

A Trip to the Coorong.

(By J. Sutton.)

The following account deals with a trip made to the Coorong in order to observe the migratory wading birds before their departure for the northern coasts of Asia. That flight is usually assumed to take place by the end of March of each year.

The party consisted of Professors J. B. Cleland and Harvey Johnston, and Messrs. Edwin Ashby, F. E. Parsons, and J. Sutton, and the trip lasted for four days—from 5th to 8th March, 1925, inclusive.

Mr. Parsons, who motored us to Goolwa, arrived with the two Professors at Mitcham at 7.14 a.m. on 5th March, where I got in, and the motor-car was then driven to Blackwood, where Mr. Ashby joined us, and all the luggage was fixed on the motor-car. We arrived safely at Goolwa at 10.8 a.m., the distance from Mitcham being 58 miles. Thirty-six species of native birds, comprising 554 individuals, were noted from Mitcham to Goolwa as follows:—

Geopelia placida (1); *Larus novae-hollandiae* (48); *Trichoglossus moluccanus* (28); *Glossopsitta porphyrocephala* (55); *Platycercus elegans* (50); *Psephotus haematotus* (2); *Neophema elegans* (2); *Dacelo gigas* (7); *Hirundo neoxena* (34); *Hylochelidon ariel* (4); *Microeca fascinans* (6); *Petroica multicolor* (11); *Melanodryas cucullata* (1); *Rhipidura leucophrys* (19); *Colluricincla harmonica* (1); *Graucalus novae-hollandiae* (11); *Cinclusoma punctatum* (1); *Epthianura albifrons* (4); *Geobasileus chryssorhous* (26); *Malurus cyaneus* (33); *Artamus cyanopterus* (2); *Grallina cyanoleuca* (1); *Aphelocephala leucopsis* (2); *Climacteris picumna* (1); *Zosterops lateralis* (2); *Pardalotus ornatus* (10); *Melithreptus lunatus* (2); *Melithreptus gularis* (1); *Meliphaga virescens* (4); *Meliphaga penicillata* (11); *Meliornis novae-hollandiae* (74); *Myzantha garrula* (5); *Anthochaera carunculata* (23); *Anthus australis* (3); *Zonaeginthus guttatus* (4); *Gymnorhina hypoleuca* (65).

Mr. Bedford, with his motor-launch, the "Heather Bell," engined with a six-cylinder Studebaker engine, was waiting for us at Goolwa, with the necessary food supplies and water on board. The food had been ordered through his agency from a local storekeeper. After placing our baggage on board the launch, we left Goolwa at 10.38 a.m. for "Bedford's Camp," on Younghusband Peninsula, down the Coorong.

The colour of the water of the River Murray as the launch went between Sir Richard Peninsula (the strip of land from Goolwa to the Murray Mouth) and Hindmarsh Island was clay-like. At 11.30 a.m. we were opposite the Murray Mouth and the breakers were five to six feet high—their base of a clay colour, and near the white crest the sea-green colour showed. The width of the Mouth is given as one-third of a mile, and it is situated six and a half miles in a direct line east-south-east from Goolwa and 33 miles south-west by west from Wellington, where the River Murray enters Lake Alexandrina.

Captain Sturt, in his boat voyage down the Murrumbidgee and Murray, with Mr. McLeay and six hands, was the first white man to reach the Murray Mouth on 10th February, 1830. He found great difficulty in the whaleboat being pulled as far as the Goolwa, although frequently sounding for a channel from one side of the river to the other, and when they reached a mile or two below that part further progress in the boat was prevented by numerous shoals and sandbanks, some of which, being dry at low tide, extended completely across the river. The remainder of the journey to the Mouth, a distance of seven miles, was accomplished on foot.

Two tragic events are connected with the Murray Mouth. Captain Collet Barker, of the 39th Regiment, who was surveying the coast and country in South Australia, arrived at the Murray Mouth on 30th April, 1831. Being desirous of taking bearings from a sandhill on the east side of the Mouth (Younghusband Peninsula), and being the only one of the survey party who could swim well, he divested himself of his clothing, had his compass fastened on his head, and swam across the Mouth. The time taken was 9 min. 58 sec., but he was obliged to go somewhat above the outlet, as the stream would otherwise have carried him amongst the breakers. He ascended the sandhill, took several bearings, descended the further side, and was never seen again. Some little time afterwards it was ascertained that he had been murdered by the natives. The sandhill referred to was named Barker's Knoll, and appears now on all the maps, but has long since disappeared by the action of the river current.

On 12th December, 1837, Sir John Jeffcott (the first Chief Justice of South Australia, and who on the 8th of the same month had been one of the passengers on the "South Australian," which was wrecked at Encounter Bay), with Captain J. W. D. Blenkinsopp and four rowers, were upset in a boat while attempting

the passage of the Murray Mouth outwards. The Judge, Captain Blenkinsopp, and two of the rowers were drowned.

In 1838 Captain Sturt tried to enter from the sea, but on account of a heavy gale springing up, he had to desist from the attempt, and after some anxiety the whaleboat was beached. It was then hauled over the sandhills and launched in the Goolwa. He then tried to row through the outlet to the sea, but after remaining for five days and having the boat swamped four times he was forced to give up the attempt, as he had no further time to spare.

Captain Gill, master of a small cutter that was unfortunately wrecked at some distance to the eastward of the outlet, was the first to come down the Coorong in his boat, in which he eventually reached Victor Harbour, but he had to remain three weeks under cover of the sandhills before he could venture forth. (Date not given.)

In 1841 Captain (later Admiral) Pullen, in a cutter, was the second to enter the river from the sea, but it was only by patiently watching for the opportunity that he succeeded.

