Edward Cove, 24 sheep and four horses (a stallion and three mares) were landed and they took up residence on the flat area of ground opposite King Edward Point since known as Hestesletten ('Horse Plain' in Norwegian). The sealing was a failure and Swinhoe returned to Chile leaving the horses and some of the sheep.

Swinhoe's four horses on Hestesletten

Photographs show that Swinhoe's horses were criollos, a South American breed, noted for their hardiness, endurance and ability to survive on coarse food. On South Georgia this was tussock grass supplemented by tidbits given them by the whalers. The photographs also show that at least two foals were born. Swinhoe had included horses among his livestock to see whether they would thrive on South Georgia and there is no record of what function they might have had if this was successful.

Swinhoe's horses with a foal. Note the distinctive white markings on the head and legs of these criollo horses

The second group of horses were brought to South Georgia by Wilhelm Filchner's *Deutschland* Expedition that arrived at Grytviken in October 1911. Twelve ponies had been bought in Harbin, Manchuria. (Ponies were generally defined as horses less than 14 hands (142 cm) at the withers (shoulders) and also with a conformation of a stout body and short legs. 'Pony' was the term usually used on the three expeditions to use horses in the Antarctic (Shackleton, Filchner and Scott).

The ponies were transported by train westwards from Harbin across Asia and Europe to Hamburg and thence shipped to Buenos Aires and onwards to South Georgia aboard the Grytviken supply ship *Harpon*. On arrival they were released at Grytviken to fend for themselves. Only eight were to be taken to Antarctica and capturing them before *Deutschland* sailed proved to be a bit of a palaver. Two ponies broke away and raced uphill to the area of Gull Lake. It took three days to recapture them and one then broke free again, jumped into the sea from the dock, swam ashore and raced into the hills. It was allowed to remain free and one of the four that was going to left behind was taken instead. One year later, Filchner returned to Grytviken having failed to establish a foothold on the continent.

Seven Manchurian ponies (and a cow) being fed on the outskirts of Grytviken whaling station before Filchner left for Antarctica.

The surviving four ponies were released and joined the four that had been left at South Georgia and had gone wild. The subsequent history of Swinhoe's and Filchner's animals is little known. They survived for at least a few years. In 1913 the American ornithologist Robert Cushman Murphy 'found a small herd of wild horses' left by Filchner.

James Wordie, Shackleton's geologist, recorded 'Filchner's two ponies' in 1914. The magistrate's records show that two horse hides were exported in 1917 and Leo Harrison Matthews, writing in 1931, wrote that the horses on Hestesletten 'have long since died out'. Would the two 'herdlets' have interbred? Given that the mares would have been jealously guarded by the stallions, it would been likely only after one stallion had died.

Margit, one of C.A. Larsen's daughters, riding bareback on one of Filchner's ponies.

There are two records of horses being employed at the whaling stations. Wordie wrote that a horse pulled trucks of coal at Ocean Harbour and the horse may also have been ridden with mail across to the Veslegard Hut on the shore of Cumberland Bay for onward carriage by boat to Grytviken. Søren Berntsen, the manager of Husvik, took two photos of a horse which was presumably used for pulling railway trucks around the whaling station. Given that the trucks used for ferrying large quantities of coal, bonemeal and other materials around the whaling stations were otherwise propelled by manpower, it is perhaps surprising that more use was not made of horsepower.

Update to the Dictionary of Falklands Biography (including South Georgia)

On 1st June 2021 a completely redesigned Dictionary of Falklands Biography website was launched. There are now more than 1700 images on the website and there have been more than 15,000 'hits' in the past 12 months. Many new biographies were added, including four that are of particular interest to SGA members.

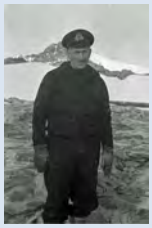
- Captain Robert Shepherd, the master of the *Eagle* and the first master of the *Trepassey*
- Captain Eugene Burden, the second master of the *Trepassey*
- Carl Ossian Johnson, the whaling entrepreneur associated with Prince Olav Harbour and the Southern Whaling company.
- Captain Denis Coleman, administrator of South Georgia 1959-1969.

