

*You bet. I have
Compts of Elliott Coues*

SUMMARY REPORT ON THE NATURAL HISTORY OF
KERGUELEN ISLAND.*

By J. H. KIDDER, M. D.,
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NAVY-YARD, NEW YORK, *June 12, 1875.*

SIR: Inclosed herewith I have the honor to forward a summary report upon the natural history of Kerguelen Island, as observed by me, omitting all technical details, excepting specific names, where these are known.

I have nearly finished rewriting the measurements, descriptions, and field-notes collected concerning the birds of the island, which Dr. E. Cones, United States Army, has kindly undertaken to edit for me. It has been proposed to me to publish this treatise as one of the Bulletins of the National Museum, and, as it is likely to be of interest only to ornithologists, I respectfully request your permission to do so.

Very respectfully,

J. H. KIDDER,

Passed Assistant Surgeon, U. S. Navy.

Surg.-Gen. J. BEALE,

U. S. Navy.

REPORT.

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WASHINGTON, D. C.

The natural-history specimens collected on Kerguelen Island, in connection with the Transit of Venus expedition, having arrived at New York, per sailing-bark from Cape Town, on May 21, have been forwarded to the Smithsonian Institution, and

* A detailed report of the natural history of the expedition to Kerguelen Island will soon be published under the authority of the Smithsonian Institution.

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found to have sustained no material damage by the voyage. I am, therefore, now in a position to report briefly the general scientific results of the expedition, with reference to the duty to which I was detailed.

The spot selected by Commander Ryan for an observing-station was at the head of Royal Sound, (near the southern end of the island,) on a plateau or terrace 130 feet above the level of the sea, and on the easterly side of a considerable bluff overlooking the bay. The southern portion of the island, so far as we were able to penetrate, is formed entirely of volcanic rock, showing no trace of stratification, and of very little geological interest. Stratified rock and a considerable coal deposit have been found in the northern part of the island, with the silicified trunks of large trees. Captain Fuller, of the sealing-schooner Roswell King, informs me that a very large glacier occupies the central part of the island, extending in a general easterly and westerly direction. The central part is in general mountainous and covered with snow, reaching an altitude, on Mount Ross, of about 5,000 feet. The island is treeless, barren, and covered with a scanty vegetation, whereof cryptogamous plants form by far the greatest proportion. It is situated in a region of almost constant precipitation, and exposed to frequent and extraordinarily violent gales of wind, the effects of which are to be seen in the often fantastic forms of the rocks which crop out at the tops of most of the hills.

Of phænogamous plants, I found only twenty-one species, including, with one exception, (*Limosella aquatica*,) all of those attributed by Dr. J. D. Hooker to this locality, and, perhaps, adding three species of *Ranunculus* and a grass to the list, besides three ferns. The remaining cryptogams have not yet been identified, but the botanical collection has been placed in

* Two new species of moss have been found in the collection, and described by Mr. T. F. James, of Cambridge, as *Grimmia falcata* and *G. kerguelensis*. Also, one new genus and three new species of lichens, determined by Prof. Edw. Tuckerman.

the hands of Professor Gray,* at Cambridge, for final judgment. Of especial interest among the plants are the now well-known Kerguelen cabbage, (*Pringlea antiscorbutica*;) the Kerguelen tea, (*Acæna affinis*, Hook. fil.), a rosaceous plant much used by whalers as a febrifuge and diaphoretic; *Leptinella plumosa*, one of the *Compositæ*, used as an emetic, (in decoction); and *Lyallia kerguelensis*, Hook. fil. The last-named plant is quite unique, being strictly *sui generis*, and the only species of its genus yet discovered. The more fragile flowers have been brought home preserved in glycerine, as well as in sheets.

Of terrestrial mammals, but a single species, a mouse, was found to inhabit the island, and this is doubtless a descendant of individuals imported many years ago by sealers, when this island was the great breeding-place of the sea-elephant. It is to be found everywhere on the island, burrowing mostly in sandy hill-sides, and feeding on the seeds of grass and the roots of *Azorella*. One nest was found in the skull of a sea elephant. The domestic cat has also run wild upon one of the islands which limit Three Island Harbor, in Royal Sound, and is said to have developed great ferocity and some change of appearance. I had no opportunity to visit this island, nor did I succeed in securing any specimens.

Of seals, the most familiar examples were the sea-elephant, (*Macrorhinus proboscidea*), and the sea-leopard, (*Stenorhynchus leopardinus*.) But a single individual of the former "hauled up" near our station, the skin of which has been preserved. The latter was seen twice, but escaped capture both times. The speed in the water of the sea-leopard is described by whalers as being most extraordinary, exceeding even that of the king-penguin, which forms a large part of its food. Another skin and complete skeleton of the sea-elephant were obtained by purchase from Heard's Island, the animals having been driven almost entirely away from the more accessible parts of the island by the wastefulness with which they have been slaughtered in former

years. But a single small schooner was engaged in hunting them during our stay, two others and a bark "working" Heard's Island, some three hundred miles to the southward. Those which are still captured on Kerguelen Island are only the stragglers from Bonfire Beach, a portion of the west coast quite inaccessible from the sea, where great numbers still repair annually to breed. Fur-seals are occasionally captured upon the small islands near the coast, and at least two species of hair-seal; but none came under my observation.

Specimens of twenty-one species of birds were brought home, all inhabiting and breeding upon the island. Of fourteen of these the eggs were obtained, of ten the young, and of seven both eggs and young, besides a number of anatomical preparations. Many of these specimens are of great scientific interest, especially in view of the fact that our long stay on the island during the breeding-season afforded an excellent opportunity for observing their habits, hitherto, in many cases, but very imperfectly known. But a single one of these, the unique "sheath-bill," (*Chionis minor*, Hartlaub,) is a land bird, pure white, and bearing a strong superficial resemblance to a domestic pigeon. It is rare in museums, and occupies rather a doubtful position, having been classed by Cuvier with the *Grallatores*, and by Buouaparte with *Rasores*. It feeds on sea-weeds and small crustaceans on the rocks near high-water mark, nests in crevices among fallen rocks, laying three very large, brown-streaked eggs, and is easily domesticated, being almost without fear of man. The remaining twenty species all belong to the *Natatores*, and include one teal,* green-winged, and probably a species peculiar to the island, since it does not migrate. This teal is largely a vegetable feeder, and an excellent bird for the table. It was the main dependence of our party in the way of fresh provisions.