The island opposite the Murray Mouth is Mundoo Island. At 12.43 p.m. we reached the entrance to the Coorong—Pelican Point—about 15 miles from Goolwa in a direct line—and passed over the rocky bar from Tauwitche Island to the entrance without striking it. To help in effecting this all the party went “for’ard” as far as possible. The colour of the water in the Coorong was a greenish hue; and the water is drinkable, so the swimmers of our party stated.

The word Coorong has been anglicized from the native word “Kurangh,” meaning “The Neck.” The word “Goolwa” means “Elbow,” and a glance at a map will show the appropriateness of the native words.

The length of the Coorong on the map from Pelican Point, at its northern entrance to the southern end, 17 miles from Kingston, appears to be about 90 miles. The following description is taken from *The Register*, 7th June, 1856:—“Captain Cadell made an attempt to navigate the Coorong in the steamer ‘Albury,’ but could not enter it, as there is a reef, or bar of limestone, that stretches right across the Coorong, over a mile in breadth, upon which the highest water averages a foot deep, and the reef is dry for one season of the year. After passing Pelican Reef the water is then deep for 25 miles with a broad

channel, until McGrath's Flat is reached, where two islands of limestone impede the channel. The islands are a continuation of a reef from the mainland, with a narrow intricate channel, called The Needles, on the Coorong side. A sharp and long point runs from the Coorong, taking in its course more than half the islands, and a point of the first island runs in a parallel direct with that point to the Coorong beach. The sudden turn given by the two points to the channel is so acute that there is but little room for a good-sized sailing boat to turn. After emerging from The Needles passage there is a mud flat two miles long, nauseous from the effluvia of putrid matter; and continuing on for 20 miles, waterholes and limestone shoals are passed. The surfaces of the latter are so sharp with points that it is very difficult to keep the boat from being pierced by them; also crags and lumps of rock high above the water are so profusely scattered about that in passing along the place the boatmen are obliged to stand with oar in hand, both in the front and stern; in order to boom off or keep the bow from being jammed in the sudden turns of a sort of channel of 20 inches of water. At the end of this 20 miles Salt Creek is reached. Boats have sometimes gone 10 miles beyond Salt Creek, but they run the risk of being left there, for should the wind shift the water is all blown off and the flat left bare. The remainder of the Coorong is a continual shoal of putrid matter from one to two feet deep, resting upon limestone and granite." With regard to the raising-up of the coastline in this part of the State, the above writer stated that after a survey of Lacedpede Bay by Captain Douglas in 1856 it was found that the water of the Bay was two feet shallower since the survey of Captain Lipson in 1853.

The Coorong was first seen by Messrs. Strangways and Hutchinson in December, 1837. It was first explored by Captain Pullen, who with Dr. Penny, five boatmen, one policeman and three natives proceeded in a boat from Goolwa on 30th July, 1840, to investigate the wreck of the "Maria" near Lacedpede Bay and the murder of the passengers by the natives. Captain Pullen had entered the Coorong several times prior to this. The name was officially reported by Major O'Halloran to Captain Gawler in September, 1840.

Its width is from a mile to two miles, but in the portion we saw it was most probably about a mile wide. There are a number of sandspits jutting out, chiefly from Younghusband Peninsula, into the Coorong, some of which are just above the water-level, whilst others have very shallow water over them.

Those marked upon the map are the ones above the water-level that we visited.

Younghusband Peninsula is the name of the land between the Coorong and the ocean. It averages about one mile in width, and is chiefly comprised of sandhills, some of which rise to about 100 feet in height, and with somewhat fantastic shapes, probably caused by the prevailing winds. When the breeze was strong the sand on the summits of those hills could be seen shifting, and appeared like smoke. Into the sandhills from both sides (Coorong and the ocean) run short valleys, those on the Coorong side with low trees and vegetation (*Olearia*, Sword-grass, Wild Tobacco, etc.). At other places on the Coorong side there are reeds and shrubs close to the water's edge, and in other spots, of some area, a depth of three or four inches of putrid vegetable matter of a black soupy nature, which smells like the odour from a boiling-down establishment.

Some of the sandhills extend to the shoreline of the Coorong, and it is interesting to find that the pressure seems to have forced up the bluish clay into little ridges, and fresh water percolates from under the sand into the Coorong, and in places there are pools of fresh water (soaks). At some of the pools the banks are a few feet high, but they may have been constructed by the cattlemen to hold water for the stock we saw on the Peninsula—some 80 bullocks in three herds.

When we were crossing the river to the entrance to the Coorong, we had a clear view northwards, and the headlands of Points Sturt and McLeay were about five miles away. The depth of the Coorong just inside Pelican Point bar is about eight feet. We reached Bedford's Camp at 1.30 p.m., a little more than three miles from Pelican Point and about 18 miles from Goolwa.

As Mr. Bedford had to return to Goolwa immediately, so as to take a launch to Point McLeay on the following day, he left shortly after lunch, but before doing so set a net in the Coorong off the point adjacent to the camp. The waves on the Coorong were slightly choppy from the north-east wind, and as the dinghy could not accommodate five persons with comfort or safety, three of the party—Professor Cleland and Messrs. Ashby and Parsons—were taken over in the launch to the mainland shore, about one mile away, and left there with the dinghy.

Professor Johnston and myself walked southwards along the shore as far as Mud Island, about one mile away, and returned

to camp about 6.34 p.m., just after the others had got back in the dinghy. In our walking trip a herd of 30 bullocks kept in front of us for nearly the mile, and through the free space between the water and the sandhills being so narrow we could not get ahead of the cattle until we reached Mud Island. At night Mr. Ashby was the only one to go out. He walked to a point south of Mud Island, and returned about 9 p.m. He saw Avocets, a Greenshank and Pied Oyster-catcher, and a few (Sea) Curlews. During the night there were no bird calls, save a few light calls from young Silver Gulls which were on the shore not far from the camp. No mosquitoes troubled us.