October 2021 saw further significant additions, including five new South Georgia entries written by Ian Hart. Ian has now produced at least one significant personality biography for all the former whaling stations on South Georgia, and in the course of this he has contributed a number of rarely seen images. With the addition of a biography of Robert Spivey, there is now an entry for all the men who served as Magistrate/Civil Administrators on South Georgia.

https://falklandsbiographies.org/home

Denis Coleman

Robert Shepherd



Eugene Burden

Wedding photograph of Carl Ossian Johnson

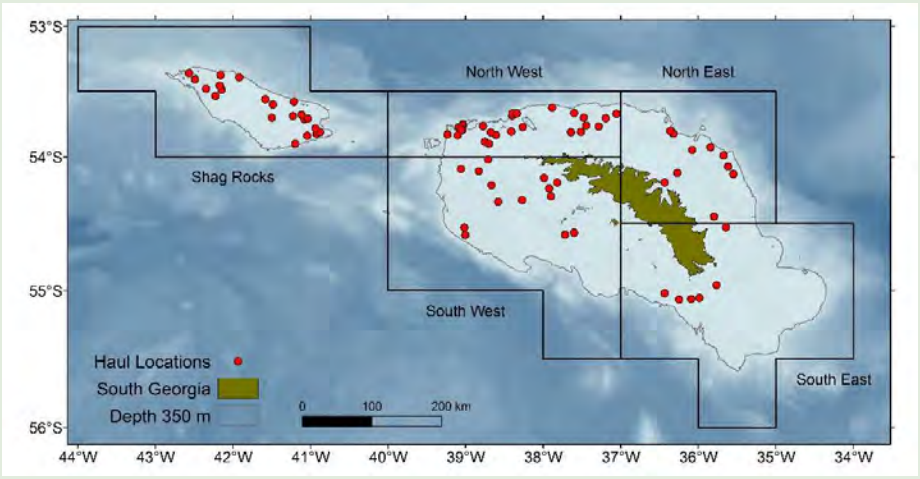
The 2021 South Georgia Groundfish Survey

Phil Hollyman, Marine Ecologist, British Antarctic Survey

In May, a team of six departed for South Georgia aboard the 70.4 m fishing trawler, F/V Robin M. Lee to undertake the 2021 South Georgia groundfish survey. For a couple of us, this was following two long weeks of quarantine in Stanley. The team was comprised of scientists from BAS and GSGSSI as well as staff from the fishing company (Polar Seafish) who operate the vessel. We set sail on the 5th of May, steaming straight into some rough seas that took a while for some team members to acclimatise to. The aim of our trip was primarily to assess the stock of mackerel icefish on the South Georgia Shelf. We achieved this by undertaking a series of 77 30-minute bottom trawls in a randomised design around the island.

The F/V Robin M. Lee in Cumberland Bay at the end of the survey (pic: Jamie Coleman)

Upon entering the GSGSSI maritime zone we began our sampling at Shag Rocks, where historically the catches of icefish have been low, however, catches of juvenile Patagonian toothfish are sometimes landed. These juvenile toothfish are an indication that the South Georgia toothfish population is reproducing successfully, resulting in young, immature fish at Shag Rocks and the wider South Georgia shelf. These small fish will themselves enter the fishery when they reach the age of around seven years old and migrate off the shelf to the icy deep waters below 700 m. Although not the main aim of the survey, the presence of juvenile toothfish allows us to understand the recruitment of juvenile fish into this important fishery. The 2021 survey found an abundance of juveniles that represented a strong cohort of four-year-old fish, as well as some small one-year-old fish, good news for the future of this commercial fishery.



Map of the survey area, with red dots indicating trawl locations

After spending three days at Shag Rocks we set a course for King Edward Point to pick up the last two members of our team, the two station scientists. These extra pairs of hands were a great help to collect a lot of extra data on species other than icefish and toothfish. We then set off on an anticlockwise circumnavigation of the island to complete the rest of the trawls in the four remaining areas (North West, South West, South East and North East) over the next eight days.

