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THE COASTAL SETTING, ROCKS, AND WOODS OF THE SIEUR DE MONTS NATIONAL MONUMENT



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Further papers on the Sieur de Monts National Monument may be obtained, with other information, from the custodian, Sieur de Monts National Monument, Park Road and Main Street, Bar Harbor, Me.

THE COASTAL SETTING, ROCKS, AND WOODS OF THE SIEUR DE MONTS NATIONAL MONUMENT.

INTRODUCTION.

By GEORGE B. DORR.

The following description of the Maine coast and appeal for the preservation of its beauty and freedom to the public in appropriate tracts was written—in somewhat ampler form—nearly 30 years ago by Charles Eliot, the landscape architect, who drew from his summers at the island, the home influences that surrounded him, and the bent of his own mind a love of nature and a will for public service that enabled him to leave behind him, when his day closed suddenly in the fullness of his early manhood, an enduring monument in important public work initiated and in ideas that other men could make their own and build into their work in turn. What he then said can not be better said today; the importance of action which he foresaw so clearly and felt so strongly has only become more evident and more urgent with each passing year.

THE COAST OF MAINE.

By CHARLES ELIOT.

FROM Cape Cod, Massachusetts, to Cape Sable, Nova Scotia, the broad entrance of the Gulf of Maine is 200 miles wide, and it is 100 miles across from each of these capes to the corresponding end of the Maine coast at Kittery and Quoddy. Thus, Maine squarely faces the gulf's wide seaward opening, while to the east and west, beyond her bounds, stretch its two great offshoots, the Bays of Fundy and of Massachusetts. The latter and lesser bay presents a south shore, built mostly of sands and gravels, in bluffs and beaches, and a north shore of bold and enduring rocks—both already overgrown with seaside hotels and cottages. The Bay of Fundy, on the other hand, is little resorted to as yet for pleasure; its shores in many parts are grandly high and bold, but its waters are moved by such rushing tides and its coasts are so frequently wrapped in fog that it will doubtless long remain a comparatively unfrequented region.

Along the coast of Maine scenery and climate change from the Massachusetts to the Fundy type. At Boston the average temperature of July is 70°; at Eastport it is 61°. No such coolness is to be found along the Atlantic coast from Cape Cod southward, and this summer freshness of the air must always be an irresistible attraction to many thousand dwellers in hot cities. Again, in contrast with the low beaches farther

south, the scenery of the Maine coast is exceedingly interesting and refreshing. The mere map of it is most attractive. From the Piscataqua River, a deep estuary whose swift tides flow through an archipelago of rocks and lesser islands, to Cape Elizabeth, a broad wedge of rock



Copyright by Dr. Robert Abbe.

Mount Desert Island as seen from an aeroplane toward sundown. Photograph from relief map made by Dr. Robert Abbe of New York.

pushed out to sea as though to mark the entrance to Portland Harbor, the coast is already rich in varied scenery; but there another type, wilder, more intricate and picturesque, begins. Casco Bay, with its many branches running inland and its seaward-stretching peninsulas and

islands, is the first of a succession of bays, thoroughfares, and reaches which line the coast almost unceasingly to Quoddy. The mainland becomes lost behind a maze of rock-bound islands; the salt water penetrates by deep and narrow channels into the very woods, ebbs and flows in and out of hundreds of lonely, unfrequented harbors, discovers countless hidden nooks and coves. Sand beaches become rare, and great and small "Sea Walls" of rounded stones or pebbles take their place. Except at Mount Desert, great cliffs occur but seldom until Grand Manan is reached, while mountains come down only to the open sea at Mount Desert; but the variety of lesser topographic forms is great.

