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Avifauna of New South Wales Islands.

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PART III.*

IN his "Birds of Australia" Mathews separates the western from the eastern form of the Wedge-tailed Petrel (*Puffinus sphenurus*, Gould). The former he catalogues in his 1913 "Hand-list" as *Thyellodroma pacifica chlororhyncha*, Lesson, and the latter as *T. p. royana*, Mathews. He describes the western form as differing from the eastern "in its generally lighter colour, especially on the under surface, and probably also in the coloration of the bill." He quotes Gould's description of *P. sphenurus*, in which the bill is stated to be "reddish fleshy-brown, darker on the culmen and tip; legs and feet yellowish flesh colour." Gould's type came from Houtman's Abrolhos, Western Australia, and Lesson's type from Shark Bay, W.A. Mathews says:—"Coues, with Gould's specimens in front of him, wrote: 'The bill is flesh colour, tinged with brown; much darker along the culmen and on the unguis.' Hall states that the bill is slate colour, with the tip or nail black, and now Campbell and White aver that the western form has the bill the same colour as the eastern, which they call 'dark horn or bone-brown.' As the characters of these dark *Puffinus* lie mainly in the bills, further investigations are necessary, and a series of birds studied." Mathews's figure of *T. p. royana* (lettered *Puffinus chlororhynchus*) shows the bill a fleshy-pink colour, with black unguis, the feet and tarsi being flesh colour. These details agree with the description of the adult bird quoted from Campbell and White. Mathews gives the range of the eastern bird as "Eastern Australia, Lord Howe and Norfolk Islands." He refers to a bird from Broughton Island (N.S.W.), sent to him by me for examination, which "has quite a small bill, the coloration of which, in the dried state, seems to be darker on the unguis, and not all uniform as given by Messrs. Campbell and White, though otherwise agreeing closely."

It appears to me that Mathews separates these two forms on the too unstable characters of the coloration of the soft parts *in the dried skin*. I have examined some hundreds of the eastern

* *Vide Emu*, vol. xi., p. 202 (1912).

form in a living state, and found considerable variation in the shade of colour of the feathers, the under surface particularly showing a range from light to dark. The bill and feet, however, never vary in the living bird, except as regards the size and thickness of the bill. This is always a dark lead-colour, frequently bright and polished with the oil from its food, the tip black. The tarsi are of a livid or pale lead-colour, the feet fleshy-white, with coloured veins showing in the interdigital membrane; the toes white. The dried skins often lose much of these distinctive colours, and some specimens taken by me have developed a brownish horn-colour in both bill and feet, while others retain the lead-colour of the bill.

Mathews quotes Dr. Ramsay's identification of the Solitary Island (N.S.W.) bird as *P. carneipes*, and North's identification of the skin from South Solitary Island as *P. chlororhynchus*.

During the season of 1911 I was in correspondence with Mr. D. Gow, then the principal lighthouse-keeper on South Solitary Island. Mr. Gow kindly sent me a number of eggs and the skin of an immature bird, undoubtedly the Wedge-tailed Petrel. He stated that he had made an exhaustive search over the island, and could not find any other species breeding there.

As the eastern form has a very wide range, extending from Montague Island, 150 miles south of Sydney, to Raine Islet, in Torres Strait, I think that a fuller examination of series will disclose more than two races or sub-species of this bird.

On 1st December, 1913, in company with Mr. Henry Grant, I visited North Coff's or Mutton-Bird Island, which lies about a quarter of a mile off Coff's Harbour jetty and nine miles south of South Solitary Island. The island is barely a quarter of a mile in length, high and rugged, with a thin covering of soil on top. Tussocks of grass grow in patches, where the soil is deep enough, and where it is only a few inches in depth there are patches of *Mesembryanthemum*. With the exception of two small patches of cane, and a few salt-bush plants, there is no other vegetation on top of the island, although ferns and a creeper with thick, fleshy leaves cover the steep slopes on the western side. Here we found the Wedge-tailed Petrels packed closer together than in any other locality I have visited. Every available foot of soil was burrowed, and the burrows occupied. The soil is so shallow that the covering barely sheltered the birds, and in many instances they were visible from the entrance. Some hundreds of eggs were lying exposed on the open ground at the entrances to occupied burrows, and it appeared to me that there were more claimants for house-room than houses! The eggs were all quite fresh. The fisherman who accompanied us said that the birds always laid their eggs on the 25th November. It is quite possible that some lay on that date, but I think that the bulk are laid on the 27th November, the date observed in other Mutton-Bird rookeries.