Once the fish from each haul were sorted into boxes, we set about collecting important biological information like length and weight for as many species as we could. For species of particular interest, we also dissected them to collect data on their sex and maturity and in many cases we collected their stomachs for later analysis of their diet. This last step is of particular importance for mackerel icefish which are voracious predators of Antarctic krill, we can infer how prevalent krill may be in the ecosystem by how prevalent it is in the diet of icefish at the time of the survey. At the end of the survey, all collected samples are returned to King Edward Point where the station scientists (as well as anyone else who stayed behind) will begin the long process of cataloguing and analysing everything we collected.

A box of mackerel icefish – our main target species (Pic: Jamie Colemam)

This was the 24th survey in a long time series which has been undertaken since 1986 (by the UK since 1990). The surveys originally began as a way of assessing the state of fish populations following heavy exploitation in the 1970s and 1980s. Traditionally conducted in the austral summer (January/February), the 2021 survey was delayed by COVID-19 complications, as so many other things have been. This delay meant we were collecting data over the winter period, at a time when no other surveys had previously occurred. This gave us interesting insight into many of the important fish species, increasing our understanding of their reproductive cycles and feeding habits.

Sue Gregory with a large Patagonian toothfish (pic: Martin Collins)

The catches of icefish were lower than we have had in many recent surveys, as were the catches of marbled rock cod. Whilst we don't think these species have disappeared or their populations reduced, the different timing of the survey, reproductive condition, and catch locations of these fish indicate that they may move to different areas of the shelf to reproduce, which is something we would not have discovered were it not for the delay.

The Robin M Lee entering Cumberland Bay at the end of the survey (pic: Jamie Coleman)

The survey itself was conducted over 11 days of (thankfully) unseasonably calm weather, with a helpful and friendly ship crew and a hardworking and motivated science team. The excellent food and hospitality on board kept everyone's spirits up and we ended on a high note with flat calm waters and dazzling sunshine for our return to King Edward Point on the 17th of May.

We will be back again in 2023 for the next survey in the series. Many thanks to Manolo and the rest of the crew from the Robin M. Lee and team science for an enjoyable and unforgettable trip!

The officers crew and science team on the Robin M Lee, with Mt Paget in the background (photo Phoebe Socodo).

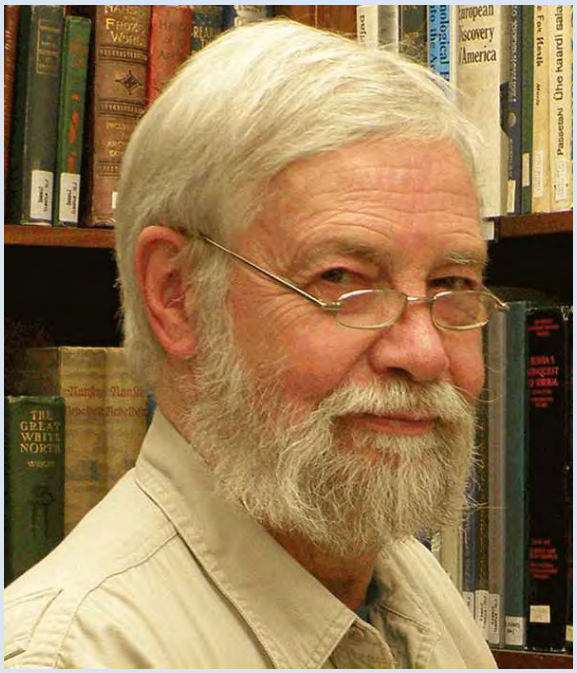
Morag Husband Campbell Medal Awarded to Bob Headland

The South Georgia Association is delighted to announce the award for the fourth year of the Morag Husband Campbell medal for 2021 to Mr Robert Headland, "For outstanding and sustained contributions to the history and knowledge of South Georgia and to extending the wider appreciation of the island".

Bob has had a long and distinguished association with South Georgia. In 1977 Bob was appointed Field Assistant to the British Antarctic Survey South Georgia Terrestrial Biology Programme. He also became Deputy Postmaster. Over two years, he developed a deep interest in the history of South Georgia. This resulted in maps of the abandoned whaling stations and the earliest recording of other historical sites.