* Since described by Mr. Sharpe as *Querquedula catoni*, in compliment to Rev. A. E. Eaton, naturalist to the English party on Kerguelen Island.

next to Lunda
and by G.R. Gray

Besides the teal, there is a single species of cormorant, (*Graculus carunculatus*,) beautifully marked by an erectile crest of thirteen small plumes, bright-yellow caruncles, and a broad circle of cobalt-blue surrounding the eye. The back and neck are of a brilliant changeable green, with violet tints, and the breast, throat, and under parts of wings pure white. These gay markings are confined to the female during the breeding-season, the male bearing a much more sober plumage. There is one species of gull (*Larus dominicanus*) distinguished by black wings fringed by a broad band of white, black back, and white head and tail. Specimens have been preserved, showing many intermediate changes in the plumage of the younger birds, after different moults, which might easily give rise to the supposition that there are several different species. A beautiful pearl-gray tern, with coral-red feet and bill, very like the arctic tern, (*Sterna macroura*,) proves to be *Sterna vittata*, Gray. A very large dark-colored skua, marked by a white bar under the wings, (*Buplagus skua antarcticus*, [Lesson,] Coues,) the homologue of the great northern *Lestrus catarractes*, occupies the place and function of a bird of prey, being almost exclusively terrestrial in habit, although web-footed; living upon other birds which it kills for itself, and having in general the habits and appearance of a buzzard-hawk. The teal builds its nest in the long grass upon uplands, the cormorant upon the seaward faces of precipitous cliffs, and the gull, tern, and skua lay upon low land, in the open ground, only the gull building a nest.

Both the great white albatross (*Diomedea exulans*) and the sooty albatross (*Phæbetria fuliginosa*, Reichenbach) nest upon the island. The former build up their nests to the height of two or three feet, choosing low, marshy land, and lay one large white egg. The young birds ("gonies" of whalers) are said to remain by the nests for an entire year, and their first plumage is quite black. I counted twenty-three nests in view at one time,

near Prince of Wales Foreland, on the eastern side of Royal Sound. The sooty albatross builds upon some high shelf on the side of a cliff, making a much less artistic nest than the white albatross, and laying also but a single egg.

Ten species of petrel were found. Of these the giant petrel, the "Nelly" of whalers, (*Ossifraga gigantea*), "quebrante-huesos" of the Spaniards, is the most remarkable for size, being quite as large as a goose. It is a carrion feeder, makes very long excursions in search of food, like the albatross, and has even been said (Darwin's Voyage of the Beagle) to kill other birds when hard pressed. Unlike other petrels, this bird lays its single egg upon the ground, selecting a dry spot where vegetation is scanty, but building no nest or burrow. The young, when half-fledged, is quite as large and heavy as its parent. At the other extreme, in point of size, is the graceful little *Procellaria nereis*, (Gould,) Coues, the smallest of petrels, smoky above, with a white breast. It nests beneath the margins of clumps of grass or Kerguelen tea, laying a single egg. I am told that there is no specimen of this bird in any American museum. Very similar, but much more familiar to naturalists, is Wilson's petrel, (*Oceanites oceanica*, [Banks,] Coues,) marked by a white band across the rump, with longer legs, and generally rather larger. Nests high on the hill-sides, among rocks. Thousands of a little diving petrel (*Pelecanoides urinatrix*) and two members of the family *Prionida*, or "blue petrels," (*Halobæna cerulea* and *Pseudoprion desolatus*,) nested in burrows close to our huts, flying about the hill-side in immense numbers as soon as night fell, and keeping up an incessant calling. The call of the former is a single plaintive note, with a rising inflection of sound; that of the latter strongly resembles the cooing of a dove. A visitor who should land on the island only during the day, returning to his ship every night, might spend a long time in the bay without even suspecting the existence of these birds, although

so numerous, since they are exclusively nocturnal in their habits. The great black petrel (*Majaqueus equinoctialis*, Reichenbach) also nests in burrows, laying a single large white egg, but is much less common than those just mentioned. Two species of *Oestrelata* were found, although rare. One proves to be *O. lessoni*; the other has not yet been identified,* and may prove to be a new species. All of these petrels, with the exceptions noted, burrow beneath great clumps of an umbelliferous plant, (*Azorella selago*, Hook. fil.,) which almost completely covers the lower lands of the island. It grows in mounds, often two or three feet high, the plants being so closely crowded together as to present a smooth and even surface, and, yielding readily to the foot, adds much to the fatigue of traveling any considerable distance.

I believe that the Cape pigeon (*Daption capensis*) and the yellow-billed albatross (*Diomedea chlororhynchus*) both also nest on the island, but not in the neighborhood of our station, both having been seen at sea near by. In addition to the petrels already mentioned, I found large numbers of young birds, called by the whalers "mutton-birds," which have not yet been absolutely identified.†

Three species of penguin close the list of birds captured, viz: the "johnnies," (*Pygoscelis taniata*, [Peale,] Coues,) "rock-hoppers," (*Eudyptes chrysolopha*, Brandt,) and a variety of the king-penguin, (*Aptenodytes longirostris*, Coues,) differing from that of the Falkland Islands (*A. patachonica*) in some of the more minute markings. Both the "johnnies" and "rock-hoppers" nest upon the island, the former laying on a level plateau some 300 feet above the sea, and fully half a mile from the shore. Very distinct and deeply-cut roads lead to these rookeries, along which companies of twenty-five or thirty penguins may at almost any time be seen climbing their way. There are two broods when

* Since described as *Oestrelata kidderi*, Coues.