The only other species found breeding on this island was the

Pectoral Rail (*Hypotaenidia philippensis*). I saw two pairs of birds, and flushed one bird from a nest containing five eggs. If the proposed harbour works are carried out at Coff's Harbour this island will be connected to the mainland by a breakwater, and the existing crowded rookery will inevitably disappear.

We were unable to visit the Solitary Islands, as heavy weather set in on the day following our visit to Coff's Island. North Solitary is practically inaccessible, and landing on South Solitary is only possible in the finest weather.

On 6th December, 1914, I revisited some of the Five Islands off Wollongong, N.S.W., our party including Messrs. Henry Grant and S. E. Rohu. The weather was fine, and there was no wind when we put out from Perkins Beach, near Port Kembla, in a heavy fisherman's boat. We easily effected a landing on Pig Island, and there found the Little Penguin (*Eudyptula minor*) with eggs, fresh or in various stages of incubation, or young birds. Guthrie-Smith says the eggs of the New Zealand species (*Eudyptula albosignata*), when first laid, have a small patch of brightish green on the larger end. An egg of this species in my collection, taken by Tom Iredale near Lyttelton in 1905, evidently quite fresh when taken, shows no green spot. Having Guthrie-Smith's statement in mind, I carefully examined the fresh eggs of *E. minor*, but only one specimen showed any green colour (not obviously acquired after laying from contact with crushed leaves or excreta), and this specimen still retains the green spot (1916).

In addition to the Penguins, there were Wedge-tailed Petrels (*Puffinus sphenurus*, Gould) and White-faced Storm-Petrels (*Pelagodroma marina*, Latham) in their burrows under the matted *Mesembryanthemum*, *Convolvulus*, and salt-bush. The former had fresh eggs, and the latter in most instances young birds, although a few burrows contained eggs heavily incubated. On my previous visit (October, 1909*) the Storm-Petrels' burrows contained fresh or slightly incubated eggs.

We then made for the outermost island, and were able to approach within a few yards of the shore. This island is very small, not more than an acre in extent, shaped like a dish-cover, the smooth rocks sloping gently down under the surge that even in the finest weather sweeps all round it. It was simply covered with Gulls (*Larus novæ-hollandiæ*, Stephens) and Terns (*Sterna cristata*, Stephens), screaming at the approach of strangers and squabbling amongst themselves. We were unable to land, however, having no small dinghy to run up on the sloping rocks, and the fishing-boat being too deep in the water, and heavy, to take closer in. Perhaps it was just as well that we did not stay to make the attempt, for shortly after shaping a course for Rabbit Island, which lies close in shore, a strong breeze sprang up from the west, and we had a strenuous hour of pulling against it before we reached a bay under the lee of the mainland. Here we landed, and found

* *Emu*, vol. xi., p. 100 (1911).

the Wedge-tailed Petrels and Penguins occupying the greater part of the island, where the sand-dunes and tussocky grass gave them fine cover. This island is high and rocky on the eastern side, and a narrow neck, surf-swept in heavy weather, separates it from a second lower and more rocky island; while off the extremity of this second island lies a high, rocky islet, almost inaccessible. Mr. Rohu had managed to land on the islet in February, 1914, and there found a few Wedge-tailed Petrels with young birds in their nesting burrows in a small patch of soil. Among them he found one young bird which had a whitish breast, and he also shot and secured an adult white-breasted bird on the water in the vicinity. These birds were disposed of by Mr. Rohu as *Puffinus gavia*, the then accepted designation of the White-breasted Petrel, of which several specimens had been picked up dead or dying near Sydney. We were unable to effect a landing on the islet, and a search in a very large number of burrows on Rabbit Island failed to disclose anything but Penguins and Wedge-tailed Petrels.

