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NOTES ON THE CORAL REEFS OF THE ISLAND OF ITAPARICA,  
BAHIA, AND OF PARAHYBA DO NORTE. BY RICHARD RATHBUN.

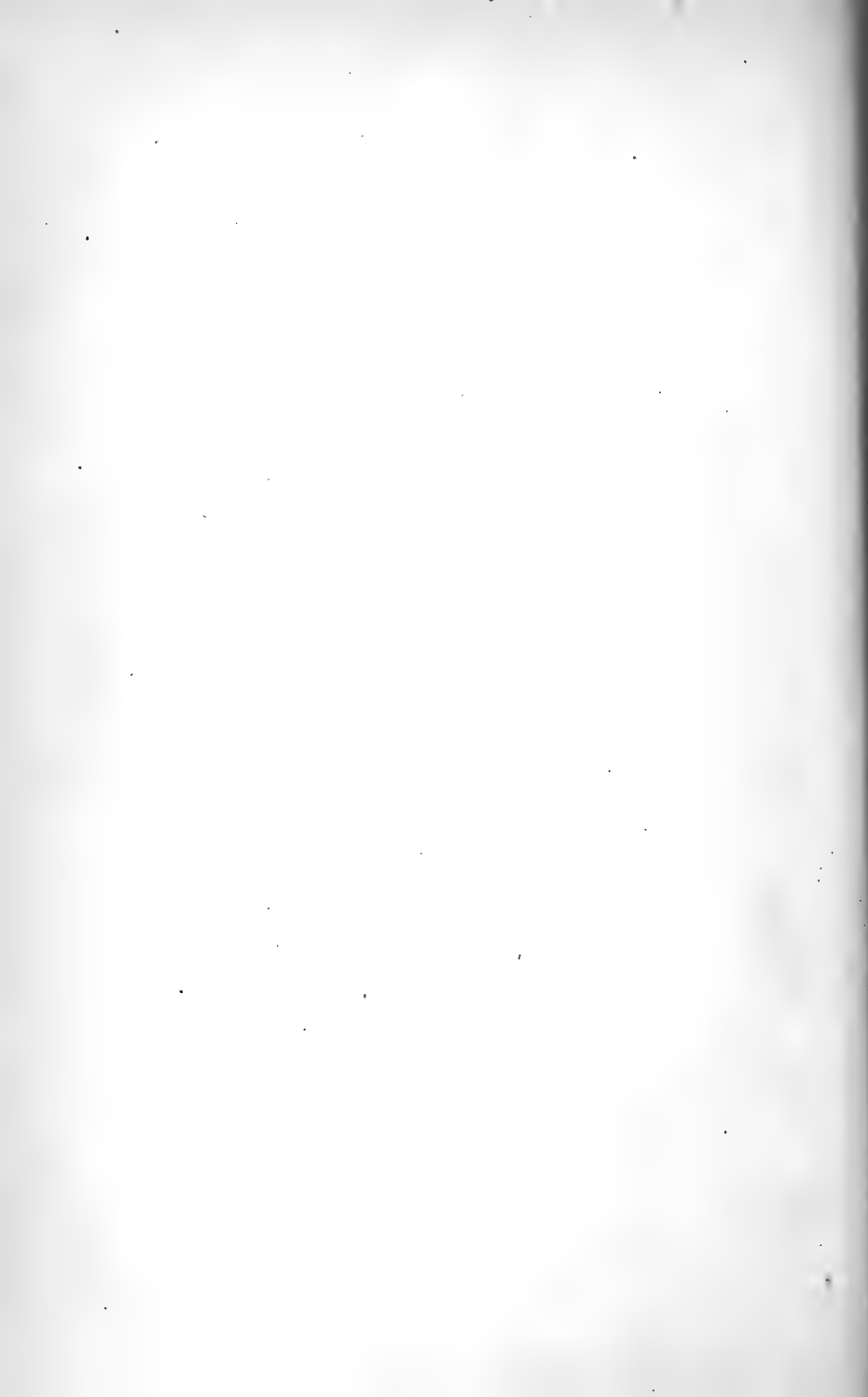
In the American Naturalist for July, 1876, I gave a short description of the coral reef skirting the outer shore of the island of Itaparica, in the bay of Bahia, Brazil. From a further examination of the reef and a study of the specimens procured from it, I am able to add a few items of interest to those previously given. I also wish to call attention to the existence of another reef, similar to that of Itaparica, to the south of the entrance to the Rio Parahyba do Norte. It was explored by Mr. John Branner of the Geological Commission. In shape and structure, as well as in the paucity of coral life upon it, this last agrees very closely with the Itaparica reef. It follows the trend of the shore, at a short distance from it, and between

the reef and the shore there is an average depth of water of about six or seven feet only. The upper and outer portions of the reef are very irregular, but the inner part is comparatively smooth. No large corals are living upon it; at the northern end were collected a few small specimens of *Porites*, and towards the south a few millepores, *Symphyllia* (?), and *Porites*. Much of the bottom surrounding the reef is very rich in coral growth. No sections were obtained giving us a clue to its structure, which is, however, probably the same as that of the Itaparica reef.