† They proved to be young of *Oestrelata lessoni*.

the birds are undisturbed, about two months apart, so that a well-grown young penguin may be found, late in the season, in the same nest with one just pipping the shell. The "rock-hoppers" nest in crevices where large masses of rock have fallen from the overhanging cliffs, and lay two eggs, both male and female remaining, as a rule, by the nest. The crests of another species of *Eudyptes* (*E. diademata*) were brought in from Heard's Island, but I did not succeed in obtaining an entire skin. The king-penguins did not breed upon our part of the island, but occasionally visited it. Both they and the "johnnies" progress by *walking*, *i. e.*, by placing one foot before the other, whereas the rock-hoppers *hop* like sparrows, with both feet at a time, climbing the steep faces of rocks with wonderful agility.

No reptiles or amphibians were found upon the island, nor did I hear of any having been seen at any time.

Fish were not plentiful, since we never succeeded in catching them with lines from the shore. A specimen with an enormous head, like an exaggerated sculpin, captured from the ship, proves to be *Chænicichthys rhinocceratus*; and several specimens which I captured by hand, in the little pools left on the shingle by the tide, represent only two species: *Notothenia purpuriceps* and *Harpagifer bispinis*. Doubtless several would have been added to this list had we been supplied with a practicable boat. As it was, we were quite confined to the shore and to the neighborhood of the station. A few specimens of small fish, taken in mud from the bottom, have not yet been examined.

A single *Octopus* was found upon the rocks, dead, by Mr. Stanley, who kindly gave it to me. Beaks of cephalopods were, however, among the commonest things found in the stomachs of the birds examined. Without the opportunity for dredging, it was scarcely possible to collect many specimens in

this class. Land-snails were abundant, although of small size, and often found gathered together in great numbers under stones. A few small shells, resembling *Turbinida*, were found from time to time in pools left by the tide or adhering to the rocks, besides several varieties of *Patella* and a small *Chiton*. A species of *Aplysia* was quite common, and at least two of *Mytilus*, (both edible,) with very fragile shells of a sort of *Pholas*. On one of the islands near by are specimens of a "petrified clam," quite similar to the familiar hard-clam of our coast. Singularly enough, no such clam is now to be found at Kerguelen. Among *Molluscoïda*, ascidians and an immense variety of *Polyzoa* were found, almost every floating sea-weed being covered with their minute coral-like branches.

The representatives of the class *Insecta* were very interesting, including several forms peculiar to the locality. Several species of *Cureulio* are found upon the rocks near the sea, and also at considerable altitudes. This family includes all the beetles that I saw excepting two small Carabids. The elytra of all but one seemed to be soldered together. Among the matted roots of the smaller plants were often found *Podura*, of at least two species, one being remarkably large. No other *Lepidoptera* were seen by me, although small Tineid moths were found by Mr. Eaton,* the English naturalist. The only flying insect that I found was a very minute gnat, which appeared late in November near the flowers of the Kerguelen tea. The cabbage is infested by a large species of apterous *Dipteron*, brown, with long legs, and without even a rudiment of the halteres or balancers. As one approaches a plant of the cabbage these insects may be seen dropping off by scores, counterfeiting death. Another species, smaller, darker, and with rudimentary halteres but no wings, was often found feeding on dead animal matter. Several were caught in a jar sunk to the level of the ground, which I had set as a bee-

* Since described by him as *Embryonopsis horticella*.

tle-trap. Still another yet smaller species inhabits the rocks by the sea-shore, and these show little triangular rudiments of wings, which seem to help them in jumping, (which they do with great agility,) but are by no means sufficient for flight. I believe that more careful examination will separate this last species into two. The *Hemiptera*, *Neuroptera*, *Orthoptera*, and *Hymenoptera* are not represented at all, as far as I know. Long streaks or bands of minute yellow dots, often seen on the rocks where the cormorants congregate, prove, on microscopic examination, to be very hard-shelled *Acarini*, in shape much like "lady-birds," (*Coccinella*.) Another species of *Acarinus*, bright red, and still smaller, is found in the axils of the leaves of the cabbage. Hunting-spiders are common in gravelly places and among stones, under which their tent-like egg-cases can almost always be found.

Among littoral crustaceans are several species of crab, innumerable shrimps, and at least two species of "pill-ball" isopods, one of which is over an inch long and of very handsome coloring. Small marine leeches are also very common, as are *Nereid* and the various tube-inhabiting marine worms. The earth-worm is common on shore, with many different active larvæ, supposed to be of *Podura* and *Curculio*. The *Echinodermata* are well-represented, specimens having been preserved of *Holothuria*, *Ophiuridea*, (from 12 fathoms,) star-fish, (three species,) and spatangoid sea-urchins. The last were dredged from 5 and 12 fathoms. Several not conspicuous species of *Actinia*, two or three sponges; (partly vitreous,) and a few diatoms from the sea-water, complete the zoological list, so far as specimens have been preserved.

There is a considerable collection of *Algæ*, both pressed and dried, including the two huge species of antarctic kelp, concerning which so much has been said and written, (*Macrocystis pyrifera* and *D'Urvillea harveyi*.)

Such geological specimens as have been preserved were selected with a view to also illustrating the lichens which grow upon them up to 2,500 feet above the sea-level. Very large specimens of calcareous spar from holes in the rocks, and of silicified wood from the northern part of the island, have also been brought home. For the latter I am indebted to Mr. Maynard, bearer of dispatches to the commanding officer of the expedition.

All of the members of the party rendered me material assistance at one time or another, and I am particularly under obligations to Commander Ryan for often-repeated acts of kindness. I am also indebted to Dr. Gill, of the Smithsonian Institution, and to Dr. E. Coues, United States Army, for identification of the fish and many of the birds.