I had long wished to visit Brush Island, lying about midway between Ulladulla and Bateman's Bay. On my visit to the latter place in 1911* I had made inquiries as to means of access to and probable inhabitants of this island. The local tradition was strong on Quail. "Flocks of 'em," was the general tale, and "Pengwins—stacks of 'em." After several attempts to arrange a trip during the three following years, I at last got off with Mr. Henry Grant on 4th December, 1915. Our journey was from Sydney to Nowra by train, thence to Ulladulla *via* Milton by motor. We arrived at the seaport on Saturday evening, in time for a stroll along the ocean beach before tea. After inspecting the launch we had engaged to take us out to the island on the following day, we walked south, and at once came upon several dead Petrels in rather advanced stages of decomposition. A glance was sufficient, however, to show that they were not Wedge-tails, the tail feathers being short and square. Further search resulted in our finding an almost perfect specimen, slightly decomposed on the under side only. The species was easily identifiable as *Puffinus brevicaudus*, Gould; but, after taking measurements, I found that it was larger than typical specimens of the Tasmanian "Mutton-Bird," but not quite so large as the dark-plumaged bird I found at Cabbage-tree Island in 1910 and named *P. intermedius*.† After tea we walked along the sandy beach of the harbour, finding many more dead Petrels of the same species, most of which had evidently been dead for many days. By great good fortune we found one awash in the surf, apparently quite recently dead, and this specimen Mr. Grant subsequently skinned.

Day broke on Sunday dull and cloudy, with a drizzling rain, which ceased shortly after we left the port at 6 a.m. Another dead Petrel was seen floating off the breakwater, and the fisherman who owned the launch told us that they had been coming

* *Emu*, vol. xi., p. 202 (1912).

† *Emu*, vol. xi., p. 98 (1911).

in on the beaches along the coast in hundreds for some weeks past.

When about six miles from Ulladulla, and two miles off shore, we encountered quite a number of Petrels, many of which were the black Shearwaters or Mutton-Birds, both Wedge-tailed and Short-tailed being recognizable. But sitting on the water were numbers of a smaller bird, a stranger to me. As we ran amongst them they rose with a peculiar short fluttering flight, more like that of a Teal than any other bird I have seen rising from the water. Their white breasts and necks showed clearly as they rose, and Grant shot one, which we soon had under examination. It appeared to me to be *Puffinus gavia* (*Reinholdia reinholdi byroni*, Mat.), and I labelled it as such for the time being. The colour of the upper surface, however, was entirely different from that figured by Mathews under the name of Brown-backed Petrel. The freshly-killed bird was of a deep slaty-blue—the colour of the sea under a lowering sky. When subsequently selecting a specific name for this bird I long hesitated between "*cheimeria*" ("the stormy or wintry sea") and "*cyaneoleuca*," which I finally adopted. This blue colour was very marked, and accompanied by a rich bloom, like that of a ripe plum. The bloom has now disappeared entirely, and the blue has become dull and lifeless; the whole appearance of the bird has changed. I have noticed the same loss of colour in the skins of the White-winged Petrel, and of the rich gloss or bloom of the Wedge-tailed and Short-tailed Petrels, but in no former instance was the change so marked.

Mr. Grant secured two more birds before we had passed through the flock, which flew seaward as we disturbed the individuals, possibly 100 in all. About a mile further on we ran into another flock of these birds, and secured two more specimens. Thinking that we were on the right track for their nesting-place, I did not consider it necessary to take any more by shooting; besides, there was a fairly heavy swell, and it sometimes took two or three turns of the launch before we could pick up our birds, and time was a valuable consideration.

We soon sighted Brush Island, and arrived at a safe anchorage at 8.30 a.m., the distance from Ulladulla being close upon 15 miles. The island is long and narrow, about 80 acres in extent, high in the centre, and thickly covered with *Casuarina*, *Banksia*, small eucalypts, and undergrowth, chiefly consisting of a salt-bush (*Rhagodia billardiera*). The native name of the island is Murramurang, and it lies barely half a mile off Murramurang Head, an old-time camping-ground of the blacks, with one of the most extensive kitchen middens on the coast.