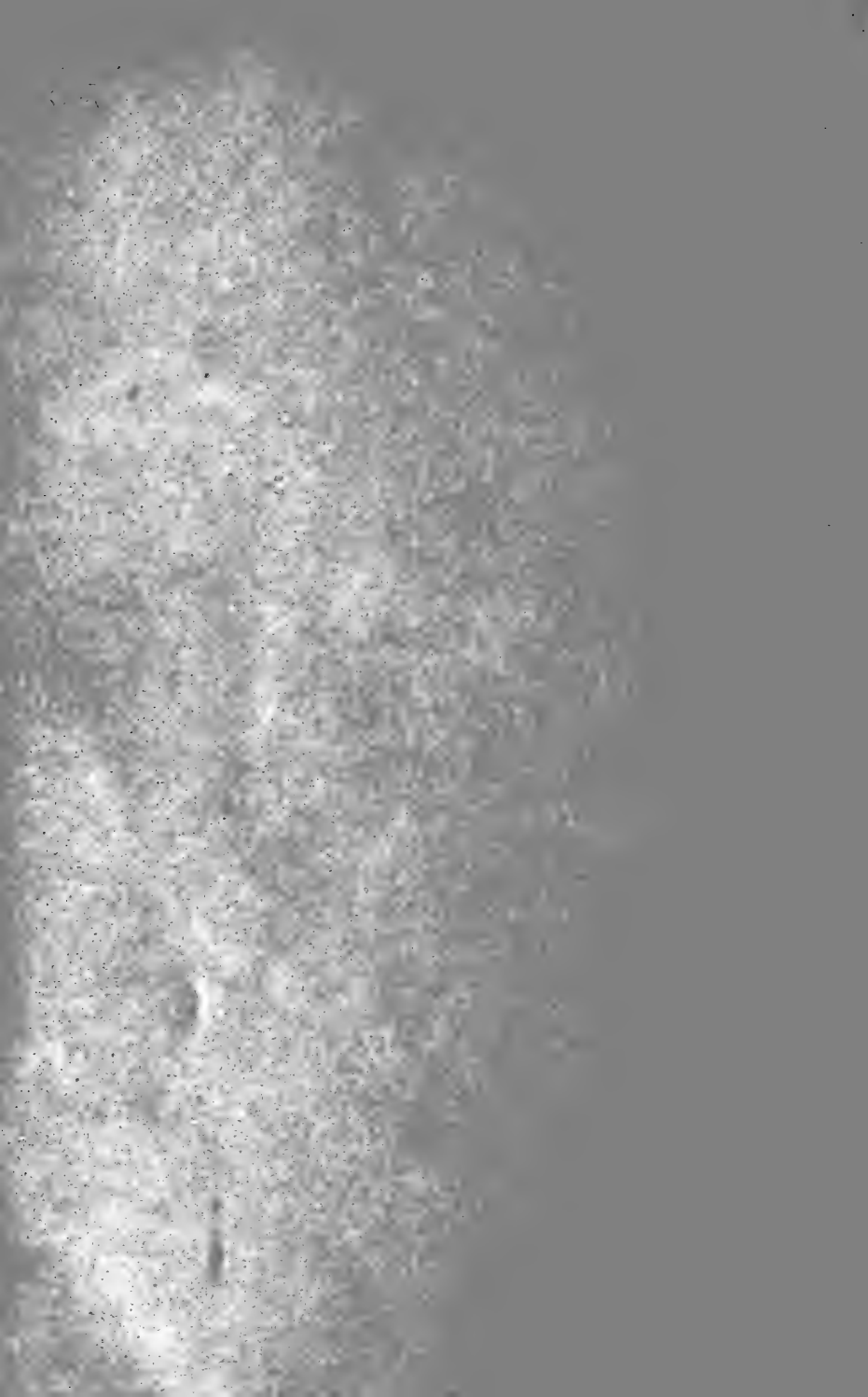
In my former description of the Itaparica reef I stated that, while the lower portion was plainly made up in large part of true corals, the upper part appeared to contain only nullipores. I have since found that the worm tubes covering the surface of the reef enter very largely into its structure, probably to as great an extent as the nullipores, and give rise to an exceedingly hard, calcareous rock from which, ultimately, all traces of the worm-tube structure disappear. The