Meteorological register.

United States observing station, Kerguelen Island.—Latitude, 49° 21' S.; longitude, 70° 15' E.; altitude of barometer above sea-level, 130 feet.

| September, 1874. | BAROMETER. | | | THERMOMETER. | | | WIND. | | Remarks. |
|------------------|------------|---------|---------|--------------|---------|---------|--|--------|-----------------------------------|
| | 8 a. m. | 2 p. m. | 8 p. m. | 8 a. m. | 2 p. m. | 8 p. m. | Direction. | Force. | |
| 1 | | | | | | | | | |
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| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
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| 12 | | | | | | | | | |
| 13 | | | | | | | | | |
| 14 | | | | | | | | | |
| 15 | | | 30.10 | | | | South by east | | Cold and clear. |
| 16 | 30.20 | | 30.30 | | | 35 | Southerly and westerly | | |
| 17 | 30.17 | 30.12 | 30.15 | 55 | 63 | 54 | do | | |
| 18 | 29.93 | 29.70 | 29.70 | 64 | 55 | 48 | Northerly and westerly | 10 | High gale, with rain, &c. |
| 19 | | | | | | | | | |
| 20 | 30.11 | 30.11 | 30.03 | 48 | 52 | 41 | Southerly and westerly | | Overcast. |
| 21 | 29.80 | 29.71 | 29.61 | 47 | 56 | 56 | Northerly and westerly | 6 | Overcast; clear afternoon. |
| 22 | 29.37 | 29.53 | 29.33 | 57 | 56 | 37 | Northerly and easterly | 5 | Snow in afternoon. |
| 23 | 29.47 | 29.55 | 29.55 | 34 | 38 | 32 | West-northwest | 7 | Snow; clearing in afternoon. |
| 24 | 29.58 | 29.38 | 29.52 | 39 | 42 | 50 | Northerly and easterly a. m.; southwest, p. m. | 8 | Snow. |
| 25 | 29.61 | 29.42 | 29.92 | 41 | 42 | 40 | Southwest at 8 a. m.; northerly at 2 and 8 p. m. | 10 | Rain and strong gale. |
| 26 | 28.80 | 28.79 | 29.00 | 32 | 34 | 23 | Westerly | 10 | Gale continues; much snow. |
| 27 | 29.28 | 29.50 | 29.73 | 25 | 33 | 24 | do | 10-11 | Gale increasing; very heavy snow. |
| 28 | 29.81 | 29.80 | 29.72 | 33 | 39 | 30 | do | 5-6 | Cloudy; fresh wind. |
| 29 | 29.30 | 29.17 | 29.20 | 37 | 45 | 33 | do | | Rain and snow; clear intervals. |
| 30 | 29.16 | 29.12 | 29.14 | 43 | 43 | 31 | Northerly | | Partially clear; snow at night. |
| Monthly mean | 29.60 | 29.52 | 29.60 | 42.9 | 46 | 38.14 | | | |
| | | | | | | 42.36 | | | |

United States observing station, Kerguelen Island.—Latitude 49° 21' S.; longitude 70° 15' E.; altitude of barometer above sea-level, 130 feet. *Meteorological register.*

