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A

FAMILIAR TALK ABOUT TREES.

DELIVERED IN THE HALL OF THE HOUSE OF REPRESENTATIVES,
CONCORD, AT A MEETING OF THE NEW HAMPSHIRE
BOARD OF AGRICULTURE, ON THE EVEN-
ING OF JUNE 13, 1883.

BY FRANKLIN B. HOUGH,

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1883.

A TALK ABOUT TREES.

Since being invited, some ten days ago, by your secretary, to attend this meeting, I have been travelling every day, and have had no opportunity for writing, or for making references. I will not therefore attempt to deliver an "address," and must simply attempt to give you, from the abundance of the subject, a familiar talk about trees.

When this country first became known to Europeans, the soil was everywhere, throughout this state, and in all the Atlantic states, and in Canada, covered with forests, until we reach the prairies of the West and the treeless regions of the North. These forests differed greatly in density, and in the kind and value of their timber.

Of course, had these settlers then known all that Europeans now know, or all that we shall hereafter know about forest management, a considerable part of this would have been cleared, in order to make room for agriculture. The parts selected for this purpose would have been the best portions for tillage,—the intervalles along the valleys, and the arable portions of the hills and the plains. But the hill-tops and the broken mountain regions, too steep and stony for the plow, and too poor for pasturage, would have been spared. They would have left the forests in the ravines, upon slopes liable to erosion, and upon sands liable to drift. But without this knowledge as to the proper care of woodlands, and without a further thought than

to destroy everything alike, and without reservation, except here and there a wood lot, the country throughout the whole settled portion has been cleared, so that there are now but few large tracts of forest remaining, and the valuable timber has, to a very large extent, been cleared off. Much was burned to get rid of it, without any profit, excepting sometimes from the ashes. Forest fires have been invited in to aid in the destruction, and much that was not absolutely wasted without any return has been extravagantly used in needless degree.

This wanton practice has at length begun to attract the serious attention of thoughtful men in every part of the country, and they are asking one another, What shall we do to be saved from the inconvenience and distress which the extreme depletion of these supplies must occasion?

The great seal of Maine bears the device of a white pine tree, and that of your state the figure of a ship upon the stocks. The first of these emblems fitly represented the grandest element of wealth that the state of Maine then possessed; but it has since disappeared from their commerce almost entirely, and in its place we find them using up their spruces and hard woods, which must in time become equally scarce. The ship on the stocks reminds us of a time when the white oak and the white pine supplied the materials for an industry which was once regarded as of commanding importance, and worthy of adoption as the symbol of a state.

I have recently visited Portsmouth, your only sea-port, and they told me that this business of ship-building has died out almost entirely as a private enterprise, and that excepting what is going on now and then at the navy-yard, there is scarcely anything left. At Bath, the principal ship-building point in Maine, where a considerable number of ships are still built every year, the amount of tonnage is far below the totals of former years. They get their white oak from Virginia and other Southern states; their yellow pine from Georgia; their white pine from Michigan; and some of their "juniper" (tamarack) knees from Canada. They are already getting ready to build iron ships at that place, wisely foreseeing in this, a time not remote, when these timber supplies which they are now using will become scarce.

It is true that coal for fuel and iron for naval and civil constructions have in late years largely taken the place of wood; and to this extent they have lessened the demand for wood as a fuel, and for the heavy timbers formerly used in ship-building and in city architecture. But on the other hand, new uses for wood, in various forms, are daily appearing, and among these is that for the making of paper-pulp, of which, already, since a comparatively recent period, a large amount is made; and of this we have as yet scarcely seen the beginning, although nearly forty establishments exist in the New England states alone. Upon the whole, we may say that the amount of wood consumed as a material is increasing every year, while the existing supplies are as rapidly becoming less. I think it need not be proved, for the fact is evident, that although we may, to a large extent, employ stone, slate, tile, brick, and the metals for many uses in which wood is now taken, we can scarcely conceive of a time when this material from the forests will not be in great and constant demand, or when it could ever be less needed than to-day.