The general aspect of the coast is wild and untamable, an effect due partly to its own rocky character and storm-swept ledges, but yet more to the changed character of the coastal vegetation. Beyond Cape Elizabeth capes and islands are wooded, if at all, with the dark, stiff cresting of spruce and fir, interspersed perhaps with pine and fringed by birch and



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View of Frenchmans Bay and the Gouldsbrough Hills from a mountain trail in the National Monument.

mountain ash. One by one familiar species disappear as the coast is traversed eastward, and northern forms replace them. The red pine first appears on Massachusetts Bay, the gray pine at Mount Desert; the *Arbor-vitae* is first met with near Kennebec; the balsam fir and the black and white spruces show themselves nowhere to the south of Cape Ann, nor do they abound until Cape Elizabeth is passed. It is these somber coniferous woods crowding to the water's edge along the rugged shore which give the traveler his strong impression of a wild sub-arctic land where strange Indian names—Pemaquid, Megunticook, Eggemoggin, or Schoodic—are altogether fitting.

The human story of the coast of Maine is almost as picturesque and varied as its scenery. This coast was first explored by Samuel de Champlain, whose narrative of his adventure is still delightful reading. Fruit-

less attempts at settlement followed, led by French knights at St. Croix, French Jesuits at Mount Desert, and English cavaliers at Sagadahock; all of them years in advance of the English Colony at New Plymouth. Then followed a long period of fishing and fur trading, during which Maine belonged to neither New France nor New England. Rival Frenchmen fought and besieged each other in truly feudal fashion at Penobscot and St. John. The numerous French names on the eastern coast bear witness still to the long French occupation there; as, for instance, Grand and Petit Manan, Bois Bubert, Monts Deserts and Isle au Hault, and Burnt Coat—English apparently, but really a mistranslation of the French, Côte Brulée.

No Englishmen settled east of the Penobscot until after the capture of Quebec; when they did, more fighting followed in the wars of the Revolution and of 1812. The settlers fished and hunted, cut hay on the salt



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The top of Newport Mountain under whose shadow at the close of day Champlain must have sailed when he first reached the island.

marshes, and timber in the great woods; then, in later times, took to ship-building. These, the occupations of a wild and timbered coast, still form its business in great part. The fisheries are an abiding resource and fleets of more than two hundred graceful vessels may be often seen in port together, waiting the end of a storm. Hunting is carried on at certain seasons in the eastern counties, where deer are numerous, and innumerable inland lakes and streams are full of trout. The large pines and spruces of the shore woods have long since been cut, but Bangor still sends down the Penobscot a fleet of lumber schooners, loaded from the interior, every time the wind blows from the north.

It was in the early sixties that what may be called the discovery of the picturesqueness, the wild beauty and refreshing character of the Maine coast took place. Then, through the resort to it of a few well-known landscape painters, the poor hamlet of Bar Harbor leaped into sudden fame and it became evident that the whole coast had an important

destiny before it as a resort and summer home. Now, summer hotels are scattered all along its shores to Frenchmans Bay, and colonies of summer villas already occupy many of the more accessible capes and islands.

The spectacle of thousands upon thousands of people spending annually several weeks or months of summer in healthful life by the seashore is very pleasant, but there is danger lest this human flood so overflow and occupy the limited stretch of coast which it invades as to rob it of that flavor of wildness which hitherto has constituted its most refreshing charm. Yet it is not the tide of life itself, abundant though it be, which can work the scene such harm. A surf-beaten headland may be crowned by a lighthouse tower without losing its dignity and impressiveness; a lonely fiord shut in by dark woods, where the fog lingers in wreaths as it comes and goes, still may make its strong imaginative appeal when fishermen build their huts upon its shore and ply their trade. But the inescapable presence of a life, an architecture and a landscape architecture alien to the spirit of the place may take from it an inspirational and re-creative value for work-wearied men no economic terms can measure.

The United States have but this one short stretch of Atlantic seacoast where a pleasant summer climate and real picturesqueness of scenery are to be found together; can nothing be done to preserve for the use and enjoyment of the great body of the people in the centuries to come some fine parts at least of this seaside wilderness of Maine?