| October, 1874. | BAROMETER. | | | THERMOMETER. | | | WIND. | | Force. | Remarks. |
|----------------------|------------|---------|---------|--------------|---------|---------|-------------------------------------|--------|---|----------|
| | a. m. | 2 p. m. | 8 p. m. | a. m. | 2 p. m. | 8 p. m. | Direction. | Force. | | |
| 1 | 29.27 | 29.31 | 29.31 | 50.00 | 47 | 35 | Northerly | Light. | Clear and pleasant; cloudy intervals. Snow in forenoon; clear at night. | |
| 2 | 29.32 | 29.33 | 29.37 | 43.5 | 40 | 31 | Southerly and westerly | Light. | Snow at intervals. | |
| 3 | 29.63 | 29.73 | 29.72 | 42.5 | 35 | 30 | Northeast. | 8 | Heavy snow; squally. | |
| 4 | 29.50 | 28.58 | 28.67 | 31 | 41 | 30 | N. E. S. a. m., N. & W. 2 & 5 p. m. | 6 | Snow all day; high wind. | |
| 5 | 29.81 | 28.67 | 28.97 | 33 | 35 | 28 | Northeast and westward | Light. | Clear forenoon; frequent snow and rain in afternoon. | |
| 6 | 29.80 | 29.27 | 29.00 | 36 | 39 | 25 | Westerly | 8 | Occasional snow; heavy at night. | |
| 7 | 29.80 | 29.79 | 29.58 | 30 | 35 | 31 | Westerly 4. m., northerly p. m. | Light. | Showed all night; clear afternoon. | |
| 8 | 28.79 | 28.77 | 29.05 | 34 | 43 | 31 | Northeast and westward | 8 | Clear; unusually high and low tide. | |
| 9 | 29.55 | 29.57 | 29.30 | 25 | 32 | 29 | Westerly | 8 | Show; very heavy in afternoon. | |
| 10 | 29.55 | 29.45 | 29.30 | 32 | 46 | 36 | do | 8 | Show all day; brief intervals. | |
| 11 | 29.10 | 29.13 | 29.30 | 35 | 41 | 39 | do | 8 | Heavy snow all day; strong gale. | |
| 12 | 29.07 | 29.13 | 29.32 | 35 | 41 | 39 | do | 8 | Clear and pleasant. | |
| 13 | 29.05 | 29.57 | 29.32 | 35 | 41 | 37 | Northwest | 8 | Overcast; no snow or rain. | |
| 14 | 29.07 | 29.07 | 29.04 | 32 | 30 | 27 | Southerly | 3 | Calm morning; violent gale, with rain, by noon. | |
| 15 | 29.69 | 29.67 | 29.73 | 40 | 46 | 35 | do | 3 | Clear until 12 m.; snow all afternoon. | |
| 16 | 29.63 | 29.55 | 29.09 | 45 | 46 | 35 | Calm 8 a. m., N. and E. p. m. | 8 | Clear until 12 m.; rain, hail, and snow in afternoon. | |
| 17 | 29.74 | 29.40 | 29.37 | 45 | 33 | 31 | Southerly and westward | 8 | Occasional snow-squalls. | |
| 18 | 29.30 | 29.40 | 29.37 | 43 | 42 | 37 | do | 8 | Frequent snow-squalls. | |
| 19 | 29.37 | 29.27 | 29.32 | 43 | 46 | 34 | Westerly | 6 | Hazy morning; rain at noon; gale at night. | |
| 20 | 29.64 | 29.46 | 29.11 | 45 | 51 | 47 | N. & E. 8 a. m., N. & W. p. m. | 6-15 | Frequent snow, ceasing in afternoon. | |
| 21 | 29.50 | 29.22 | 29.11 | 49 | 37 | 41 | Northerly and westerly | 9-7 | Gale; frequent snow all day. | |
| 22 | 29.11 | 29.10 | 29.22 | 50 | 39 | 36 | do | 10 | Clear morning; snow from 11 to 2. | |
| 23 | 28.73 | 28.28 | 28.59 | 35 | 40 | 32 | do | Light. | Clear morning; snow in afternoon; 6½ feet tide. | |
| 24 | 28.72 | 28.28 | 28.59 | 35 | 40 | 32 | Westerly | Light. | Occasional snow-squalls. | |
| 25 | 28.84 | 28.94 | 28.92 | 41 | 44 | 34 | do | Light. | Clear morning; showy afternoon. | |
| 26 | 28.94 | 28.94 | 28.92 | 41 | 43 | 34 | West by north | Light. | Clear; with occasional snow. | |
| 27 | 29.03 | 29.07 | 29.32 | 41 | 47 | 33 | Westerly | Light. | Overcast; heavy snow after 11 a. m. | |
| 28 | 29.03 | 29.07 | 29.32 | 41 | 47 | 33 | do | 6-7 | | |
| 29 | 29.60 | 29.60 | 29.53 | 46 | 52 | 34 | Northwest | 6-7 | | |
| 30 | 29.45 | 29.47 | 29.53 | 33 | 41 | 34 | do | 6-7 | | |
| 31 | 29.45 | 29.47 | 29.53 | 33 | 41 | 34 | do | 6-7 | | |
| Monthly } mean. } | 29.36 | 29.32 | 29.32 | 41.97 | 41.6 | 34 | 39.2 | | | |

Meteorological register.

United States observing station, Kerguelen Island.—Latitude, 49° 21' S.; longitude, 70° 15' E.; altitude of barometer above sea-level, 130 feet.

| | BAROMETER. | | | THERMOMETER, DRY. | | | THERMOMETER, WET GULB. | | | DEW-POINT. | | |
|-------------------|------------|---------|---------|-------------------|---------|---------|------------------------|---------|---------|------------|---------|---------|
| | 8 a. m. | 2 p. m. | 8 p. m. | 8 a. m. | 2 p. m. | 8 p. m. | 8 a. m. | 2 p. m. | 8 p. m. | 8 a. m. | 2 p. m. | 8 p. m. |
| | 1..... | 29.76 | 29.83 | 29.75 | 40 | 55 | 43 | 42 | 42 | 42 | | |
| 2..... | 29.60 | 29.36 | 29.70 | 39 | 51 | 35 | 41 | 41 | 41 | ..... | ..... | ..... |
| 3..... | 29.67 | 29.64 | 29.65 | 43 | 49 | 41 | 43 | 43 | 43 | ..... | ..... | ..... |
| 4..... | 29.60 | 29.73 | 29.77 | 45 | 53 | 40 | 45 | 45 | 45 | ..... | ..... | ..... |
| 5..... | 29.51 | 29.64 | 29.76 | 41 | 45 | 33.5 | 42 | 42 | 42 | ..... | ..... | ..... |
| 6..... | 29.87 | 29.84 | 29.91 | 42 | 44 | 35.5 | 44 | 44 | 44 | ..... | ..... | ..... |
| 7..... | 29.86 | 29.80 | 29.74 | 44 | 47.2 | 48.75 | 43 | 43 | 46 | ..... | ..... | ..... |
| 8..... | 29.87 | 30.00 | 30.03 | 43 | 53 | 37 | 40 | 40 | 46 | ..... | ..... | ..... |
| 9..... | 29.80 | 29.55 | 29.31 | 35 | 37 | 34 | 35 | 35 | 35 | ..... | ..... | ..... |
| 10..... | 29.25 | 29.34 | 29.37 | 42 | 49 | 37 | 41 | 41 | 35 | ..... | ..... | ..... |
| 11..... | 29.52 | 29.50 | 29.30 | 41 | 50 | 39.5 | 43 | 43 | 35.5 | ..... | ..... | ..... |
| 12..... | 29.22 | 29.25 | 29.35 | 48 | 60 | 43 | 49 | 49 | 37 | ..... | ..... | ..... |
| 13..... | 29.62 | 29.76 | 29.91 | 39 | 37 | 36.5 | 46.5 | 46.5 | 37.4 | ..... | ..... | ..... |
| 14..... | 30.03 | 30.08 | 30.16 | 43 | 52 | 50.5 | 40 | 40 | 45.7 | ..... | ..... | ..... |
| 15..... | 30.30 | 30.30 | 30.29 | 46.5 | 57.5 | 45.5 | 46 | 46 | 47 | ..... | ..... | ..... |
| 16..... | 30.31 | 30.27 | 30.20 | 50 | 59 | 42 | 56 | 56 | 47.8 | ..... | ..... | ..... |
| 17..... | 29.90 | 29.70 | 29.85 | 52 | 59 | 40 | 51.5 | 51.5 | 51.8 | ..... | ..... | ..... |
| 18..... | 29.90 | 29.78 | ..... | ..... | ..... | ..... | ..... | ..... | 53.25 | ..... | ..... | ..... |
| 19..... | 29.85 | 29.86 | 29.91 | 38.5 | 43 | 37 | 37 | 37 | 50.9 | ..... | ..... | ..... |
| 20..... | 29.83 | 29.99 | 29.73 | 45 | 54 | 49 | 40 | 40 | 34.33 | ..... | ..... | ..... |
| 21..... | 29.72 | 29.77 | 29.75 | 48 | 49 | 40 | 47 | 47 | 32 | ..... | ..... | ..... |
| 22..... | 29.42 | 29.21 | 29.17 | 45 | 60.5 | 49 | 47 | 47 | 44 | ..... | ..... | ..... |
| 23..... | 29.18 | 29.44 | 29.60 | 45.5 | 46 | 36.5 | 47 | 47 | 44 | ..... | ..... | ..... |
| 24..... | 29.83 | 29.63 | 29.76 | 45.5 | 46 | 43 | 43 | 43 | 45.8 | ..... | ..... | ..... |
| 25..... | 29.91 | 29.86 | 30.01 | 54 | 56 | 43.5 | 53 | 53 | 33.2 | ..... | ..... | ..... |
| 26..... | 29.91 | 29.74 | 29.76 | 44.5 | 60 | 47.5 | 41 | 41 | 37.6 | ..... | ..... | ..... |
| 27..... | 29.80 | 29.84 | 29.58 | 43 | 49 | 50 | 48 | 48 | 41.2 | ..... | ..... | ..... |
| 28..... | 29.29 | 29.55 | 29.51 | 56 | 48 | 48 | 48.5 | 48.5 | 52 | ..... | ..... | ..... |
| 29..... | 29.73 | 29.74 | 29.71 | 41.9 | 50 | 41.6 | 43.8 | 43.8 | 47.2 | ..... | ..... | ..... |
| 30..... | 29.73 | 29.74 | 29.71 | 41.9 | 50 | 41.6 | 43.8 | 43.8 | 47.44 | ..... | ..... | ..... |
| Monthly mean..... | 29.73 | 29.74 | 29.71 | 41.9 | 50 | 41.6 | 43.8 | 43.8 | 47.44 | 41.1 | 41.8 | 37.7 |