Let us for a moment compare the conditions of this country and of Europe, and especially with respect to the titles to land, and notice some points of difference that vitally concern the prospects of our future forests and our timber supplies. With us, the lands in all the older states, and throughout the settled portions everywhere, belong to private owners. Neither the states, nor the general government, nor any county, city, or town, has any woodlands, nor any land upon which forests could be planted. To make a beginning of public forest management, it would be necessary to obtain the title, either by purchase, gift, or some lapse of title. It is in the most extreme degree improbable that any public authority whatever will ever plant upon private lands, or that any law would be passed, or could be enforced, that should compel the planting of lands by their owners. What remains of our woodlands, as well as all of the land on which the forests once grew, being now held by private owners, it is these owners who must do the planting of the future; and they will clear their lands, or rear forests, as their self-interest leads them.

Now in Europe we find upon the continent very different conditions. The governments, the communes, or other local or-

ganizations, and the public establishments of various kinds, are owners of considerable tracts of forest land, and administrations have been organized to take care of these interests. To get qualified agents for this service they have established schools of forestry. I have visited the forest administrations of every country in Europe that has a system of this kind, and about twenty of these schools, of which there are about thirty. At these schools, young men who have passed their first studies, about equal to what is taught in our academies, are admitted upon examination, and are carefully taught from two to three years in the sciences and the practices that apply to the care of woodlands and the removal and first working of forest products. They are taught mathematics, as applied to surveying, the measurement of contents, estimates of the growth and quantity of timber, accounts, and the like; the natural sciences that have reference to trees, and to all animal or vegetable life that may effect their welfare. Chemistry, geology, meteorology, mechanics, and, in short, whatever branch of knowledge is useful to the forester, including so much of laws and jurisprudence as may be needed in the discharge of his official trusts. Many of these candidates for the forest service are the sons of foresters, and one of the most talented of the professors of forestry in Europe is the son and grandson of men equally eminent in their profession.

The students in these schools have provided for their use extensive collections of tools and implements, models, cabinets of natural history, laboratories, libraries, forest gardens and nurseries, and the like, and every week they make excursions with their professors to learn from actual observation whatever concerns their pursuits. Once in a year they make a long journey to see forests and operations in planting under other conditions, and of these journeys they keep a journal and write up an account. Finally, after passing examinations that show approved attainments, they become entitled to a place, at first under an experienced forester, and afterwards by themselves; and they may rise through the various grades of the service, as in our army and navy, with the right to retire on a pension when working days are over.

Among the foresters' duties in Europe are the protection of

game and the adjustment of rights of common usage, as, for example, where the inhabitants of a commune or village have a right to fuel, or building materials, or pasturage, and the like, upon their common lands. With none of these affairs relating to hunting or common rights shall we in this country ever have concern. The rights of hunting belong absolutely to the owner of the land, and of rights of common usage we have none.

Now in all of these foreign systems we have nothing to learn from their codes or their jurisprudence; but we have everything to learn from their methods of planting and management, and from the scientific researches that are being made abroad. We could not give employment to men who were so highly qualified in these special sciences; we need a less extended but plain and practical course of instruction for a greater number; in fact, more or less of the first principles throughout the whole of our educational system, even down to the primary schools.

Every graduating class in a college should, at least, have the opportunity of hearing a few practical lectures upon forestry, and in several of our colleges, as in Dartmouth, instruction is now given in the class-room. In schools of less degree, it would be a most profitable thing to inculcate correct ideas, if nothing more, as to the importance of our woodlands in the welfare of the country, and the necessity of preventing injuries and avoiding waste.

As we begin to feel the need, we find springing up here and there inquiries under authority of law relating to the wants and the duties of the future, as depending upon the maintenance of our forest supplies. You have a commission named for the purpose in New Hampshire; they have one in Vermont: a little has been done in New York; and through state and local societies, of one kind and another, our people are beginning to turn attention to this subject, and to realize its importance.

It is not alone the want of wood as a material for ship-building, and erections of every kind upon the land, for manufactories and uses of infinite variety and importance, and for fuel, that is reminding us of this duty. We find effects upon our climate, upon the flow of water in our rivers and streams, and upon our agricultural interests everywhere, which may be, directly or indirectly, traced to the destruction of our forests as

a principal cause. Let us briefly notice these several incidental effects, and the manner in which they are produced.