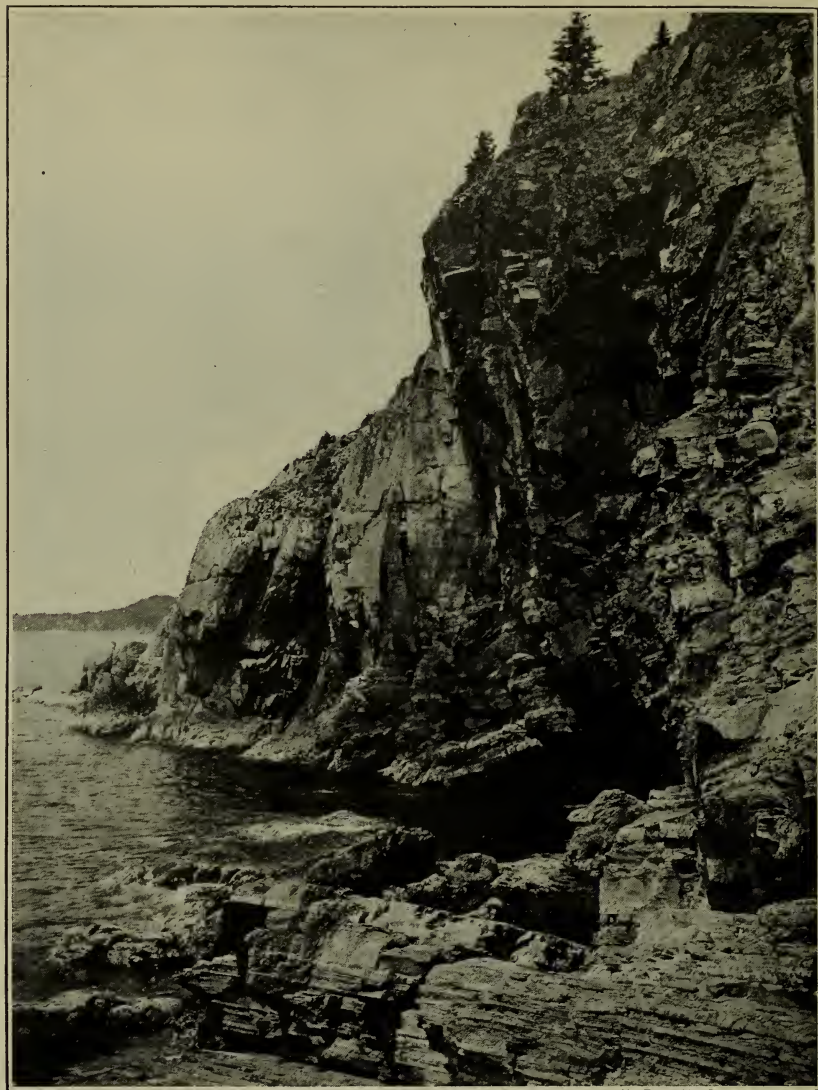
THE GEOLOGY OF MOUNT DESERT

Condensed by GEORGE B. DORR from a Government report by NATHANIEL S. SHALER and later study by WILLIAM MORRIS DAVIS.

[Statement approved by the U. S. Geological Survey.]

THE mountains of the Mount Desert range are by far the highest of the many mountainous hills that rise above the rolling lowland of southern and southeastern Maine. Long ago this lowland, far more extensive seaward then, was tilted toward the south until its southern portion passed beneath the ocean, to form the platform of the Gulf of Maine, while its northern portion gradually ascended inland till it finally took on in the interior the character of a plateau. The tilted lowland, in the portion that remained above the ocean level, became scored by numerous stream-cut valleys, following down its gentle slope toward the sea; since these were excavated the coastal region has again been slightly lowered, carrying the whole shore line farther inland, changing many a land valley into a long sea arm and isolating many a hilltop as an outlying island. Associated with this later change of level there came a period of arctic climate which covered the region with a deep sheet of ice such as that which holds possession now of Greenland—then less arctic than New England possibly. The slow southward and seaward flow of this vast mass of frozen water stripped from the land its ancient soil, wore down the hills, deepened the valleys, and pushed the accumulated débris before it to form the present fishing banks upon the ancient coastal plain, the Cape Cod sands, and the deep gravels of Long Island, besides blocking on its way the course of innumerable streams and damming them to create the myriad lakes and meadowlands which make Maine famous now as one of the greatest inland fishing regions in the world.