METEOROLOGY OF KERGUELEN.

7-11

Meteorological register—Continued.

United States observing station, Kerguelen Island.—Latitude, 49° 21' S.; longitude, 70° 15' E.; altitude of barometer above sea-level, 130 feet.

| November, 1874. | SATURATIONS, (PER CENT.) | | | | WIND. | | RAIN. | | Remarks. |
|-----------------|--------------------------|---------|---------|--|-------|---------|--------|---|----------|
| | 8 a. m. | 2 p. m. | 8 p. m. | Direction. | | Inches. | Forec. | | |
| | | | | do | do | | | | |
| 1 | | | | Northwest | | 7.9 | | Occasional snow in morning. | |
| 2 | | | | do | | | | Overcast; no snow. | |
| 3 | | | | Westerly | | Light | | Clear. | |
| 4 | | | | do | | 2.9 | | Clear and pleasant. | |
| 5 | | | | do | | 2.5 | | Clear morning; afternoon overcast. | |
| 6 | | | | do | | 3-10 | | Overcast; rain; and high gale p. m. | |
| 7 | | .61 | | Northeast | | 7.9 | | Snow-squalls; clear at noon; snow p. m. | |
| 8 | | .81 | .80 | North, west, & south & west | | 8-9.6 | 0.86 | Snow a. m.; clear p. m. | |
| 9 | | .81 | .81 | Westerly | | 9.5 | | Overcast; occasional rain. | |
| 10 | | .75 | .66 | do | | 4.2 | | Overcast. | |
| 11 | | | | Southerly | | 2.5 | | Heavy snow. | |
| 12 | | .73 | .80 | Southerly and easterly | | 2.5 | | Misty. | |
| 13 | | .80 | .81 | Southerly | | 5.4 | | Cloudy a. m.; light rain in evening. | |
| 14 | | .88 | .88 | Calm and southerly | | 0.2 | | Cloudy. | |
| 15 | | .90 | .95 | Southerly and westerly | | 2.6 | .01 | Cloudy. | |
| 16 | | .83 | .88 | do | | 6 | .008 | Completely covered; clear afternoon. | |
| 17 | | .66 | .80 | do | | 2.3 | | Completely covered. | |
| 18 | | .81 | .80 | Southerly and westerly | | 2 | .005 | Clear; light rain at noon. | |
| 19 | | .97 | .91 | Southerly and northerly | | 2.7 | | Overcast with clear intervals. | |
| 20 | | .77 | .74 | Northerly and westerly | | 6.9 | | Rain and frequent sharp squalls. | |
| 21 | | .66 | .73 | Northwest | | 7.5 | .146 | Overcast; clear intervals; sharp squalls. | |
| 22 | | .61 | .68 | Northerly | | 5.3 | .026 | Overcast a. m.; frequent snow-squalls p. m. | |
| 23 | | .81 | .65 | West | | 6.9 | .05 | Clear; cloudy p. m. | |
| 24 | | .92 | .85 | do | | 7.2 | | Clear. | |
| 25 | | .96 | .91 | S. W. at 5 p. m., E. at 2 p. m., and S. by 8 p. m. | | 3.6 | | Cloudy, with occasional rain. | |
| 26 | | .83 | .63 | Northerly and westerly | | 8.9 | | Clear a. m.; frequent snow squalls p. m. | |
| 27 | | .93 | .80 | Southwest | | 9.2 | .04 | Rain clearing in afternoon. | |
| 28 | | .85 | .81 | Westerly | | 1-2 | | Cloudy; occasional sunshine; completely covered at night. | |
| 29 | | .96 | .97 | Southerly | | 3-6 | .04 | Light rain morning and evening; clear at noon. | |
| 30 | | .83 | .73 | Northerly and easterly | | 3-9 | .72 | Fine rain all day. | |
| 31 | | .792 | .823 | Westerly | | | | Clearing off in afternoon. | |
| Monthly mean | .855 | .792 | .823 | | | | 0.200 | | |

Meteorological register.