In a wooded country the climate is more humid on account of the great amount of evaporation that is going on from the foliage. The soil is humid because sheltered from the winds and the sun, and the streams are not liable to sudden floods and to drought, because they issue from swamps, or are fed by perennial springs. Let us notice the effect of clearings upon these conditions.

In an open, treeless region, the soil being exposed will sooner dry up after a rain, and if it be clay, it will become hard, so that the rain when it falls will run off at once, instead of sinking into the earth. The water, no longer obstructed by roots and rubbish, does not find its way slowly into the water courses, but, upon steep mountain slopes and hillsides, tends to wear ravines, which sometimes become immense chasms, and the rocks and rubbish carried down by the torrents cover the fertile valleys below with stones and gravel, and spread over the plains in destructive inundations that desolate the country far and wide. Finally, the sediment coming down to the sea forms sandbars at the mouths of the rivers, which cause lagoons and stagnant morasses that render a once healthy and fertile region a pestilential waste.

This picture is a faithful one of great regions in southern Europe, and especially in Italy and Spain. In other countries, as in northern Africa, in Greece, and in western Asia, we find vast solitudes and sandy wastes, now given up to hopeless sterility, which were once well cultivated by a dense population, and abounding in trees and fruits. We find everywhere in our own country that our springs and wells fail in summer, and that mill-streams once furnishing hydraulic power through the year are almost dry for months together. Rivers once navigable are so no more, and streams depended upon for feeding the reservoirs of our city water-works fail. The snows, prevented from drifting in a wooded country, accumulate in drifts behind fences or fill in the ravines, leaving our fields exposed to frost, and our winter grains to great injury and loss. The insectivorous birds are driven away because they find no shelter, and our fruits fail where they were once as sure as the returning seasons.

Now these facts cannot be denied, and they lead us to the all-important question, What shall be done to prevent further injuries, and to restore the conditions that we have lost?

The first thing to be done is to economize—to use less, and waste less. We have coal, and peat, and iron. We can use these, and stone, slate, brick, and tiles, in a great number of places where we now use wood. We can use up the waste products that are now allowed to decay. We can get tanning materials, when our hemlock is exhausted, by planting oaks. We can provide for future wants by reclothing our broken lands everywhere with woodlands, and we shall begin to get the benefits, so far as they concern the climate, as soon as the ground is well shaded, although we may have to wait longer for the material that these woodlands should supply.

In travelling through your state—and it is much the same throughout New England and the Northern states generally—I have had frequent occasion to admire the facility with which an abandoned field will lapse again into a forest. You have none of the difficulties that they encounter as we approach the arid regions of the West in making trees grow. They will grow themselves, and everywhere, if only allowed to remain where they find themselves a chance. But we should bear in mind that some kinds of timber are worth a great deal more than others; that it takes a long time for any trees to become of size suitable for lumber, and that almost always those of least value are of most rapid growth, thus shading out and killing off the more valuable kinds.

Of native species, you have various kinds of oak, ash, elm, birch, maple, linden, beech, chestnut, and others of the deciduous class; and of the evergreens, the pines, spruces, cedars, and the hemlock. It is an easy matter to determine from what has been which of these will thrive to advantage, and it is not worth while to experiment much on uncertainties. We need not try to prove, for this has been done by nature, that the chestnut will not grow on a limestone soil; that pines prefer a sandy soil, if underlaid by a subsoil congenial to their growth; that the maples and the beech avoid the sand and seek calcareous soils; and so on through the whole list.

But besides these native trees, we have within our range of

opportunity many not native that will still thrive exceedingly well, some of them bearing seed and propagating their kind as vigorously as in their native home, and others that will grow well enough if helped to a place, but that do not reproduce readily from seed. In Scotland the larch, a native of Tyrol, has been found much more profitable than any of their indigenous trees. The elm in England thrives exceedingly, although its seeds are seldom fertile, and the most precious tree for planting in the North-Western prairie states in some situations is the white willow, which grows best from cuttings or sprouts.