worm tubes and nullipores evidently compose the entire upper half of the reef. The nullipores, in the upper portions, so far as my observations went, were all of the encrusting lichen kind, and resulted in a compact structure, showing a sort of wavy lamination which is due to the successive growths of nullipores. The large digitate nullipores, so common at Pernambuco and at many places in the bay of Bahia, are limited to the lower part of the reef, where they are associated with the true corals. At present nullipores are living in abundance only on the outer side of the reef, to a height of about one foot above medium low tide. Above the line of nullipores we find the entire upper surface of the reef coated with a layer of living worm tubes and large barnacles. The latter are generally broken off by the waves when dead, but the former remain, producing a loose structure near the surface, which becomes more compact below. The existence of nullipores in this upper portion indicates, however, that they lived on top of the reef at no distant time, and probably also that the reef has been elevated to a slight extent since then.

Within the reef the water is very shallow, being deepest near the reef and especially at and around the openings through it; it gradually shallows inwards toward the beach. The bottom of this shallow inner channel is covered with sand and fragments of all sizes of corals and shells. Corals were not found in an upright position in this channel, nor do living corals exist there at all. The coral fragments are all old, frequently much worn, and almost invariably covered

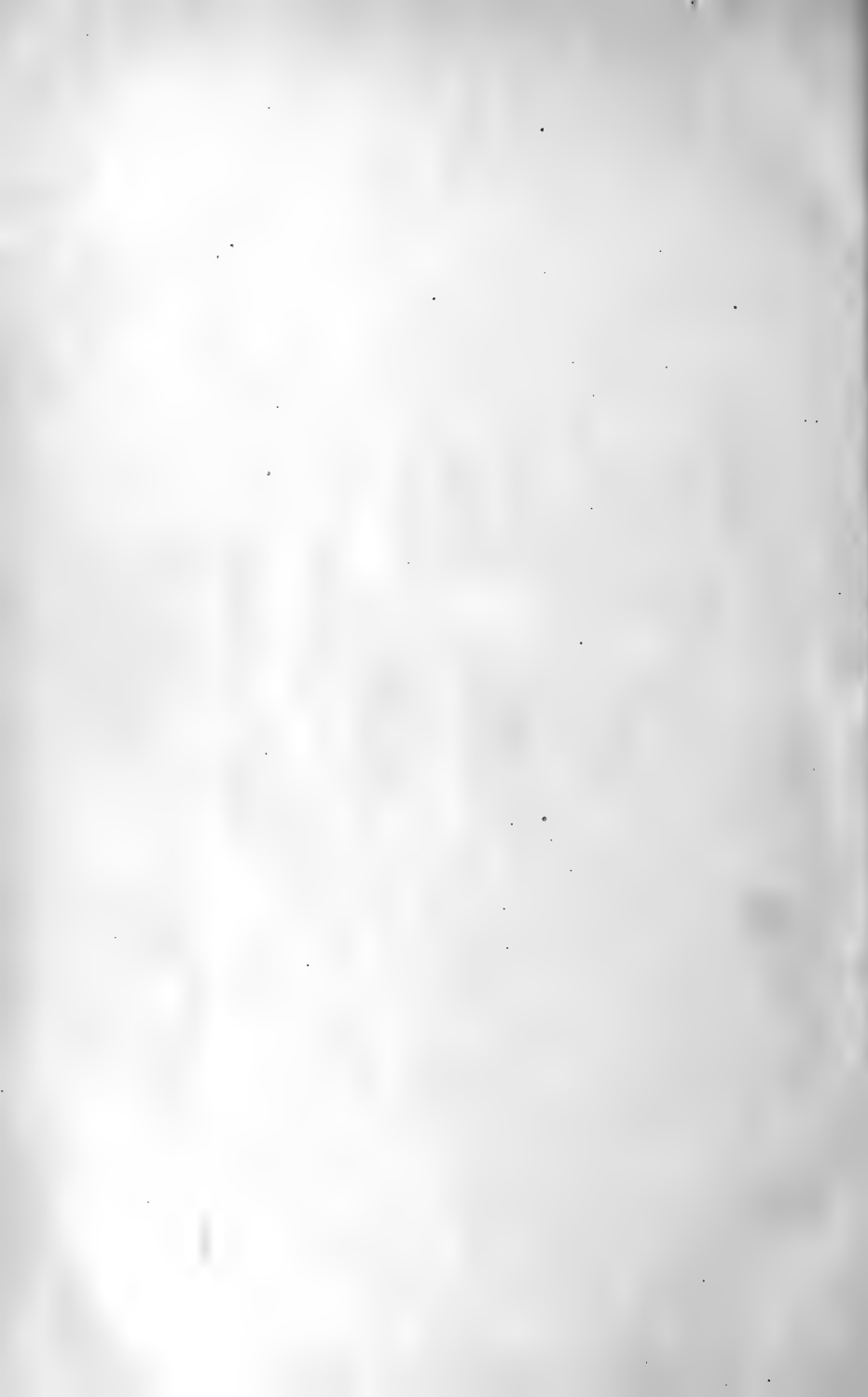
with nullipore and bryozoan growths, also dead. They form beds of considerable thickness in places, often more or less consolidated, and are dug up to burn for lime. The species discovered among the fragments are all found living in various parts of the bay, excepting *Mussa Hartii*, which does not apparently live at present anywhere in the bay of Bahia. This extensive accumulation of broken corals, which must have been