United States observing station, Kerguelen Island.—Latitude 49° 24' S.; longitude 70° 15' E.; altitude of barometer above sea-level, 130 feet.

| December, 1874. | BAROMETER. | | | THERMOMETER, DRY. | | | | THERMOMETER, WET BULB. | | | | DEW-POINT. | | | |
|-------------------|------------|---------|---------|-------------------|---------|---------|---------|------------------------|---------|---------|---------|------------|---------|---------|---------|
| | 8 a. m. | 3 p. m. | 8 p. m. | 8 a. m. | 2 p. m. | 8 p. m. | 8 a. m. | 2 p. m. | 8 p. m. | 8 a. m. | 2 p. m. | 8 p. m. | 8 a. m. | 2 p. m. | 8 p. m. |
| | 1..... | 29.58 | 29.61 | 29.70 | 45 | 46.5 | 37 | 44 | 45 | 36.5 | 42.8 | 44.5 | 35.8 | | |
| 2..... | 29.63 | 29.65 | 29.82 | 42.5 | 40.5 | 41 | 45.5 | 44.5 | 38 | ..... | 40.2 | 34.2 | ..... | ..... | ..... |
| 3..... | 29.46 | 29.71 | 29.83 | 51 | 49.5 | 40.5 | 55.5 | 51 | 37.5 | 41.9 | 45.4 | 33.0 | ..... | ..... | ..... |
| 4..... | 29.52 | 29.72 | 29.49 | 57 | 57.5 | 45 | 53 | 50 | 43 | 58.2 | 43.1 | 40.7 | ..... | ..... | ..... |
| 5..... | 29.50 | 29.73 | 29.46 | 64 | 63 | 50 | 60 | 56 | 37 | 56.7 | 54.1 | 33.8 | ..... | ..... | ..... |
| 6..... | 29.30 | 29.62 | 29.46 | 44 | 43 | 36 | 41 | 47 | 33.5 | 37.5 | 41.8 | 34.7 | ..... | ..... | ..... |
| 7..... | 29.59 | 29.64 | 29.74 | 53 | 51 | 40 | ..... | 47 | 36 | ..... | 42.8 | 37.7 | ..... | ..... | ..... |
| 8..... | 29.34 | 29.92 | 29.16 | 40 | 32.5 | 42 | 46 | 43.5 | 49 | 42.8 | 44.3 | 37.5 | ..... | ..... | ..... |
| 9..... | 29.32 | 29.18 | 29.19 | 51 | 52 | 49 | 49 | 47 | 49 | 41.9 | 44.8 | 44.8 | ..... | ..... | ..... |
| 10..... | 29.44 | 29.53 | 29.59 | 46 | 54 | 41 | 48 | 50 | 39 | 41.7 | 40.1 | 36.8 | ..... | ..... | ..... |
| 11..... | 29.30 | 29.40 | 29.46 | 40 | 53 | 46 | 43 | 45 | 32 | 40.9 | 47.7 | 35.3 | ..... | ..... | ..... |
| 12..... | 29.63 | 29.72 | 29.86 | 49 | 51 | 35 | 43 | 45.5 | 42.5 | 41.1 | 38.2 | 28.5 | ..... | ..... | ..... |
| 13..... | 29.83 | 29.97 | 29.83 | 50.5 | 44 | 42.5 | 48 | 46.5 | 44.4 | ..... | ..... | ..... | ..... | ..... | ..... |
| 14..... | 29.57 | 29.73 | 29.63 | 53 | 68 | 46 | 54 | 60.5 | 45 | ..... | ..... | ..... | ..... | ..... | ..... |
| 15..... | 29.11 | 29.82 | 29.44 | 51.5 | 50 | 36.5 | 49 | 48.5 | 35 | ..... | ..... | ..... | ..... | ..... | ..... |
| 16..... | 29.54 | 29.48 | 29.54 | 45.5 | 56 | 46 | 45 | 53 | 46 | ..... | ..... | ..... | ..... | ..... | ..... |
| 17..... | 29.43 | 29.57 | 29.63 | 54 | 51 | 46 | ..... | 50 | 49 | ..... | ..... | ..... | ..... | ..... | ..... |
| 18..... | 29.43 | 29.53 | 29.64 | 55.5 | 48.5 | 40 | 52 | 45.5 | 38 | ..... | ..... | ..... | ..... | ..... | ..... |
| 19..... | 29.70 | 29.71 | 29.45 | 46 | 47 | 48 | 44.5 | 45 | 47.5 | ..... | ..... | ..... | ..... | ..... | ..... |
| 20..... | 29.33 | 29.06 | 29.16 | 44 | 60 | 48 | ..... | 58 | 46 | ..... | ..... | ..... | ..... | ..... | ..... |
| 21..... | 29.72 | 29.36 | 29.50 | 44 | 45 | 44 | 41 | 42 | 46 | ..... | ..... | ..... | ..... | ..... | ..... |
| 22..... | 29.72 | 29.36 | 29.50 | 43 | 41 | 46 | 41 | 42 | 46 | ..... | ..... | ..... | ..... | ..... | ..... |
| 23..... | 29.05 | 29.04 | 29.04 | 59 | 50 | 40 | 48 | 47.5 | 37.5 | ..... | ..... | ..... | ..... | ..... | ..... |
| 24..... | 29.53 | 29.64 | 29.61 | 43 | 50 | 46.5 | 41 | 55 | 40 | ..... | ..... | ..... | ..... | ..... | ..... |
| 25..... | 29.55 | 29.46 | 29.58 | 44 | 58.5 | 49 | 49 | 58 | 40 | ..... | ..... | ..... | ..... | ..... | ..... |
| 26..... | 29.83 | 29.49 | 28.73 | 50.5 | 54 | 41 | 49.5 | 52.5 | 46.5 | ..... | ..... | ..... | ..... | ..... | ..... |
| 27..... | 28.62 | 29.16 | 29.14 | 44 | 41.5 | 41 | 46.5 | 46.5 | 49.5 | ..... | ..... | ..... | ..... | ..... | ..... |
| 28..... | 29.47 | 29.56 | 29.56 | 47 | 50 | 45 | 46.5 | 48.5 | 38.5 | ..... | ..... | ..... | ..... | ..... | ..... |
| 29..... | 29.39 | 29.43 | 29.42 | 52 | 58.5 | 46 | 50.5 | 54 | 48.5 | ..... | ..... | ..... | ..... | ..... | ..... |
| 30..... | 29.43 | 29.37 | 29.30 | 46 | 43.5 | 40 | 43.5 | 42 | 39.5 | ..... | ..... | ..... | ..... | ..... | ..... |
| 31..... | 29.35 | 29.33 | 29.46 | 47.5 | 43.5 | 39 | 43.5 | 45 | 38 | ..... | ..... | ..... | ..... | ..... | ..... |
| Monthly mean..... | 29.53 | 29.39 | 29.54 | 49.02 | 52.05 | 43.2 | 47.03 | 47.07 | 41.13 | 45.31 | 44.77 | 36.91 | ..... | ..... | ..... |