The lowland from which the mountainous hills of Maine rise up is not, like the coastal lowlands to the southward of Cape Cod, a recently emerged sea bottom, still for the most part as smooth as when the ocean



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Rock formed by coastal deposit in an ancient ocean at a period antedating any present trace of life on land. The strata formed by seasonal rains are still plainly to be seen in the foreground; the cliff beyond, of more resistant character, has been molten, compressed, and hardened by volcanic agencies.

covered it. It is low in spite of having been strongly uplifted long ago; it is low because the ancient alpine heights that occupied it once have been worn down by age-long denudation and have slowly wasted away under the ceaseless attack of the atmosphere.

The boldly uplifted range of Mount Desert is one of the most stubborn survivors of that ancient highland, and the beauty of the island as seen from the sea, unparalleled along our whole Atlantic coast, is due to its persistent retention of some portion of the height which the whole region once had but which nearly every other part of it has lost.

Although the noble granitic rocks that form this range rest quiet and cold in their age to-day, they were once hot and energetic, pressing their way upward, as a vast molten mass, toward—and overflowing possibly—the ancient surface of the land. The massive granite stretches east and west across the island, inclosed wherever the attack of ice or sea has failed to lay it bare by rocks of a wholly different origin and character. At first these other rocks are seen as isolated fragments included in the granite; the fragments then become more frequent until



Pegmatite dike filling a rift in the granite of Pemetic Mountain.

solid rock of their own type, strangely twisted and contorted, begins to take the granite's place, as in the wonderful displays at Great Head and Hunter's Beach Head; further on, the granite is only seen penetrating these other rocks in long, narrow crevices, as on Sutton Island; at last it ceases entirely, and the rocky floor, wherever it can be observed, is wholly formed by rocks like those first seen as fragments caught and frozen in the cooling granite. Near the margin of its area, again, the granite is finer textured than where erosion has laid bare its ancient depths, as in the mountain gorges; for it is the way of igneous, or fire-formed, rocks when crystallizing from a molten state to develop smaller crystals and finer texture near their boundaries, where the cooling is more rapid.

This fine texture of the margin of the granite, the inclusion of angular and freshly broken fragments of the regional rocks within its borders,

and the penetration of the regional rocks themselves by narrowing granitic arms or dikes, clearly show that the granite is the later comer, and that it came molten, breaking its way with tremendous power into the ancient rocky crust under some vast, compelling pressure; at last, when the impelling forces were satisfied, it came to a halt and slowly froze into a rigid mass, holding in its grasp innumerable fragments gathered from the rent and fractured walls, whose cracks it fills.

This granitic outburst is the greatest event in the geologic history of Mount Desert. It was of colossal magnitude. The energy of its intrusion can not be conceived. Not that the intrusion was suddenly accomplished, for no conjecture can be made as to the time it took, but that it was effected against enormous resistances and involved the movement of gigantic masses.

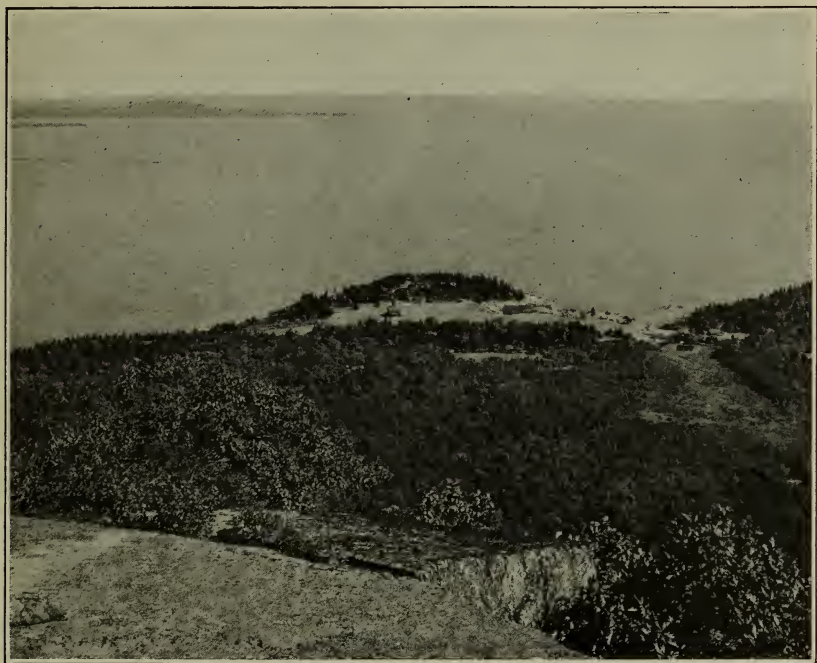
The granite mass disclosed in these ancient monuments of the geologic past is at least a dozen miles in length and four or five in breadth at widest, with roots far wider spread beneath the level of the present surface. No one can give a measure of the greater height to which it once ascended, and he would be a daring geologist who would set a limit to the unsounded depths from which it rose. The uprising may have required many historic ages; it may have been relatively rapid; but that it was progressive, not instantaneous, is clearly to be seen upon examination of the granite margins.