Of trees not native I would suggest the black walnut, hardy catalpa, European larch, Scotch and Austrian pines, and certain of the European willows and alder as well worthy of experiment. They may prove perfectly well adapted to your soil and climate, and some of them, as for example the willows and the alder, a great deal more profitable than our native species. They will at least prove interesting as affording means for comparison and for botanical study, and add new resources to our list, already large, of trees suited for ornamental plantation in our villages and around our homes.

While speaking of exotic trees, it may be remarked that the conifers of the Pacific coast, which thrive so luxuriantly in their native region, almost uniformly fail in the Atlantic states, while the trees of eastern Asia, the Himalaya region, and Japan, almost uniformly succeed. As these all differ in species, and many of them in genus, from those nearest like them in our own country, we have in these a precious opportunity for increasing an interest in ornamental plantations, and perhaps of adding to our list of exceptionally profitable timber trees.

Let us now come to consider a very practical question, which, at the beginning of your legislative session, may be deemed opportune, namely, How can a state encourage the preservation and restoration of its forests? It is true that individual enterprise, under the stimulus of high prices and the pressure of want, might find it profitable to seek these prices and relieve this want; but our land-owners, upon whom we must depend for future planting, will not begin to do this in a very extensive way until they feel this necessity upon them. It is not wise to wait till these evils are present. It is the part of prudence and

foresight to provide seasonably for this future ; and in this the state may render important services to its citizens in various ways short of paying for the expenses of planting, and among these the following :

1. It may exempt waste and vacant lands from taxation for a limited period, where they are successfully replanted and protected for forest growth ; or if there be a constitutional provision forbidding the exemption of private property from taxation, as in some of the states, it can declare that the increased value of lands by reason of forest growth shall not be taxed until some revenue begins to accrue.

2. It can stimulate rivalry by the offering of premiums for the greatest amount planted, the best management, or the most approved results in the introduction of exotic species, with reports showing the methods of operation, and other information best calculated for rendering this experience useful to others.

3. It can in like manner reward the authors of essays upon forest culture, and various subjects relating to the maintenance and management of groves and woodlands. To render these most widely useful, they should be printed for distribution among those engaged in planting.

4. It can provide for the establishment of experimental stations for the careful study of methods and the determination of facts of practical utility ; and it can aid in this by the distribution of seeds and plants among those willing to coöperate in these observations.

5. It can provide for instruction in the first principles of forestry in the public schools, and to a greater degree in the higher institutions of learning in the state ; and in a more general way it can enable agricultural, horticultural, and other societies to extend their operations in the discussion of subjects relating to forestry until special societies for this purpose are established.

6. It can provide laws for the prevention and control of forest fires, under which greater care would be taken in the use of fires in or near a woodland, and a more direct responsibility attached to this act.

7. In some of the states where this has not been done, the state can enact laws compelling the owners of cattle to keep them within their own premises, thus removing one of the mo-

tives for setting forest fires, and tending to the welfare of the woodlands generally.

It is very generally observed that in a new country, and in the absence of an owner or his agent, the rights of property in timber are often disregarded, and it has been appropriated for use without much care or inquiry as to who the owner was. This is especially true with respect to timber upon the public domain, and upon railroad grants. But where groves are planted upon the lands of a resident owner or manager, there would be no greater liability to trespass than in a corn-field or an orchard. As a country becomes older, these private rights become better established. The hardy and sometimes lawless pioneer moves on with the advancing tide of civilization, and personal rights become better defined.

I might say much more that the opportunity allows concerning the amenities of life that are secured in home adornment, village improvement, and city parks, which are so many forms of planting and cultivation, in which the benefits appear in the public health and in the intellectual refinement and personal enjoyment which they secure to all who come within their influences.

We are accused by Europeans of being an unstable and restless people, having no strong attachments to ancestral possessions, and ever seeking new fields of enterprise in an uneasy desire for change. There is nothing that can more strengthen this attachment to home and country than by making them pleasant. It is only those who feel this attachment, that build monuments and that found institutions that will survive them as witnesses of their substantial interest in the welfare of the country in which they have lived.