Meteorological register—Continued.

United States observing station, Kerguelen Island—Latitude 49° 21' S.; longitude 70° 15' E.; altitude of barometer above sea-level, 130 feet.

| December, 1874. | SATURATION. | | WIND. | | RAIN. Inches. | Remarks. |
|--------------------|-------------|---------|---------|------------------------------------|------------------|--|
| | 8 a. m. | 2 p. m. | 8 p. m. | Direction. | | |
| 1 | .92 | .97 | .95 | Northerly and westerly | 9-10 | Snow, with clear intervals; very high wind. |
| 2 | .80 | .85 | .77 | Westerly | 6 | Partially clear. |
| 3 | .87 | .96 | .85 | do | 6-9 | Cloudy, with partly clear intervals. |
| 4 | .77 | .88 | .81 | do | 5-6 | Clear; cloudy toward night. |
| 5 | .77 | .88 | .89 | Northerly and westerly | 8-10 | Overcast; sharp squalls, with rain. |
| 6 | .77 | .88 | .92 | Southerly and westerly | 2-3 | Overcast. |
| 7 | .74 | .84 | .85 | Northerly and westerly | 3-5 | Overcast; fine rain. |
| 8 | .73 | .83 | .85 | Southerly and westerly | 4-3 | Overcast; light rain; partly clear p. m. |
| 9 | .50 | .66 | .86 | South. | 2-3-2 | Completely covered; partly clear in morning. |
| 10 | .56 | .74 | .84 | Northerly and westerly | 7-5-3 | Partially clear and overcast. |
| 11 | .53 | .80 | .78 | do | 8-10 | Occasional squalls, with fine rain. |
| 12 | .79 | .63 | .79 | Westerly and southwesterly | 7-1 | Occasional rain and snow-squalls; clear evening. |
| 13 | ..... | ..... | ..... | Northerly | 6 | Overcast and squally. |
| 14 | ..... | ..... | ..... | Westerly | 6-9 | Rainy, with squalls. |
| 15 | ..... | ..... | ..... | Southwesterly | 4-7-9 | Rain and snow, with sharp squalls. |
| 16 | ..... | ..... | ..... | Northerly and westerly | 11-10 | Exceedingly heavy gale, with rain. |
| 17 | ..... | ..... | ..... | Westerly | 9-5 | Gale moderating; rain-squalls. |
| 18 | ..... | ..... | ..... | do | 7-5 | Clear morning and evening; rain-squalls at noon. |
| 19 | ..... | ..... | ..... | do | 7-9 | Overcast; heavy rain toward night. |
| 20 | ..... | ..... | ..... | N. by at sunrise; W. by at 8 p. m. | 10-4 | High gale, with much rain; clearing p. m. |
| 21 | ..... | ..... | ..... | Westerly | 5-7 | Clear a. m.; snow at noon. |
| 22 | ..... | ..... | ..... | West and southwest | 5-8 | Occasional snow-squalls. |
| 23 | ..... | ..... | ..... | Southwest and northwest | 5-7 | Clear morning; cloudy afternoon. |
| 24 | ..... | ..... | ..... | Northwest and northwest | 11-3 | Very high gale with much rain; moderating in afternoon. |
| 25 | ..... | ..... | ..... | Northwest and northerly | 7-5 | Rain; cloudy afternoon. |
| 26 | ..... | ..... | ..... | Northerly and northwest | 10-8 | Heavy, rain early in morn g and towards night; very high wind. |
| 27 | ..... | ..... | ..... | Westerly | 10-6 | Partially clear. |
| 28 | ..... | ..... | ..... | do | 9-6 | Do. |
| 29 | ..... | ..... | ..... | Northwest | 1-4 | Rain, with sharp squalls during night and day. |
| 30 | ..... | ..... | ..... | Southeasterly and southerly | 3-2 | Rain; occasionally clear. |
| 31 | ..... | ..... | ..... | Northwest | 4-3-5 | Rainy and overcast; high wind p. m. |
| Monthly } mean. | 0.83 | 0.77 | 0.84 | | | |
| | | | | | 0.272 | |