Immediately upon landing we found our old friends the Little Penguins engaged, as usual, in what appears to be their all-the-year-round occupation of reproducing the species. Burrows and crevices amongst the rocks contained either fresh eggs or young birds, incubated eggs or big, pot-bellied chickens, with a mere collar of down left to distinguish them from their parents. The

Wedge-tailed Petrels were there also, their burrows and those of the Penguins being somewhat mixed up close to the water's edge. A wide belt of tussocks, salt-bush, and rank growths of thistles and other introduced weeds follows the shore-line, and this belt was fairly infested with the two birds mentioned. The Petrels were all sitting on fresh eggs. In one spot we found four dead Short-tailed Petrels, which had evidently been partly eaten by Crows or Hawks, lying outside the entrances to burrows tenanted by the Wedge-tails, and in a rock-pool just outside the fringe of vegetation we found another Short-tailed bird, apparently just dead. This specimen was also skinned, and forms the type of *Neonectris tenuirostris grantianus*, described by me in the January issue of this journal (p. 206). Just above the thick scrub, on a patch of sand, I found an egg, quite fresh, but perforated by a pebble, as if it had been dropped from a height of a few inches rather than laid on the ground. This egg measured 71 x 45 mm., and was, I believe, dropped by a Short-tailed Petrel, the size and the texture of the shell being in close resemblance to those of the Tasmanian and Victorian birds. The largest egg of the Wedge-tailed Petrel taken on the island measured 65 x 41 mm., while the smallest egg of the same species measured 54 x 37 mm.

Instances of dead Petrels coming ashore on the New South Wales coast in quantity are numerous, and various theories have been advanced to account for the phenomenon. Starvation, disease, storms, have all been suggested to account for the untimely death of the birds. The two specimens of the Short-tailed Petrel taken by us were found to be badly nourished, and their stomachs were empty, but there was no sign of injury which could have caused death. I advance, with some diffidence, a further theory, that these smaller and less combative birds, trying to establish themselves in the rookeries of the Wedge-tailed birds, are driven off, buffeted, and harried until they die from exhaustion or starvation. Further investigation, and examination of the blood, stomachs, and intestines of freshly-dead specimens, may reveal the cause of death with greater certainty.

We made a thorough examination of the island, searching every likely patch of soil and cover for indications of the nesting-places of other birds, but found none. The White-breasted birds were not represented. Where the flocks we saw have their breeding-place remains to be discovered. The specimens taken were adult, but in some instances the moult was not complete, one bird, a female, having brown patches on the wings. The ovaries of the females did not indicate that the laying season was approaching. On opening them Mr. Grant found their stomachs and crops crammed full of small mackerel, from a fresh one in the mouth or throat to almost completely digested ones in the stomach. The bodies of all the specimens were well nourished and fat. Externally they were covered with *Mallophaga* (*Menopon*, sp.)

Other birds seen on this trip were *Sterna cristata*, Steph., *Larus novæ-hollandiæ*, Steph., *Sula australis*, Gould, and *Chenopsis atrata*,

Latham, on the sea, the last-named in large numbers just off Tebowrie Head; and on the island, *Hæmatopus fuliginosus*, Gould, (adult pair and one young bird), *Synoicus australis*, Temm. (many adults and a dozen chicks), *Demiegretta sacra*, Gmelin, *Anthochaera carunculata*, Latham, *Anthus australis*, Vig. and Hors., *Megalurus gramineus*, Gould, *Rhipidura motacilloides*, Vig. and Hors., *Zosterops dorsalis*, Vig. and Hors., *Cracticus destructor*, Temm., and *Corvus* (? sp.)

I have in this paper adhered to the "Check-list" nomenclature, but in describing the two birds found on the Brush Island trip* I followed Mathews's "Hand-list" for the new sub-species of the Short-tailed Petrel, and ventured to place the "Fluttering" Petrel in a new genus, thus departing from the principles of the "Check-list," but following Mathews. Possibly, when the new "Check-list" is prepared, and further investigation reveals more of the life-history and habits of the Fluttering Petrel, some alteration may be necessary. I here take the opportunity of correcting an error in the generic characters of *Cinathisma cyaneoleuca*. The number of rectrices should be 12.

It is somewhat remarkable that we should have encountered such large numbers of the Fluttering Petrel, in view of the fact that *Puffinus gavia* (*Reinholdia reinholdi byroni*, Mathews) is considered to be a very rare bird indeed, and the two white-breasted birds might easily be taken for the one species by superficial observers. The records of occurrence of *P. gavia* are four only,—the first being a living bird, picked up after a storm at Victoria Park, Sydney, by Professor Anderson Stuart, and by him presented to the British Museum;† the second was picked up dead on Bondi beach by Mr. William Barnes, after an easterly gale, in September, 1908,‡ the skin of which was exhibited at a meeting of the Linnean Society, of New South Wales, by North, in 1909; the third was Mathews's type, which, I understand, was also picked up dead on one of the northern rivers; while the fourth occurrence was the specimen found by Rohu at the Five Islands (see *ante*).