We were all up before sunrise on the 6th March. The fish-net was "run," and the catch was 14 Bony Bream (*Nematalosa erebi*), 16 Lake Mullet (*Agonostomus forsteri*), and one Mul-loway (*Sciaena antarctica*). This last-named fish was about 4 lb. in weight, and out of its pharynx as it was held up there dropped a young crab. Later on, in its stomach more remains of crabs were found.

We left at 9.55 a.m. for the ocean beach (Encounter Bay), and after tramping over sandhills and in valleys between the sandhills we reached the seashore at 10.40 a.m. The weather during our walk was sultry. There was very little to be seen at the spot we reached, as there was a haze, and nothing at a distance could be picked out clearly. The sand hummocks continued to the southwards as far as could be seen, and to the northwards as well. The coastline appeared to be very precipitous to the south-west of the Murray Mouth. We walked southwards and went on until 11.20 a.m., and then turned into the sandhills and reached our camp at 11.55 a.m. With regard to the bird life, we saw two Whistling Eagles flying southwards as we left the camp, but noted nothing else until we reached the ocean beach. There we saw two Red-capped Dotterels and 13 Silver Gulls, and two Dotterels flashed past us, but were not identified; however, they were not the Red-capped. About there also we noted one Mapie, one Welcome Swallow, Singing Honey-eaters, one White-faced Heron, one Silver-eye, and Purple-crowned Lorikeets (these last flew overhead). On our way back we heard a Singing Honey-eater and a Butcher-bird.

It is astonishing to see all along the sandhills of the Young-husband Peninsula the immense numbers of the deposits of cockle-shells (*Chione*), the remains of meals made by the natives in past years. The cockles were obtained in the sand in the

shallow waters of the seashore. Human bones were found in four places on this Peninsula, but skulls and portions of skulls were only found in the sand in one place, near Lousy Jack's Hill. They were evidently the bones of natives, and in one instance a number were found amongst a deposit of cockle-shells.

After lunch Professor Cleland and Messrs. Ashby and Parsons went northwards along the Coorong shore as far as Lousy Jack's Hill, about one and a half miles away, whilst the two others remained in camp, Professor Johnston being occupied in examining the inside portions of fishes and birds for parasites. We "ran" the net in the afternoon and obtained 21 fish, all Lake Mullet, and 19 of those were females with large roes. There were some 28 Silver Gulls at times quite close to us when we were cleaning the fish, and they eagerly seized upon any offal thrown to them. Fourteen of the Gulls were young birds. The walking party returned about 6 p.m., quite tired out, but soon were refreshed by a bathe in the Coorong. For dinner that night the chief article on the menu was fried fish—in fact, we all seemed to prefer fish, and left our cooked-meat joint alone. The Lake Mullet were very palatable, and tasted altogether different from those one purchases in Adelaide.

That night Mr. Ashby went out southwards. He made a low shelter of bushes at the edge of the water at Mud Island, but the visibility was very poor during the hour or more he squatted there. He could hear birds which were feeding within 60 or 80 yards, but as they never came across the pathway of the moonlight he was only able to identify Avocets by their call, and (Sea) Curlews, which called once or twice apparently when they were flying. Several species of Duck were heard, but they could not have been numerous. He secured a Greenshank, one of a party of four. During the daytime this species was always solitary, but Mr. Ashby's experience indicates that they are more sociable at nighttime. He got back to camp at 10 p.m. There were a few mosquitoes about, just after dinner, in the twilight, but on a slight north-east breeze springing up they disappeared. Mr. Bedford got back from Goolwa in the launch at 9.45 p.m., and anchored out in the Coorong. We did not hear him arrive.

On 7th March we were all up early; sunrise was at 6.7 a.m. and we had our usual menu—fried Mullet and many cups of hot tea. We all managed to acquire a great thirst each day. Mr.

Bedford "ran" the net and obtained 18 Lake Mullet and one Mulloway. Those we took with us, as we had plenty of fish available for breakfast from the previous day's catches. We left in the launch at 8.53 a.m. and went southwards as far as the Sixteen-mile Spit. We got there at 11.10 a.m., and anchored a few yards from the shore. The sandspit was above the water-level, and along the water's edge it was fringed with good growths of Swan Grass (*Zostera*)—the first time it was met with. Along the water's edge there were a number of wading birds. On the south side of this spit there was a bay which had a great quantity of Swan Grass growing therein, and there were large numbers of wading birds about the shallow western end. We had lunch at 1.40 p.m., and at 2.15 p.m. the launch went on southwards, but we at once began to get the propellor fouled with the Swan Grass, and at 2.45 p.m. we stopped on account of the continuous fouling. As there seemed no prospect of getting out of the Swan Grass area we decided to turn back. We were then within a mile of Sam's Island, and about 18 miles from Pelican Point. A high sandhill is on the Peninsula immediately opposite Sam's Island. The Swan Grass so fouls the fishermen's nets that fishing south of the Sixteen-mile Spit is practically impossible. We went back as far as the Thirteen-mile Spit, where all were landed and walked northwards along the shore to the Twelve-mile Spit, where the launch picked us up. We then went to the Ten-mile Spit, where we landed and walked about the Spit until teatime. We slept on board the launch, which was anchored out about 50 yards from the shore. The night was a quiet one, and the only call I heard was that of a Black-breasted Plover.