Bob returned to South Georgia in 1982 but his work was interrupted by the Argentine invasion. With two companions he set up an observation post overlooking Leith Harbour and monitored Argentine radio communications where Bob's fluency in Spanish was invaluable. A third visit was made to close down BAS projects at KEP and make an assessment of the damage caused by the Argentine occupation.

Shortly afterwards, Bob was appointed Archivist and Curator at the Scott Polar Research Institute which he kept for 27 years. He carried out research into many aspects of polar history and became a mine of information, freely given, on South Georgia and wider Antarctic affairs and history.



Bob in the library at the Scott Polar Research Institute

In 1984 Bob published 'The Island of South Georgia', the most comprehensive account of the island. He is an advisor to several organisations, including cruise companies and departments of government, and is a member of the Antarctic Place-names Committee. He was later instrumental in aiding the formal transfer of ownership of the Whalers' Church from the Larsen family to the Government of South Georgia. Bob was awarded the Polar Medal in 1984.

Bob has spent many years as a lecturer and guide on cruise ships, giving passengers a uniquely knowledgeable introduction to South Georgia. In summary, with Bob's wide range of knowledge and such varied role in the affairs of South Georgia and the polar regions, the award of the Morag Husband Campbell medal is most appropriate.

The Medal has been made possible by a generous bequest from a long-standing supporter of the Association, Miss Morag Husband Campbell. She was so enthralled when visiting South Georgia, she determined to leave a bequest to the SGA. The Medal comprises a Sterling silver relief medallion, 60mm in diameter. The name of the awardee is inscribed on the reverse.

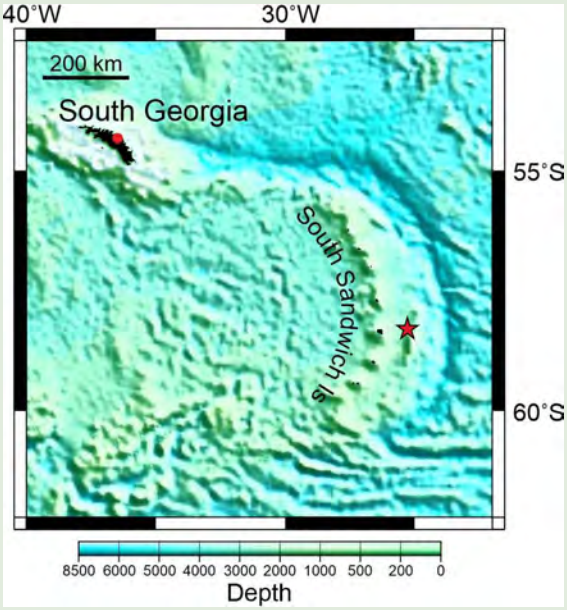
A Great Earthquake near the South Sandwich Islands

Rob Larter, British Antarctic Survey

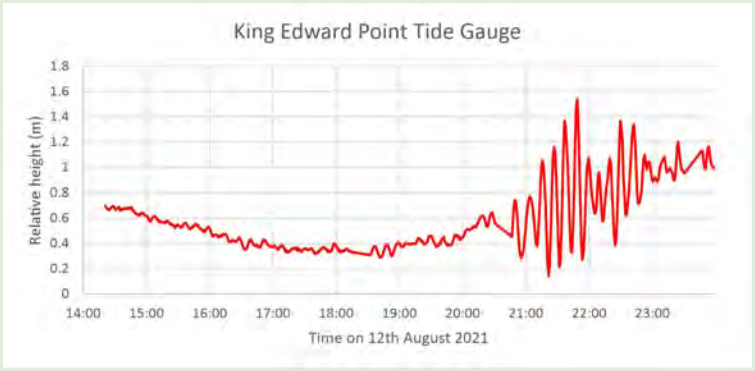
On 12th August this year the largest earthquake in the Scotia Sea region since the World-Wide Standardized Seismograph Network was set up in the 1960s occurred about 60 km east of Montagu Island, South Sandwich Islands (843 km east-southeast of King Edward Point, South Georgia). Its magnitude of 8.1 means it is classified as a "great earthquake" and stands alone in this category among earthquakes in the region during this ~60-year period.