By the courtesy of Mr. Sylvester E. Rohu I am enabled to add to this paper a transcript of some notes compiled from observations taken over a period of eighteen months—April, 1913, to September, 1914—by Messrs. E. A. Windle and W. Newton, fishermen working between Broken Bay and Botany Bay, New South Wales, and Mr. Rohu. These notes are of great value as showing the periods of greatest frequency of the species mentioned within the area in question, and throw valuable light on the problems connected with their breeding seasons. The nomenclature is that adopted by Mr. Rohu, and it is only necessary to suggest that the "*Puffinus assimilis*" mentioned in the list probably refers to both of the white-breasted Petrels—*Reinholdia reinholdi byroni*, Mathews, and *Cinathisma cyaneoleuca*, Hull.

* *Emu*, vol. xv., p. 205 (1916).

† Proc. Linn. Soc. N.S.W., vol. xxxiv., p. 418 (1909). ‡ *Ib.*

It also affords me much pleasure to present the readers of this journal with a remarkable photograph of an Albatross rising from the water inside Port Jackson, near the pile light off Watson's Bay. This striking picture was taken by Mr. J. Degotardi, the photographer to the Public Works Department, in the summer of 1912. Visits of these noble birds to Port Jackson are by no means uncommon, and I have seen several when journeying from Sydney to Manly. It is possible that some records of *Gabianus pacificus* as visitors to the port are the result of a mistaken identification of *Diomedea melanophrys*. I have travelled daily from Manly to Sydney for a number of years, but have never seen the Pacific Gull on the waters of Port Jackson, nor have I met with it during any of my numerous trips to the harbours and islands of our coast from Montague Island to Coff's Harbour.

A SUMMARY OF SEA BIRDS NOTED ON THE COAST BETWEEN BROKEN BAY AND BOTANY BAY, N.S.W.

Eudiptula minor.—Seen occasionally in singles. Were found breeding on the mainland at Narrabeen, a little north of Manly, their burrows situated under a fisherman's hut. This little rookery was composed of half a dozen adult birds. It is a strange fact that during the breeding season this hut was occupied by the fisherman.

Pelagodroma marina.—These were noted in fair numbers towards evening, making north, possibly to Broughton Island, where they have a very large rookery. These migrations north were noted during October, January, and February; other times of the year they were only seen occasionally.

Oceanites oceanicus.—Only two of these birds were noted, and in October, 1913, one of these specimens was shot. We were told by several fishermen that some eight or nine years ago these birds were noted only in pairs, but were very numerous.

Puffinus sphenurus.—Noted January and February, absent March, April, May, and June; returning July, August, and October. During these three months they are collected in thousands, following the schools of porpoises.

Puffinus tenuirostris.—The observations of these are very similar to the foregoing species, but in November and December they migrate in thousands towards the south.

Puffinus assimilis.—These birds are first noted at the beginning of July, and increase in numbers until November, when they are very numerous. They begin to leave these shores in December; they appear to follow the track of the porpoises when they are feeding on the vast shoals of pilchards. They make north at this time of the year.

Estrelata leucoptera.—Only two of these birds have been noted, and these were flying and feeding with the other *Puffinus* specimens.

Ossifraga gigantea.—Are first noted at the beginning of July, August, to the first week in September, but it is only after very heavy weather that they are seen. Immediately the seas go down these

birds disappear, only to return after the next storm, but at no time are they numerous. Windle says that when they are about there would be one of these birds to 250 specimens of Albatross. Windle also states that on one day he shot a Wandering Albatross, and it soared a distance of about half a mile before falling, and before he had time in his motor launch to come up to it a Giant Petrel had swooped down on this bird, had torn the breast open, and devoured a good deal of the flesh. It had torn the specimen about so much that it was of no use. From these observations Windle has learned to decoy these birds by shooting an Albatross and tearing the skin away from the breast, and setting it about 50 yards away from his boat when he is fishing. He says if there is any Giant Petrel in the vicinity it is not long before it swoops down upon the bait. A white specimen was collected on the 3rd of September, 1914.