We had breakfast at 8 a.m. on 8th March, left our anchorage at 8.50 a.m. and went on until 9.25 a.m., when we reached Mud Island. We all landed except Professor Johnston, who was still working on the parasites. Professor Cleland, Mr. Ashby, and myself went southwards, whilst Mr. Parsons went northwards. We returned at 11.55 a.m. for lunch, and after lunch we four went southwards to look for Bristle Birds, which Mr. Ashby had heard in a scrub valley near the Spit. The birds were found, and we were back at the launch at 2:50 p.m., and left immediately for Tauwitchere Point. On this occasion, when crossing the rocky bar between the mouth of the Coorong and Tauwitchere Island, the launch struck the bar five times, two of the bumps being really hard ones, notwithstanding that we were all as far "for'ard" as possible. It appears that the passage over this bar is affected by the direction of the wind.

North-easterly and south-easterly winds (the wind was from the north-east when we passed into the Coorong on 5th March) drive the water in the Coorong down westerly, and the water over the bar rises approximately about a foot, whilst on the other hand the south-westerly winds if blowing strongly drive back the water in the Coorong, and the water over the bar is lowered about a foot. The draught of our launch was two feet.

We stopped at Tauwitchere Point, on Younghusband Peninsula, where there were extensive sandspits, and two small islets covered with samphire and reeds. Mr. Parsons and I walked about there, whilst Professor Cleland and Mr. Ashby were rowed over to Tauwitchere Island, about 250 yards from the Point. On it Professor Cleland shot a tiger snake not quite four feet in length. Mr. Ashby writes:—"We made almost a circuit of Tauwitchere Island, and saw some thousands of smaller waders feeding on the mud flats on the south-east side—Little Stints, Sharp-tailed Stints, Red-capped Dotterels, a few Golden Plovers, and, we believe, a number of Curlew Sandpipers. An immense flock, numbering some thousands, rose on the wing and went through a series of convolutions; sometimes the flock would stretch out a quarter of a mile or more in length, changing apparently in obedience to some concerted signal into the figure of an immense letter W, then into a shape like the letter N, only with one side produced to several hundred yards in length, and so on whirling into many different forms or figures, but all the changes of the immense flock being carried out in perfect unison without muddle. The effect of these convolutions carried out in perfect unison was that at one moment the underside came into view and the whole resembled a moving cloud of snowflakes, changing as quickly again into a cloud of dark-coloured objects, again into a huge winding serpent-like form, one moment dark, then again white, the evening sun with its horizontal rays being exactly at the right angle to give these beautiful effects. We were too far away to determine the exact species, but judged that several varieties of the smaller Sandpipers were engaged in the performance."

We were all on board again at 6 p.m., and whilst the launch lay up against a sandbank in the Murray stream we had dinner. We left at 6.53 p.m., and on passing the Murray Mouth in the darkness saw the flashlight on Point Blenkinsopp on Mundoo Island, on our right, blinking a warning.

We arrived at Goolwa at 8.40 p.m. The motor-car was obtained from the garage, and after packing our baggage we left at 9 p.m.

The best view we had of the waders was at the Sixteen-mile Spit, and it was very interesting to see the large flocks of those birds all feeding together near the edge of the water of the Coorong or in very shallow water lying on the Spit itself. At that Spit we saw Red-capped Dotterels, Little Stints, Sharp-tailed Stints, Curlew Sandpipers, Golden Plovers, Spur-winged Plovers, Greenshanks, and Avocets. There were other species present, which were not identified. The predominating colours of many of the migratory species are grey or brownish above with white underneath. All the sandspits run out some distance—up to half a mile—into the Coorong, and are completely bare of cover, consequently it is very difficult to get near the birds to obtain a specimen or to try and identify them with the aid of a field-glass.

A numbers of rabbits were seen on Younghusband Peninsula. Traps were set at night for small mammals, but without result.

I am indebted to the publications of Mr. R. Cockburn, Captain Sturt, "S.A. Gazetteer," Rev. J. E. T. Woods, and The Register for some of the particulars furnished herein.

In the accompanying list of birds seen on the Coorong I have included those noted at Tauwitchere Island and Point.

As the kind of vegetation and its distribution is such an important factor in bird life, both as regards the species occurring and their numbers, the following brief account of the botany of this part (north end) of Younghusband Peninsula has been prepared by a member (J. B. C.) of the party:—

During our short visit to the northern end of Younghusband Peninsula only a passing survey of the botany could be carried out. About 69 species of flowering plants were noted. Doubtless a small number of additional perennials and a considerable number of annuals and ephemeral species remain to be added to the list. The total number of plants present probably does not much exceed 100. The soil conditions are not very variable or suitable, and destruction in a few years of nearly all the plants by the shifting sands is quite a likelihood. At one time we were informed, this long and narrow Peninsula—in many places less than a mile wide—was clothed in scrub. As the result of grazing by cattle, but more particularly, our informant told us, from the repeated deliberate firing of the scrub for the purpose of getting later a temporary supply of young shoots of grass for fodder, probably more than half of the scrub-covered part has been replaced by shifting white, almost