formed by the breaking off and heaping up of living corals from the surface of the reef by the breakers, when the reef was at a lower level, testifies to the exceeding richness of the coral life at that time. Corals have apparently ceased to be reef builders in the bay of Bahia.





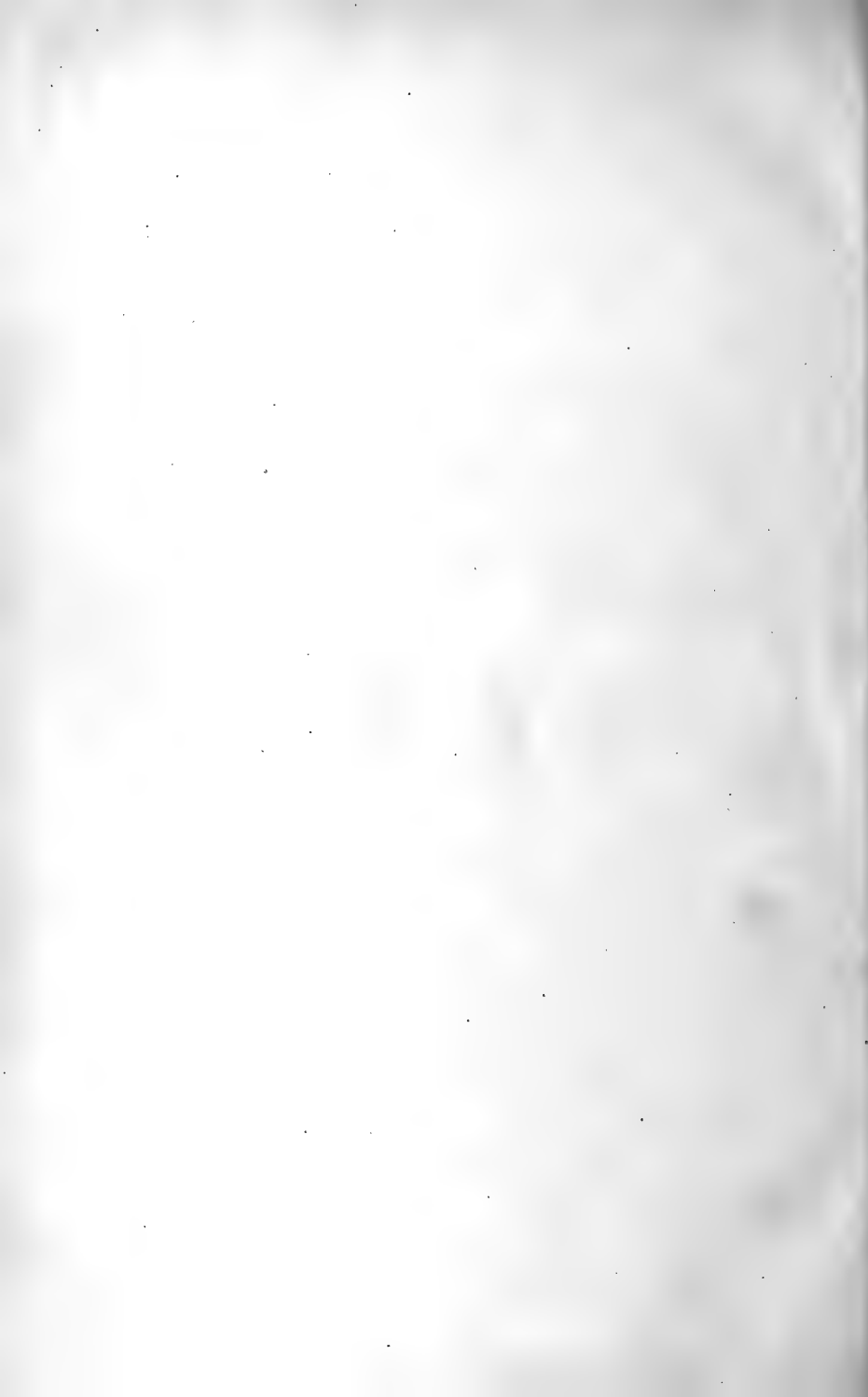


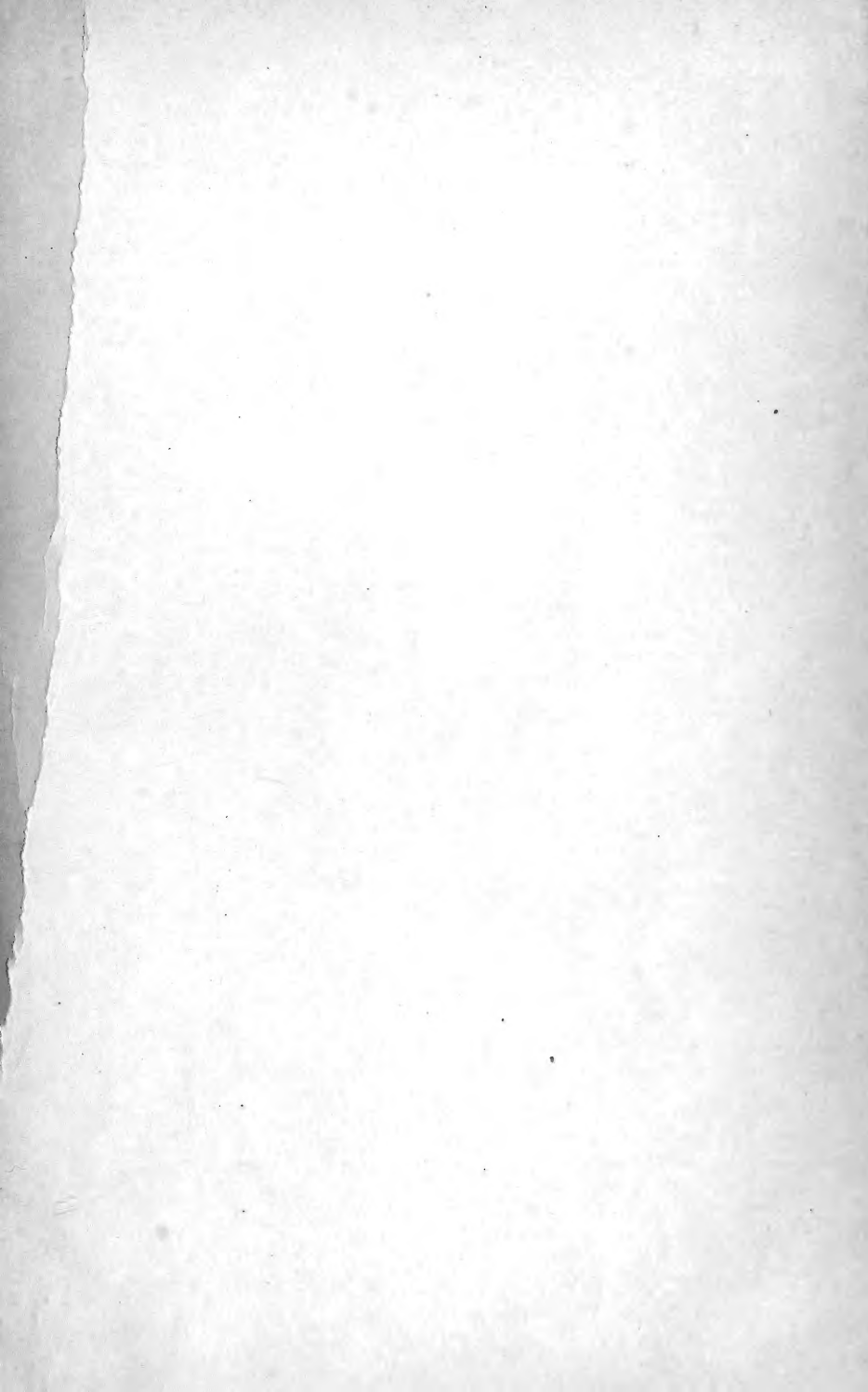


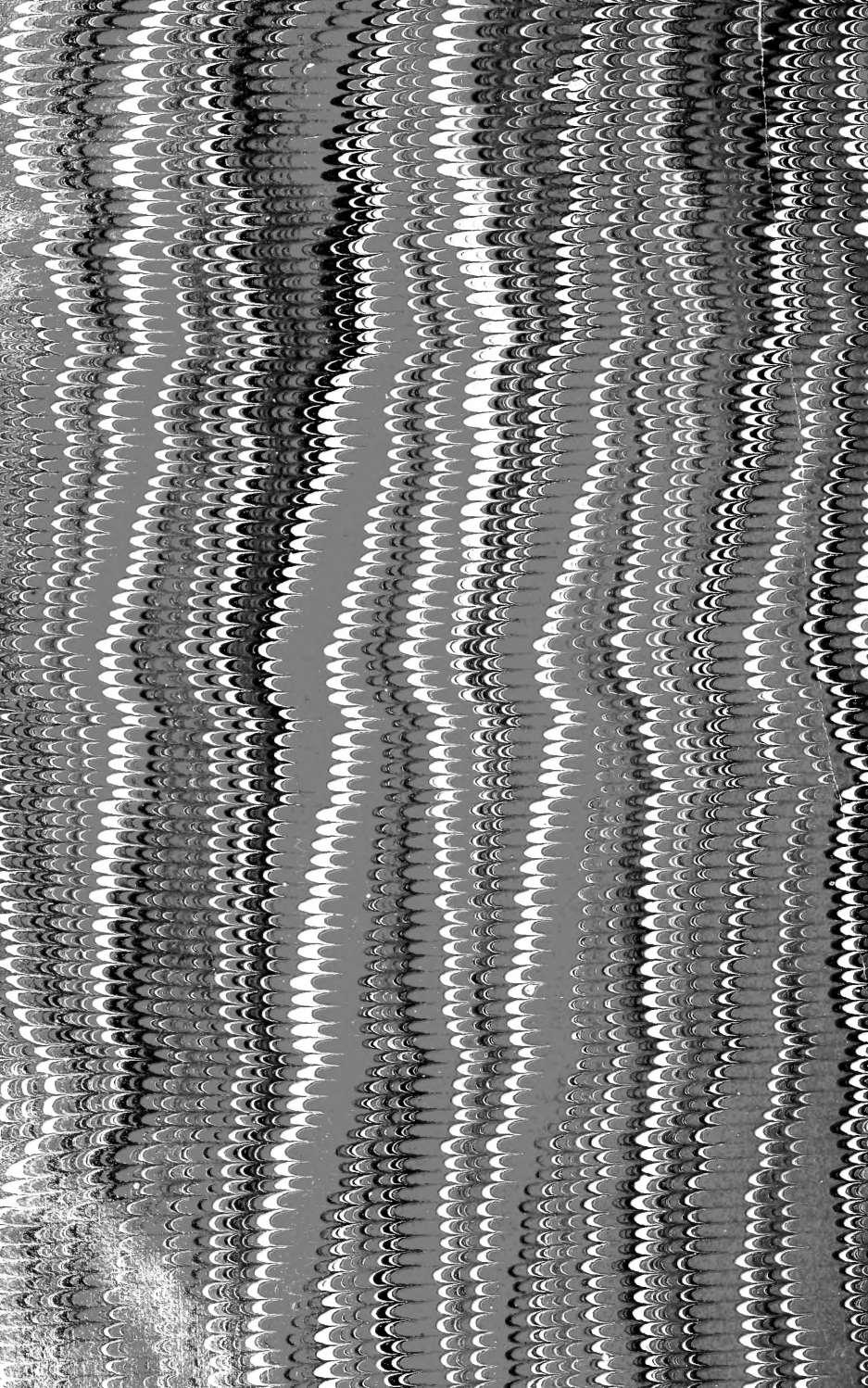


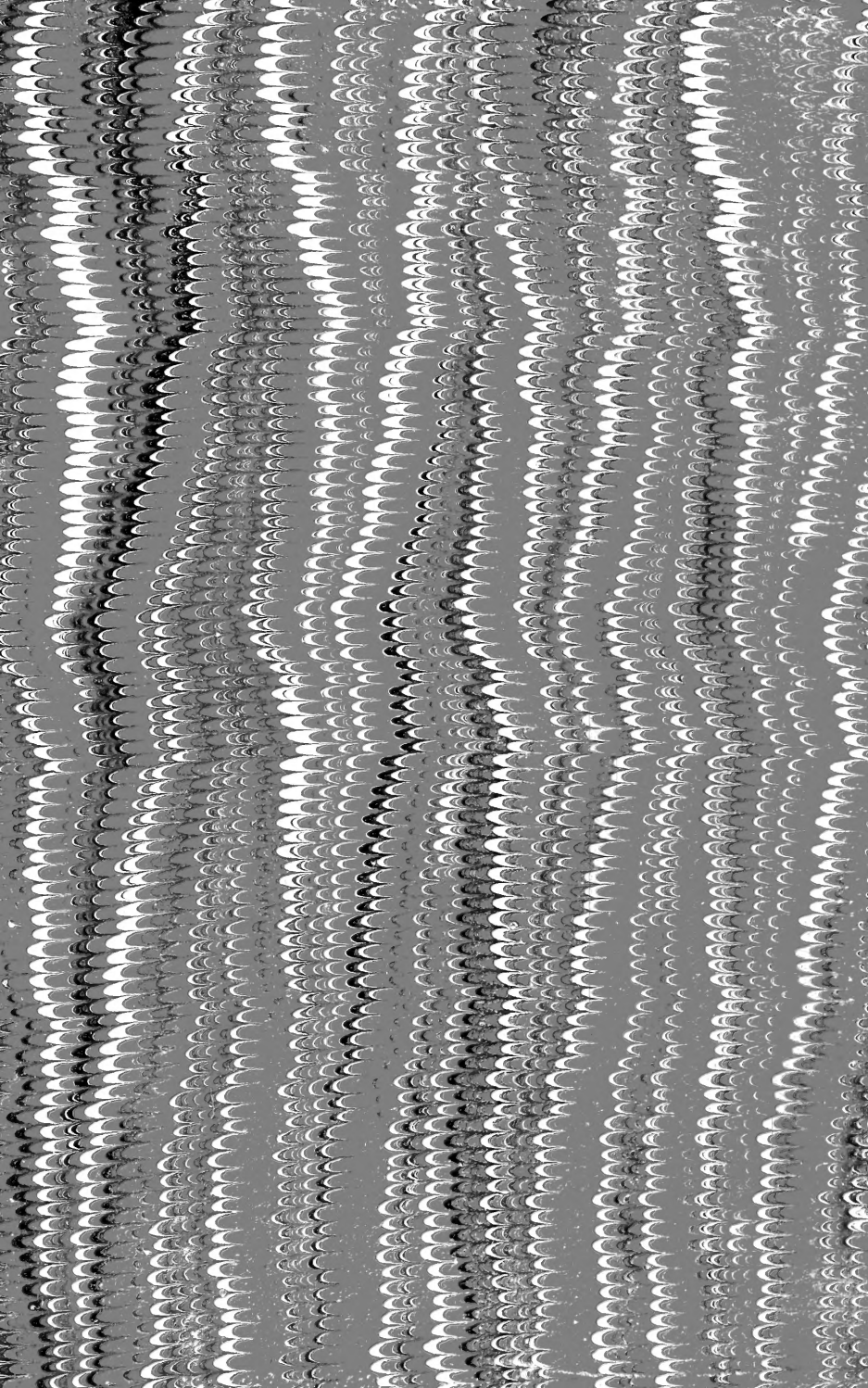












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