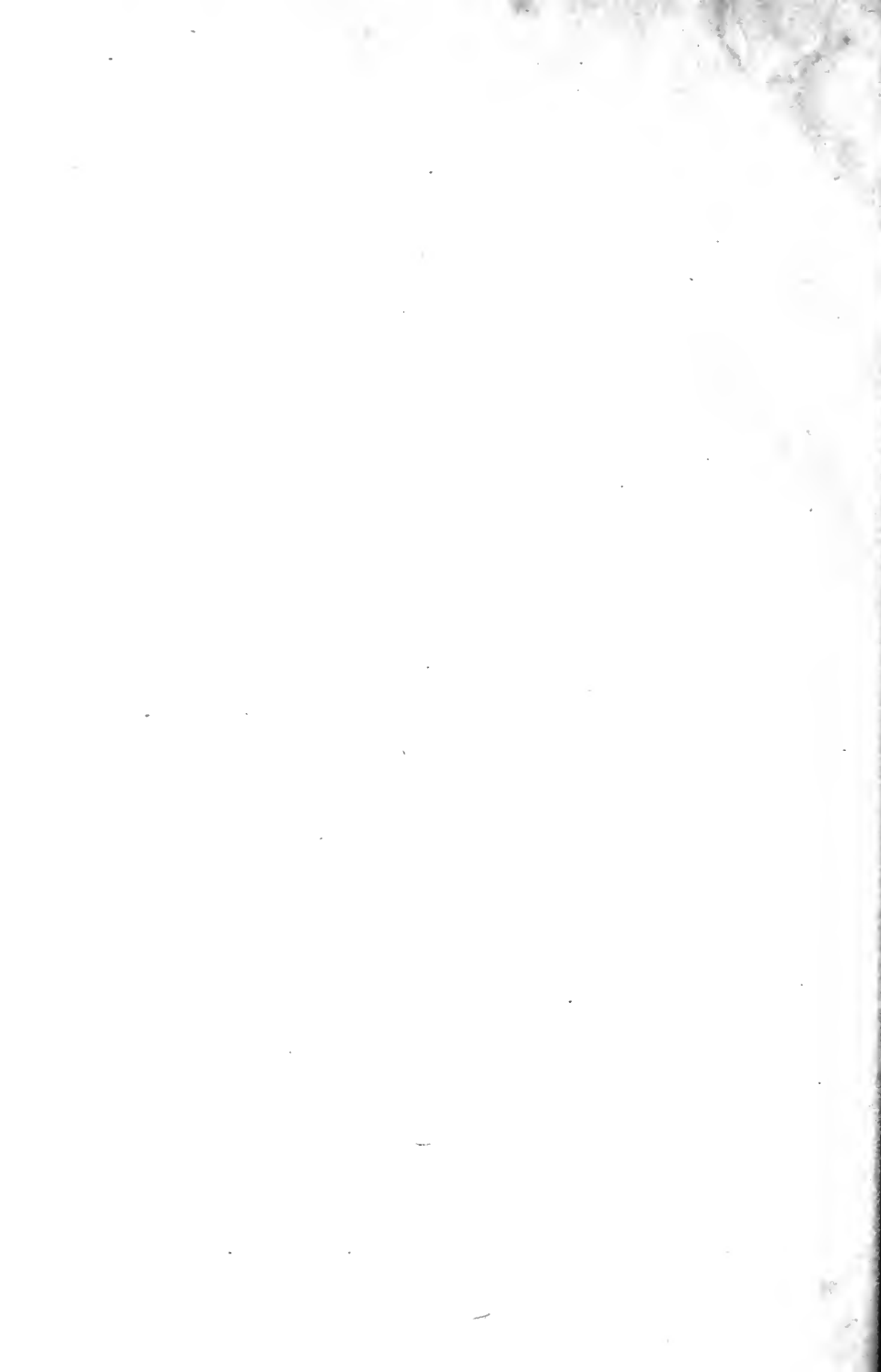
I have faith in the Yankee! I believe in him! If you can only tell him where there is a dollar to be made or saved, *and make him believe it*, he will find the means to secure it. Now one of the ways of doing this is to plant trees. When planted, protect them. Teach the importance of this, and the methods by which it can be done to most profit, in your schools and colleges, and especially let every owner of land seek to advance this object, both by precept and example, and it will not be long before we shall begin to realize the advantages that should result from this measure.