sterile, sand heaped up into hummocks that change their shape and position as blows the wind, and which overwhelm and drown the bushes in their neighbourhood. Many shrubs, especially of *Olearia axillaris*, were seen with just their summits projecting from the sand. The sand also blows eastward into the Coorong, filling up in part its westward bays and helping to form spits projecting towards the centre. These sandy flats and spits, more or less awash, supply an abundance of food to many waders. Another interesting feature was the effect of the pressure of these shifting hills of sand on the fine alluvial mud in adjacent parts of the Coorong. The sand pressure tends in places to pass under this soft silt and lift it up *en masse*. We were told that on one occasion, when camped in a little bay, the boat left awash by the shore in the evening was found when day came to be on a bank of silt and sand a foot or so above its previous level. In many places along the Coorong edge of the Peninsula, fresh water oozes out or collects in small swamps, percolating from near the bases of the sandhills. Where these parts are definitely swampy, large shrubs of *Lignum* (*Muehlenbeckia cunninghamii*) occur. Amongst these, in one place the Emu-Wren was obtained, whilst at another such spot the Little Grass-Bird was found, and the notes of a Scrub-Wren were heard, though the bird could not be seen. One feature of parts of the scrubby portion of the Peninsula was the way in which such plants as *Olearia axillaris*, the introduced *Nicotiana glauca* (Tree Tobacco), and particularly *Acacia longifolia*, var. *sophorae*, spread out in an intricate tangle as a result probably of the strong winds. Sand became heaped up against this low, nearly horizontal tangle of living and dead branches. Here was the typical home of the Bristle Bird. Round these covers its footprints were numerous. In dells and depressions in the centres of groups of these bushes the Bristle Bird actually hid itself amongst the broken sticks and debris, on one occasion within a couple of yards of an observer. It was poked out of its hiding-place and ran like some small rodent amongst the brushwood to hide elsewhere. Grasses were few in species and in numbers, and harsh and unpalatable at that. A patch of *Festuca littoralis* was infested with the long sclerotia of an ergot. *Spinifex hirsutus* and Marram Grass strove to bind the shifting sand, but often became vanquished. The cattle we saw seemed to have been feeding chiefly on sedges. Possibly some salsolaceous plants may also supply food. Eucalypts were absent where we were located. There were occasional shrubs of *Melaleuca parviflora*. We saw no sheoaks on the Peninsula.

The following is a list of the plants noted:—

Grasses.—*Imperata cylindrica* (Blady Grass), *Spinifex hirsutus*, *Stipa* sp. (Corkscrew Grass), *Sporobolus virginicus*, *Phragmites communis* (Reed), *Distichlis spicata*, *Ammophila arenaria* (Marram Grass), *Festuca littoralis* (with large ergot sclerotia).

Sedges.—*Scirpus nodosus*, *S. americanus*, *Cladium glomeratum* ? (with fungus on stems), *Lepidosperma gladiatum* (Sword Rush).

Rush.—*Juncus polyanthemus*.

Other Monocotyledons.—*Triglochin* sp., *Dianella revoluta*, *Calostemma purpureum*.

Dicotyledons.—*Exocarpus aphylla* (a Native Cherry), *Muehlenbeckia adpressa* (twining), *M. cunninghamii* (Lignum), *Chenopodium murale*, *Salsola kali*, *Suaeda australis*, *Enchylaena tomentosa*, Samphire, *Mesembryanthemum aequilaterale*, *M. australe*, *M. crystallinum*, *Tetragonia*, *Spergularia marginata*, *Clematis microphylla*, *Cassutha glabella*, *Bursaria spinosa*, *Acacia rhetinodes* (very broad-leaved form), *A. ligulata*, *A. longifolia*, var. *Sophorae*, *Melilotus indica*, *Lotus australis*, *Kennedyia prostrata*, *Pelargonium australe*, *Zygophyllum* sp., *Adriana Klotzschii*, *Dodonaea viscosa*, *D. attenuata*, *Pimelea microcephala* (?), *Kunzea pomifera*, *Melaleuca parviflora*, *Apium prostratum*, *Hydrocotyle* sp., *Leucopogon richiei*, *Samolus repens*, Red Pimpernel, Century, *Solanum opacum* (?), *Nicotiana glauca* (Tree Tobacco), *Mimulus repens*, *Limosella aquatica* (forming a carpet on damp sand), *Myoporum insulare* (blue berries), *Cucumis myriocarpus* (Wild Melon), *Lobelia anceps*, *Wahlenbergia gracilis*, *Seligeria radicans*, *Aster subulatus*, *Olearia axillaris*, *Cotula coronopifolia*, *Helichrysum cinereum*, *Inula graveolens* (Stinkwort); *Cirsium lanceolatum* (Spear Thistle), *Sonchus oleraceus* (Sow Thistle), *S. maritimus*.

List of the species of birds seen on or near to the Coorong, with particulars and totals of the individuals noted. In the very large totals the calculations were made approximately, as it was impossible to count the flocks. In every such case the approximate numbers were all on the low side.

Coturnix pectoralis, Stubble Quail, 11. These were all seen on the mainland (eastern shore of the Coorong) on 5th

March. ♀—iris, reddish brown; legs and feet, pale flesh; bill, grey brown. Stomach contained seeds which were identified by Mr. Edwin Cheel, Curator of National Herbarium, Sydney, as those of *Cirsium lanceolatum*, the Spear or Black Thistle.

Fulica atra, Coot, 1. The only bird of this species noted. It was amongst a number of Black Swan and Ducks, and tarried a little when the others flew away.

Podiceps ruficollis, Little Grebe, 2. These were seen in mid-stream in the Coorong on 5th March. The launch passed within 50 yards of the birds.

Podiceps cristatus, Great Crested Grebe, 2. One bird was seen on 5th March when two of us were walking southwards along the Younghusband Peninsula. The other was seen near the mainland shore at Landlock. When each of the birds took to flight the chestnut neck-frill was very noticeable. The frill was noticed in the first bird mentioned when it was swimming in the water.

Chlidonias leucopareia, Marsh Tern, 5. These birds were noted flying near the water's edge at three of the sandspits.

Hydroprogne caspia, Caspian Tern, 22. This species was noted along the Coorong (also at Goolwa). On the sandspit at Ten-mile four young birds were standing about 10 yards from the water's edge as we anchored. Several times we saw a bird of this species drop into the water, with a great splash, after food.