Prion ariel.—Only one of this species was noted, and it was procured in August, 1914. This bird was enticed to come right up to the boat by throwing pieces of fish into the water whilst it was circling overhead.

Diomedea exulans.—These birds are noted from June until November. August, September, and October are the months when they are very numerous. They generally follow the mail steamers up the coast in large numbers, and the same birds have been noted to stay within the vicinity of Sydney Heads for perhaps a week.

Diomedea regia.—Only one of this species has been recorded, and that was in July, 1913, but this should not be taken to imply that they are not more numerous, as this bird was taken when we were collecting *D. exulans*. There is very little difference to be noted in these birds whilst in flight; perhaps this has been the reason for only one specimen being taken.

Diomedea cautus.—These birds are noted in June, July, and August; in July they are very numerous.

Diomedea chlororhynchus.—Are to be seen from March until December, and are to be classed as being the most common of the *Diomedea* found on the coast of New South Wales. In proportion to all other species of the Albatross family, it would not be exaggerating to say that the *D. chlororhynchus* would outnumber the others by three to one.

Diomedea (? sp.; yellow-beaked, with yellow eyes).—Are noted in June, July, and August; after August not one is to be seen.

Diomedea (? sp.; grey head and grey neck).—These birds seem to take the place of the foregoing species, and are only noted after the others have disappeared; these continue to be seen up till the beginning of December.

Diomedea culminatus.—This bird, during the period of these observations, has not been noted, although a strict outlook has been kept for same; this also applies to *Phaebetria fuliginosa*.

Sterna bergii.—These are always numerous off Sydney Heads, with the exception of the months of October and November; during these months we consider these birds, from Newcastle locality and along this portion of the coast, adjourn to the Five Islands, South Coast, to breed, but during the period of breeding of these birds there is an occasional one to be seen.

***Sterna frontalis*.**—This bird is only noted for two months in the year—July and August. It is always to be seen diving for its prey close in to the rocks. During these months we estimate that the total of this species within a range of 20 miles of Sydney would not be more than about 150 birds.

***Larus novæ-hollandiæ*.**—These birds, like the *S. bergii* are always to be seen, but are less numerous during the months of September, October, and November, when they are away breeding. Their closest rookery to Sydney known to us is at Five Islands, in the south.

***Megalestris antarctica*.**—May is the first month that these birds make their appearance. They are to be seen in singles and in pairs up till the end of August. They are known to all the fishermen and sailors alike on the coast of New South Wales as the Sea-Hen or Sea-Hawk.

***Stercorarius crepidatus*.**—Immediately *M. antarctica* disappears this bird takes its place, and is noted up till about the end of January. Windle seems to think that the birds that come to this coast within the radius of 20 miles of Sydney remain in the same locality until the time they take their departure. He comes to this conclusion mainly on account of the various markings of their plumage. He estimates in this radius that during these months there would be about 20 of these birds. On one occasion we saw as many as eight Skuas tackling a Tern. When the Tern had dived for its food, and was flying away with it, the Skuas would come from everywhere and join in the chase; previous to the diving of the Tern there could not be seen any trace of them. Some of these chases would continue for half a minute, and in other cases for many minutes, before the victim disgorged its food.

***Demigretta sacra*.**—Three pairs of these birds seem to occupy the coast-line from Botany Bay to Broken Bay.

***Phalacrocorax carbo*.**—Noted from May until November only in singles; in December and January they are noted in pairs; the end of January they begin to show their breeding plumage.

***Phalacrocorax melanoleucus*.**—Are noted all the year round.

***Phalacrocorax gouldi*.**—Noted during May, June, and July, but only in singles. The nearest rookery of these birds known to us is on the South Rock, Broughton Island, N.S.W.

***Sula serrator*.**—Noted all the year round, and very plentiful from August until December, when they are following the huge shoals of pilchards making north.

***Haliaëtus leucogaster*.**—There is a pair of these birds which breed annually on the north-east point of Kuring-gai Chase that juts into Broken Bay. This pair of birds seem to have practically the whole of the coast-line from Broken Bay to Botany Bay to themselves.



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