There is frequent seismic activity around the South Sandwich Islands due to active subduction of ocean floor that is part of the South American plate beneath the island arc. Over many years earthquakes with magnitudes of 5.0 or greater have occurred at an average rate of about one per week. In the week following the great earthquake, however, there were 156 aftershocks with magnitudes of 5.0 or greater in the area around the islands, and elevated levels of seismic activity are still being observed nearly three months later.

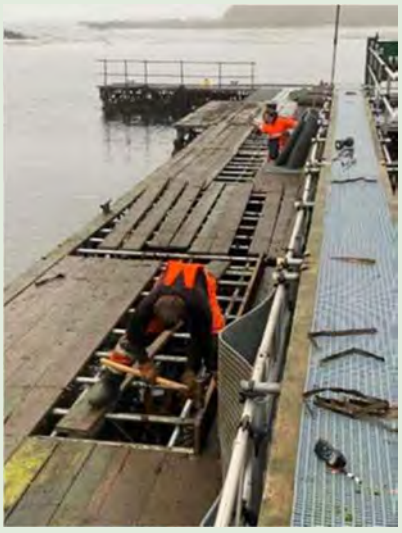
Despite the frequent occurrence of earthquakes in the area around the islands, very large earthquakes are rare. Prior to this August only six earthquakes with magnitudes of 7.0 or greater had occurred in the immediate vicinity of the islands since 1960. Only one of those, near the southern limit of the subduction zone, had seismic characteristics consistent with an origin due to slip along the boundary between the two plates. Therefore, it appears that the plate boundary along most of the subduction zone had been "locked" for more than 60 years.



Location of the earthquake (red star)



Record of relative wave height recorded on the KEP Tide Gauge following the earthquake.



Repairs to the Bird Island jetty

Following the earthquake a sequence of tsunami waves was observed on tide gauges at various locations around the South Atlantic. On the King Edward Point tide gauge record the sequence begins at 20:47 UTC (18:47 local time), 2 hours and 12 minutes after the earthquake occurred. The largest waves, with an amplitude of about 1.2 m, arrived more than an hour later. The arrival of the tsunami waves at South Georgia coincided with a severe storm and the combined effects resulted in some damage to the jetty at the British Antarctic Survey research station on Bird Island.

South Georgia Government News

GSGSSI Consultation

Following the launch of Protect, Sustain, Inspire Strategy, the GSGSSI has set out a number of draft success criteria and milestones through which it can prioritise its work and provide clarity around Government plans. GSGSSI are inviting views on the draft success criteria and milestones. Full details of the consultation can be found on the Government's website: https://www.gov.gs/delivery-of-protect-sustain-inspire/

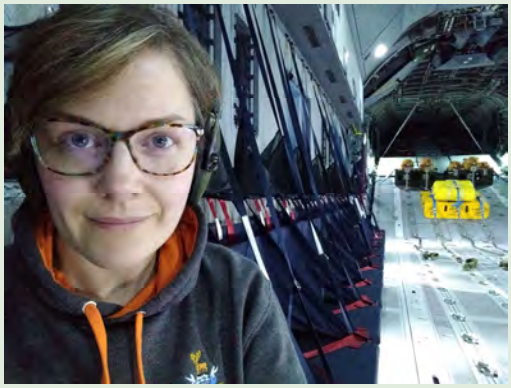
GSGSSI Annual Report Published

The GSGSSI has published its 2020 Annual Report and Financial Statements and Audit Report for the 2019 calendar year. The Annual Report is available from: https://www.gov.gs/docsarchive/gsgssi/.