Sterna bergi, Crested Tern, 61. This species was met with along the Coorong (also near Goolwa). They close their wings and drop into the water like a stone, but evidently go to no depth as they rise again immediately. A young bird was noticed near our camp. It was standing on a sandspit which was about two inches under water. On that spot it called for food, and was fed a few times by a parent bird.

Sternula nereis, Little Tern, 104. This species was only seen on the Coorong and generally in small flocks, but flying at a little distance from each other. The greatest number in one flock was 20 birds. Similarly to the Crested Tern, they drop into the water, but also into shallow water, and if they do sink, which is hard to determine, must go just below the surface. Their call is short and plaintive. ♂—iris, very dark brown; bill, chrome; inside of bill, chrome; legs, orange; toes, dark; total length, $9\frac{3}{8}$ inches; span of outspread wings, $20\frac{1}{4}$ inches. ♀ similar; ♂ juv. One specimen had a large round worm in the upper

part of the intestine. Another specimen had no internal parasites.

Larus novae-hollandiae, Silver Gull, 977. Found everywhere. They were the first birds to be seen in the early morning, flying about looking for food, and they were the last birds foraging in the dim twilight. Along both shores of the Coorong single Gulls were seen at a distance of about 30 yards apart. It looked as if each bird had a given length of shoreline to look after. They were quiet, as a rule, the only exceptions being three birds near Bedford's Camp, who seemed to dominate the young birds there.

Haematopus ostralegus, Pied Oyster-catcher, 11. Nine were seen near Lousy Jack's Hill. One bird was at the water's edge at the extreme end of Mud Island. As we approached it flew away three times, but returned to the same spot in a minute or so. Its red beak was very noticeable, as were its black back and white under parts.

Lobibyx novae-hollandiae, Spur-winged Plover, 302. The majority of these were seen on the Coorong shore of Young-husband Peninsula. They were noted also on Hindmarsh Island and Tauwitchere Island and Point. They were in flocks—one of 45 and another of 25 members were seen. They were, as usual, the "watchdogs" for all the other waders, and uttered their harsh calls when we were a long distance away.

Zonifer tricolor, Banded (Black-breasted) Plover, 1. The call of a bird of this species was heard at 9.12 p.m. on 7th March, coming from the mainland, whilst we were anchored for the night off Ten-mile Spit.

Charadrius dominicus, Lesser Golden Plover, 15. Nine were identified on the Coorong and six on Tauwitchere Island. Three of them were seen flying in a zig-zag course over a small bay in which Swan Grass was growing thickly on the south side of the Sixteen-mile Spit. Whilst a great number of other waders were quietly feeding, those three birds were darting about over that bay at no greater height than 15 feet, and they appeared to me to look like a large edition of a Welcome Swallow, and although I watched them for some time with the field-glasses I did not see them alight on the sandspit. ♀—iris, dark brown; bill, black; pharynx, flesh-coloured; tongue, yellowish; legs, slaty-grey; total length, 10 inches; span of outspread wings, 20½ inches. ♂—Similar details. No internal parasites in either.

Charadrius ruficapillus, Red-capped Dotterel, 922. A pair of these birds was seen on the ocean beach of Younghusband Peninsula. The remainder were seen on the Coorong, both shores, and on Tauwitchere Island. They were in large and small flocks, and when with other waders they formed into a body by themselves as soon as they all alighted. ♂—testes, small; iris, very dark brown; bill, black; pharynx, greyish; legs, fuliginous; feet, black; total length, 6 inches; span of outspread wings, 13 inches. ♂—crown and neck rufous, testes large. ♀—One specimen contained two species of tapeworms and three hook-headed worms. The other two contained hook-headed worms.

Recurvirostra novae-hollandiae, Red-necked Avocet, 30. Eleven of these flew close to and past the launch when we were near the Sixteen-mile Spit. Fifteen in one flock were seen by Mr. Ashby at night near Mud Island.

Numenius cyanopus, Eastern Curlew, 33. Some of these were seen on Tauwitchere Island, but the majority were on the Coorong. They generally worked the mainland shore, but three flew past the launch at Mud Island whilst we were lunching. Their seven-inch beak was very noticeable. All these birds were very wary.

Glottis nebularius, Greenshank, 14. These were noted on the shores of Younghusband Peninsula in the Coorong. Six of them were seen at night by Mr. Ashby. Their call, "Tewey-tewey," was heard several times. ♂—iris, dark walnut; legs and feet, yellowish green; bill, basal grey, distal black; total length, $13\frac{3}{4}$ inches; span of outspread wings, 22 inches; wing, $7\frac{1}{4}$ inches; culmen, $2\frac{3}{8}$ inches; tarsus, $2\frac{3}{8}$ inches; length of bill (gape), $2\frac{1}{2}$ inches. Fluke were in the body cavity, and tapeworms in the intestine.

Pisobia ruficollis, Red-necked (Little) Stint, 3,057. This species was in flocks—some of many individuals. It was a beautiful sight to see a flock of some hundreds of birds flying in close formation twist and turn—first the grey backs showing, then flashes of white as the under parts were seen, and on several occasions I watched a flock through the field-glass, but although they flew so closely together I did not see any one of the birds strike another in their quick turns. I noticed that when a large flock of birds including this species alighted on a spit the Little Stints would get together in a body on the edge of the flock. ♂—iris, very dark brown; bill, blackish; pharynx,

fleshy-olive; legs, nearly black; total length, $6\frac{1}{4}$ inches; span of outspread wings, $12\frac{3}{8}$ inches (mites on wing). Another bird, unsexed—total length, $6\frac{3}{8}$ inches; span of wings, $12\frac{5}{8}$ inches (mites on wing). ♂—total length, $6\frac{1}{4}$ inches. One specimen had fragments of tapeworm, another had numerous tapeworms, and the third had many tapeworms in the intestine.