The bare ledges and cliffs of the southeastern coast especially afford wonderfully clear illustrations of the molten stone's intrusive processes. Here we may follow the upward-driven granite forcing its way into narrowing cracks among the older rocks; there great fragments of the older rocks have been caught up in it and partly melted by its heat perhaps. Sometimes a block of the ancient regional stone may be seen divided by granite-filled fissures whose fractured walls can still be matched with certainty, striking instances of which are shown on the eastern side in the narrows of the Somes Sound fiord. The now rigid granite then yielded so perfectly under the heat and tremendous pressures acting on it as to penetrate the narrowest cracks and crevices, following them down to hairlike fineness. Nowhere in the world, indeed, may the geologist or traveler find better or more impressive illustration of the manifold processes of deep-seated intrusion than on the wave-swept ledges of the island's southern coast between Somes Sound and Frenchmans Bay.

THE WOODS OF MOUNT DESERT

By EDWARD L. RAND, Secretary of the New England Botanical Society and author of "The Flora of Mount Desert."

MOUNT Desert Island has an area of over one hundred square miles. The ocean surges against it on the south; broad bays enclose it on the east and west, and at its northernmost extremity a narrow passage only separates it from the mainland. Its outline is very irregular, like that of the Maine coast in general, with harbors and indentations everywhere. The largest of these, Somes Sound, a long, deep fiord running far into the land between mountainous shores, nearly bisects the island. There are some 13 mountains—bare rocky summits varying in



Schooner Head and the entrance to Frenchmans Bay seen from the summit of a splendid cliff. The sea horizon from this point lies over 30 miles away.

height up to over 1,500 feet and lying in a great belt from east to west; between them deep, blue lakes are sunk in rocky beds. To the north, the northwest and the southeast, the surface—of a different geologic structure—is relatively flat, with lower and more undulating hills and broad stretches of meadow land and marsh. On the southeast and east the mountains approach closely to the shore, ending in a coast of precipitous cliffs and bold, rocky headlands that has long been famous. Nowhere else on the Atlantic coast is there such a wonderful combination of natural scenery as this island possesses; nowhere is there another spot where shore and mountain are so grandly blended. For years it has been renowned as the crowning glory of the beautiful, countless-harbored coast of Maine.

The forests of Mount Desert Island were once full of wealth, and full of wealth they still would be if the lumbermen had not done their work so well. High up on the mountain sides, through the mountain gorges, along the borders of the lakes and streams, everywhere to the water's edge, the great trees growing on the thin but rich wood-soil were taken out, as one may plainly see by their huge rotting stumps to-day. The importance of preserving the woods which still remain no lover of Nature can question. They are infinitely precious as a part of the wild



Glacial boulder in a forested mountain valley 700 feet above the sea.

scenery of the place and for their wonderful attraction to the city-wearied man or woman in search of a summer home and resting-place.

What the island was in the early days of its primeval beauty, when Champlain sailed along its shore and for a century after, lies far beyond the possibility of conjecture now. Yet some idea of what these woods once were may still be gained from a few favored spots where portions of the ancient forest yet remain, and much of their original beauty may be brought back if steps are taken to preserve them now and protect from consuming forest fires the all-important humus in their soil.