The Financial Statements (https://www.gov.gs/docsarchive/gsgssi/#tab-4) show a cash surplus of £3,075 increasing the General Revenue Balance to £12,390k. The main source of revenue was sale of toothfish licences (£5,565k) and tourist landing charges (£1,632k). The main expenditure was Fisheries Patrol (£3,058k), Salaries (£665k) and King Edward Point Project (£500k)

New GSGSSI CEO Appointed

Laura Sinclair Willis has taken over from Helen Havercroft as the GSGSSI Chief Executive. A languages graduate, Laura enjoyed a successful career in the UK police service and private sector, before moving into conservation as a member of the senior team with National Trust Wales. Having previously served overseas in roles with the Ministry of Defence and the United Nations, Laura is looking forward to living and working in the Falkland Islands with her family from July 2021.



Laura in the back of an RAF A400 over the South Sandwich Islands

Laura noted: "It has been a varied and interesting first few months in post, with the conclusion of some significant pieces of work and the commencement of others. The wharf project at KEP has now been completed and signed-off, the krill and toothfish fishing seasons concluded successfully, and we bade farewell to my predecessor Helen Havercroft who begins a new adventure with her family in Australia.

Following the publication of "Protect, Sustain, Inspire" – we are now in the midst of public consultation for the milestones and success criteria against which the Government will measure it's progress in meeting the very stretching ambitions of our 5-year vision. Smaller consultations on amateur radio licensing and Covid-19 visitor arrangements have also opened. I would encourage all of you to visit the website and provide responses if you can.

The future of tourism looks promising, with an increasing number of cruise ships booking visits for the upcoming summer season. Our new Government Officers are settling into their roles and we hope that they will be able to welcome visitors again soon. We have also been notified of a number of bids for Darwin funding to undertake an exciting and varied portfolio of scientific activity on both the maritime and terrestrial areas in the coming year.

All in all, it has been a busy but satisfying few months. Mine is a challenging but very rewarding role, and I have the benefit of an incredible team of passionate people to work with"

South Georgia News, Books & Stamps

South Georgia Museum's Exhibition *Shackleton's Last Quest* Goes Live

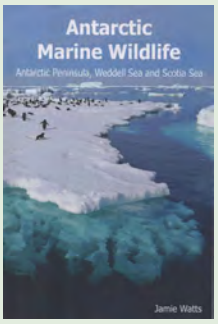
https://sgmuseum.gs/shackletonslastquest/

Shackleton's Last Quest is an online exhibition marking the centenary of Sir Ernest Shackleton's final expedition which, for him, ended at South Georgia. The exhibition focuses on the part that South Georgia played in the story and it showcases several objects in the South Georgia Museum Collection that relate to Shackleton and to his death and burial at South Georgia.

As well as little known photographs, the online exhibition features what we believe is a new innovation for any museum - it hosts Digital Loans of objects key to the Quest Expedition from other museums, institutions and individuals. These Digital Loans include Shackleton's expedition diary, a clock that used to be in Shackleton's cabin inscribed and given to him by the crew, and the sewing machine which was used to make a shroud from a sail for Shackleton's body.

As well as being online, the exhibition will be mirrored at the South Georgia Museum at Grytviken, for visitors to the island to see when the Museum reopens (it has been closed since March 2020 due to the pandemic). The crow's nest, which was fixed to the main mast of the expedition vessel Quest, will be returning to South Georgia to be the centrepiece of this exhibition. This will be the first time it will leave its current home in All Hallows Church by the Tower of London. Book-shelving Shackleton's life, the crow's nest will first be on display at Shackleton's birthplace in Ireland, at the Shackleton Museum, Athy. In spring 2022 it will continue its journey back to South Georgia to take its place in the exhibition at the site of his untimely death.

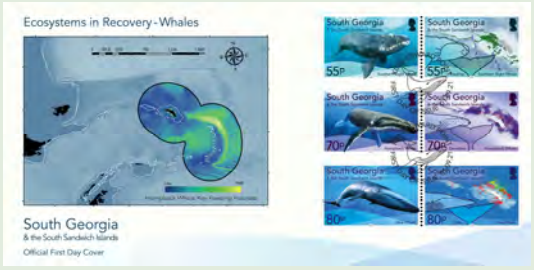
Antarctic Marine Wildlife (ISBN 9798735528623) by Jamie Watts



A sea-spider or pycnogonid from South Georgia

Jamie Watts, a former BAS-KEP scientist and fisheries observer and now a cruise ship naturalist and guide, has recently written a new guide to Antarctic marine wildlife. Jamie's book differs from existing publications in bringing together the underwater fish and invertebrate fauna with the charismatic marine mammals and seabirds. The book, which includes some beautiful underwater images and some of Jamie's own excellent illustrations, provides a valuable reference for those interested in all aspects of marine life. The book is available from Amazon.