Pisobia acuminata, Sharp-tailed Stint, 773. Frequently with the Little Stints and other waders in flocks. The Sharp-tailed Stints seemed to me to move about much more than the other waders. On alighting and whilst being watched some of them were continually shifting a few inches at a time. The side and under parts of the tail are white, but the upper part of the tail is grey. ♂—iris, dark brown; bill, very dark brown, paler at base below; pharynx and tongue, flesh-coloured; legs, light olive-green; toes, black; total length, $8\frac{1}{4}$ inches; span of outspread wings, $16\frac{3}{4}$ inches. ♀—Same colour notes; total length, $7\frac{5}{8}$ inches; span of wings, $15\frac{1}{2}$ inches. ♂, ♀—total length, $8\frac{1}{8}$ inches. ♀—total length, $8\frac{1}{8}$ inches; span of wings, $15\frac{1}{2}$ inches. Three specimens had no internal parasites, one had numerous tapeworms, another had hook-headed worms, and another numerous hook-headed worms in the lower intestine.

Erolia ferruginea, Curlew Sandpiper, 102. This species was generally seen in company with the two species of Stints, and on a casual view there seemed to be very little difference between it and the Sharp-tailed Stint, but the Curlew Sandpiper has the upper base of its tail white, whilst its beak is slightly arched. The white on the tail is a distinguishing feature when this species is in flight. ♂—testes, small; iris, very dark brown; bill, nearly black, with a tinge of olive; pharynx, fleshy-olive; legs, the colour of the bill; total length, $7\frac{1}{2}$ inches; span of outspread wings, 15 inches. ♀—Similar colours, but with rufous on the under side and in a few feathers on back; span of wings, 15 inches. One specimen had no internal parasites, and the other had numerous tapeworms, some of them very small.

Platalea flavipes, Yellow-billed Spoonbill, 14. These birds were seen in a flock on the mainland shore of the Coorong on 5th March as we passed along in the launch, but when we were some distance away they disappeared into the low scrub.

Notophoxyx novae-hollandiae, White-faced Heron, 73. These birds were seen on the shores of the Coorong in small flocks. The largest flock numbered 13 members.

Demigretta sacra, Reef Heron, 10. These were seen on the mainland shore of the Coorong and generally as single birds. They did not seem to take much notice of the launch as it passed by.

Chenopsis atrata, Black Swan, 1,391. These were seen on the Coorong. The majority were in the water close to the shores of Younghusband Peninsula. They were in great flocks and flew away long before we got near.

Tadorna tadornoides, Mountain Duck, 2,330. Easily the most numerous of the Duck family that were seen. They were seen in large flocks feeding close to the soaks on the shores of Younghusband Peninsula. They rose from the water when we were a long way off. The white patch on the wing and slower flight easily distinguishes them from other Ducks. Their "honking" call was heard a few times.

Anas superciliosa, Black Duck, 513. This species was generally about the sandspits and the shoreline near the soaks on Younghusband Peninsula, but sometimes in company with Black Swans and Mountain Duck. They were very wary.

Virago gibberifrons, Grey Teal, 78. This species was very scarce, and the above birds were all noted on the Coorong in the company of other Ducks. On Mud Island Professor Johnston ran down a Teal in the samphire. It had one wing badly broken by a gunshot. ♂—testes, large; iris, blood-red carmine; bill, above bluish-lead, tip black, distal half of lower bill purplish-flesh passing into pale buff, inner rim of upper bill buffy flesh, the pale parts with a few dark specks; inside of bill and tongue, fleshy-pinkish buff; pharynx, white; legs, dull greyish-brown; total length, $17\frac{1}{4}$ inches; span of outspread wings, 29 inches. No internal parasites.

Spatula rhynchotis, Blue-winged Shoveller, 6. Two lots of three birds each were seen on the Coorong in company with other Ducks.

Nyroca australis, White-eyed Duck, 70. One flock was seen on 5th March in midstream in the Coorong. They were in company with other Ducks, and on rising they came quite close to the launch.

Phalacrocorax varius, Pied Cormorant, 60. Twenty-five of these were sitting on a spit (or rock) at Pelican Point. This species is an early arrival in the morning at a sandspit.

Pelecanus conspicillatus, Australian Pelican, 838. Some were seen on the sandspit at Tauwitchere Point, but the majority were on or about the sandspits and shores of the Coorong.

Circus approximans, Swamp Harrier, 5. These birds were seen flying near the shores of both sides of the Coorong. In one instance one of the Swamp Harriers was attacked whilst in the air by two Spur-winged Plovers.

Haliaeetus sphenax, Whistling Eagle, 5. Three of these birds were seen flying over Younghusband Peninsula, whilst the other two were seen over the mainland shore.

Cerchneis cenchroides, Nankeen Kestrel, 1. This bird was seen flying over the water near the shore of Younghusband Peninsula in the Coorong.

Pandion haliaetus, Osprey, 1. This bird was seen flying over Younghusband Peninsula near Lousy Jack's Hill.

Glossopsitta porphyrocephala, Purple-crowned Lorikeet, 103. These birds were seen flying overhead. Three flocks of 20, 30, or 50 birds in each were seen flying over Encounter Bay in a south-easterly direction, when we were at the ocean beach in the forenoon of 6th March.