Ecosystems in Recovery Stamps



In September GSGSSI issued a set of six stamps to celebrate the recovering ecosystem of the Territory with a focus on whales. The stamps highlight the work of the BAS-led Wild Water Whales project, which used a range of scientific approaches to investigate the abundance, distribution and ecology of South Georgia's whales. The paired stamps feature southern right whales (55p), humpback whales (70p) and Antarctic blue whales (80p) and the associated science.

Blue Belt Stamp Issue

In November GSGSSI issued a set of stamps to commemorate involvement in the UK Blue Belt Programme and highlight some key elements of the SGSSI MPA. This attractive set of stamps features the Patagonian toothfish (70p), the *Pharos SG* (80p), a gentoo penguin (£1.05) and benthic invertebrates (£1.25).

South Georgia Association News

Morag Husband Campbell Medal

The South Georgia Association is inviting nominations for the award of the Morag Husband Campbell medal for the fifth year.

The Medal has been made possible by a generous bequest from a long-standing and enthusiastic supporter of the Association, Miss Morag Husband Campbell. It comprises a Sterling silver relief medallion, 60mm in diameter. The name of the recipient and the year will be inscribed on the reverse. It is intended to award the Medal every year or every other year depending upon nominations.

The Morag Husband Campbell Medal

The Association has agreed that the Medal should be awarded to individuals who have contributed significantly to the understanding, appreciation and promotion of South Georgia. This would encompass i) scientific studies as well as in the arts and humanities including culture, history, heritage, artistic endeavour etc., ii) adventurous travel and "exploration", iii) activities which enhance the wider appreciation of South Georgia (e.g. in the media or through administrative functions).

Nominations (self-nominations are not permitted) should be made on an official Nomination Form available on the website and from the Secretary of the Association to whom they should be sent no later than 31st December 2021. The award would be made the following year at the Annual General Meeting of the Association. Given present uncertainties regarding Covid-19 in the UK the AGM may be either delayed or conducted by video streaming.

Professor David J Drewry
Chair SGA

SGA Online Meetings

The SGA have continued to hold a series of on-line talks. In May, Marcus Brittain talked about the recent archaeological expedition to South Georgia, that was funded by the SGHT with support from SGA. In August, Stephen Venables talked about the Shackleton Crossing, which he has completed on four occasions, with Bob Burton providing a historical perspective on the start and finish of the trek. The talks have proved both popular and well attended. The next talk is planned for Thursday November 18th by Yasuko Suzuki and Steph Prince on Saving Ocean Wanderers, with a further talk planned for February. Please keep an eye on the SGA website for further details and to reserve your place.

SGA Spring Meeting & AGM 2022

The SGA plans to hold the 2022 Spring Meeting and Annual General Meeting as an in-person on Friday May 6th on HQS Wellington on the Victoria Embankment, London. There will also be a celebration of the Association's 21st birthday. Keep an eye on the website for more details.

SGA Seeks New Editor for Newsletter

Martin Collins plans to stand down as editor of the newsletter in 2022, so the SGA are seeking a new editor. If you would be interested in taking over, please contact Martin (e-mail: only1martincollins2@gmail.com).

Editor's Note

Thanks to the contibutors to this edition, notably Bob Burton, Fran Prince, Rob Larter, Phil Stone, Phil Hollyman & Sarah Lurcock. Thanks to Bob Burton & Fran Prince for their proof-reading and fact checking. The South Georgia Association newsletter is produced twice a year, in April and November. Contributions should be submitted, at least one month before publication, to the editor: Martin Collins (e-mail: only1martincollins2@gmail.com).