Neophema petrophila, Rock Parrot, 11. Two were flushed from the samphire and grass at Mud Island. Nine were seen at the Ten-mile, two of these were feeding on the seeds of a dwarf shrub on the side of a small sandhill, which was between the Coorong and an open water soakage, and seven were seen at the same spot feeding on the seeds of a rush. ♂—iris, dark walnut; feet, grey; bill, upper dark-grey with pale streak in centre, lower light-grey. ♂ juv. No internal parasites in either specimen.

Hirundo neoxena, Welcome Swallow, 32. These birds were all noted about Younghusband Peninsula. Four of them were young birds and were seen on posts in the water near Bedford's Camp.

Colluricincla harmonica, Grey Shrike-Thrush, 1. This bird was heard calling from the scrub south of Bedford's Camp on each day whilst we were there.

Epthianura albifrons, White-fronted Chat, 37. Fifteen of these were noted on the mainland. The remainder were on Younghusband Peninsula, generally close to the shoreline.

Cisticola exilis, Fantail Warbler, 10. These birds were seen in the reeds at Tauwitchere Point. They were not singing, but occasionally a bird would fly up out of the reeds and catch an insect. ♀ ♀—iris, grey; bill, light horn; legs and feet, flesh colour; total length, $4\frac{1}{4}$ inches.

Megalurus gramineus, Little Grass-Bird, 1. This bird was in a large clump of lignum near a soak at the shore end of the sandspit at Landlock. It was not calling. Sex?—iris, dark brown; bill, dark brown, paler below; pharynx, flesh-coloured; legs, brownish-grey. No internal parasites.

Sericornis sp. In the same clump of lignum in which the *Megalurus* was obtained, a *Sericornis* was calling, but although we waited some time the bird would not show itself.

Stipiturus malachurus, Emu-Wren, 2. These birds were seen in a clump of lignum near a soak not far from Lousy Jack's Hill. ♀—iris, brown; bill, almost black; feet, light brown; length, tip of bill to base of tail, $2\frac{3}{4}$ inches; tip of bill to tip of tail, 7 inches.

Dasyornis broadbenti, Bristle Bird, 6. Two were heard near Lousy Jack's Hill, and four were noted in a small gully with scrub at the southern end of the sandspit at Mud Island. The birds were heard calling, and one specimen was obtained. At first the loud calls reminded me of the Shy Ground-Wren, but a great deal louder. The others thought they were like a Stubble Quail. When the second lot of calls were uttered I recognized the resemblance to the latter bird's call, especially to "Churchywit." After the loud calls and whilst hidden at the foot of a tree or shrub they generally call "Tick—tick—tick" slowly. Their footmarks in the sand were very noticeable and very erratic in their directions. One bird ran within a few feet of Mr. Ashby as he sat silently on the top of a sandhill. The bird kept in an absolutely horizontal position; as it moved swiftly under dead twigs of fallen bushes it could hardly be distinguished, other than by its colour, from a small rat-like marsupial. Another time a bird that had been disturbed by one of the party ran within six feet of the same person and stayed hiding under a fallen branch until disturbed by actually treading on the fallen twigs. ♂—iris, dark brownish-red; legs and feet, dark grey; bill, greyish-brown, paler below; pharynx, greyish-flesh; total length, $8\frac{1}{2}$ inches; span of outspread wings, $10\frac{1}{2}$ inches; wing, $3\frac{5}{8}$ inches; culmen, $\frac{3}{4}$ inch; tarsus, $1\frac{1}{2}$ inches; tail, $5\frac{3}{8}$ inches. No internal parasites. The con-

tents of the stomach examined by Mr. A. M. Lea, F.E.S., of the S.A. Museum, contained a small stone; cocoon of small wasp; numerous small pear-shaped seeds, evidently of a berry; parts of a small ant (*Pheidole*); small chalcid wasp; small caterpillar; bits of small weevil; bits of small plant bug (*Homoptera*); bits of small leaf-eating beetle (*Eumolpides*).

Grallina cyanoleuca, Magpie Lark, 6. These birds were on Younghusband Peninsula. Two were heard near Bedford's Camp and four were noted about the Ten-mile Spit.

Zosterops lateralis, Grey-backed Silver-eye, 1. This bird was seen in some scrub on Younghusband Peninsula.

Meliphaga virecens, Singing Honey-eater, 47. Forty-four of these were noted in the scrub in the places we visited on Younghusband Peninsula, and three were seen on the mainland. Their calls were heard all day long, and the first call heard in the morning, about 5 a.m., was that of this Honey-eater.

Acanthagenys rufogularis, Spiny-cheeked Honey-eater, 49. All but one were noted in the scrub on Younghusband Peninsula. They seemed to me to be much quieter than the birds of this species found in the mallee, but I thought they were a much prettier bird, as the rufous on the throat and chest appeared to stand out more.

Anthus australis, Australian Pipit, 3. These birds were seen on the sand near the shore of the Coorong on Younghusband Peninsula.

Corvus cecillae, Australian Crow, 4. Three were seen flying over Younghusband Peninsula, and one was heard on the mainland.

Cracticus torquatus, Grey Butcher-Bird, 4. Three were noted on Younghusband Peninsula and one was heard on the mainland.

Gymnorhina hypoleuca, White-backed Magpie, 29. Eleven were seen on the mainland, and the remainder on Younghusband Peninsula, but they were very quiet. No singing whatever was heard from them.

Total, 53 species, with 12,187 individuals.

In the "S.A. Ornithologist," Vol. III, Part 6 (April 1918), pp. 164-178, Captain S. A. White describes "A Trip to the

Cooring" from 6th to 14th March, 1916 His camp was near to but south of Bedford's Camp. He describes 47 species which were seen during that trip, and of those we did not see 20 species. In this narrative 53 species are noted, of which he did not see 26 species.