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FAMILIAR TALK ABOUT TREES.

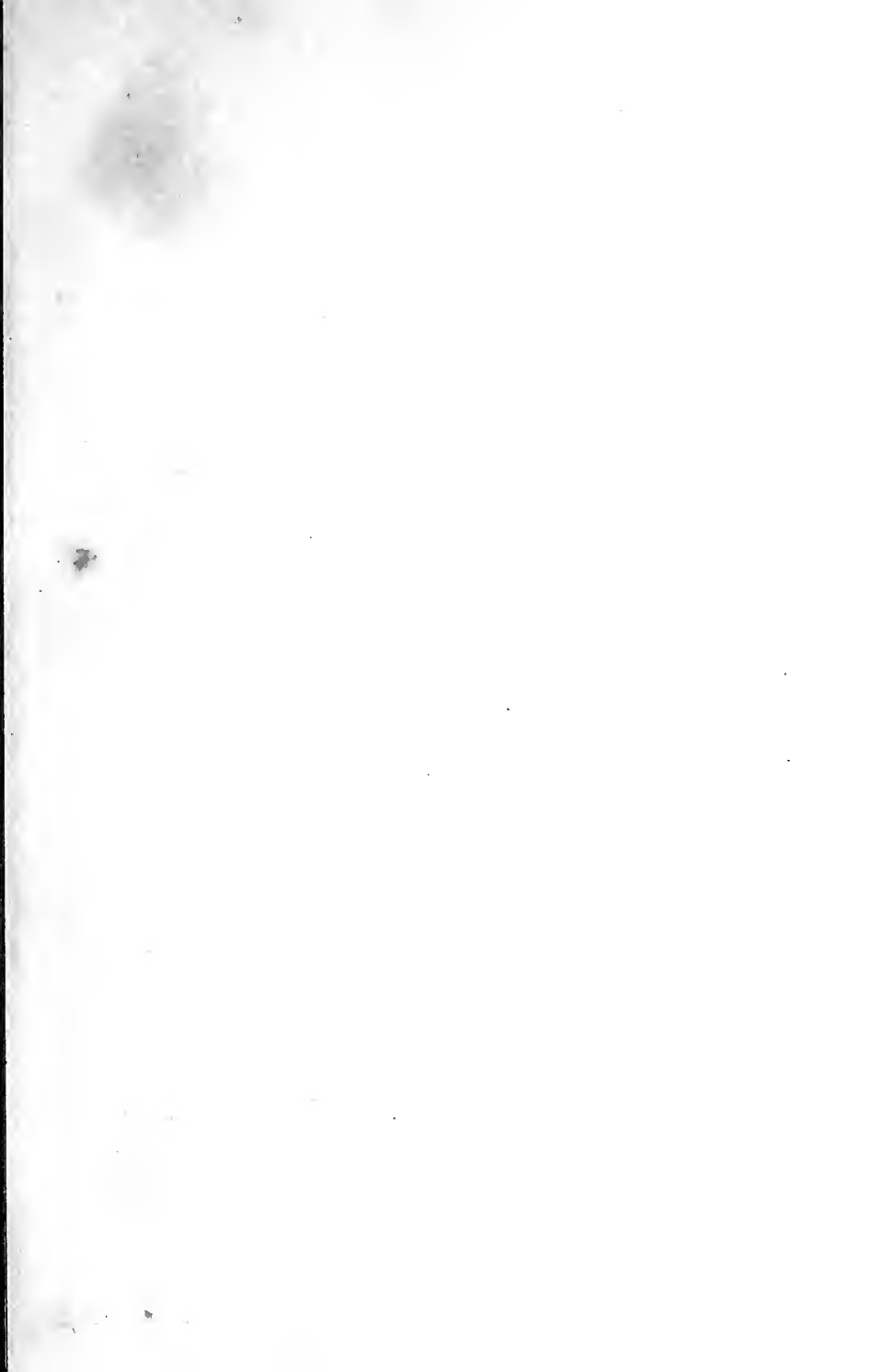
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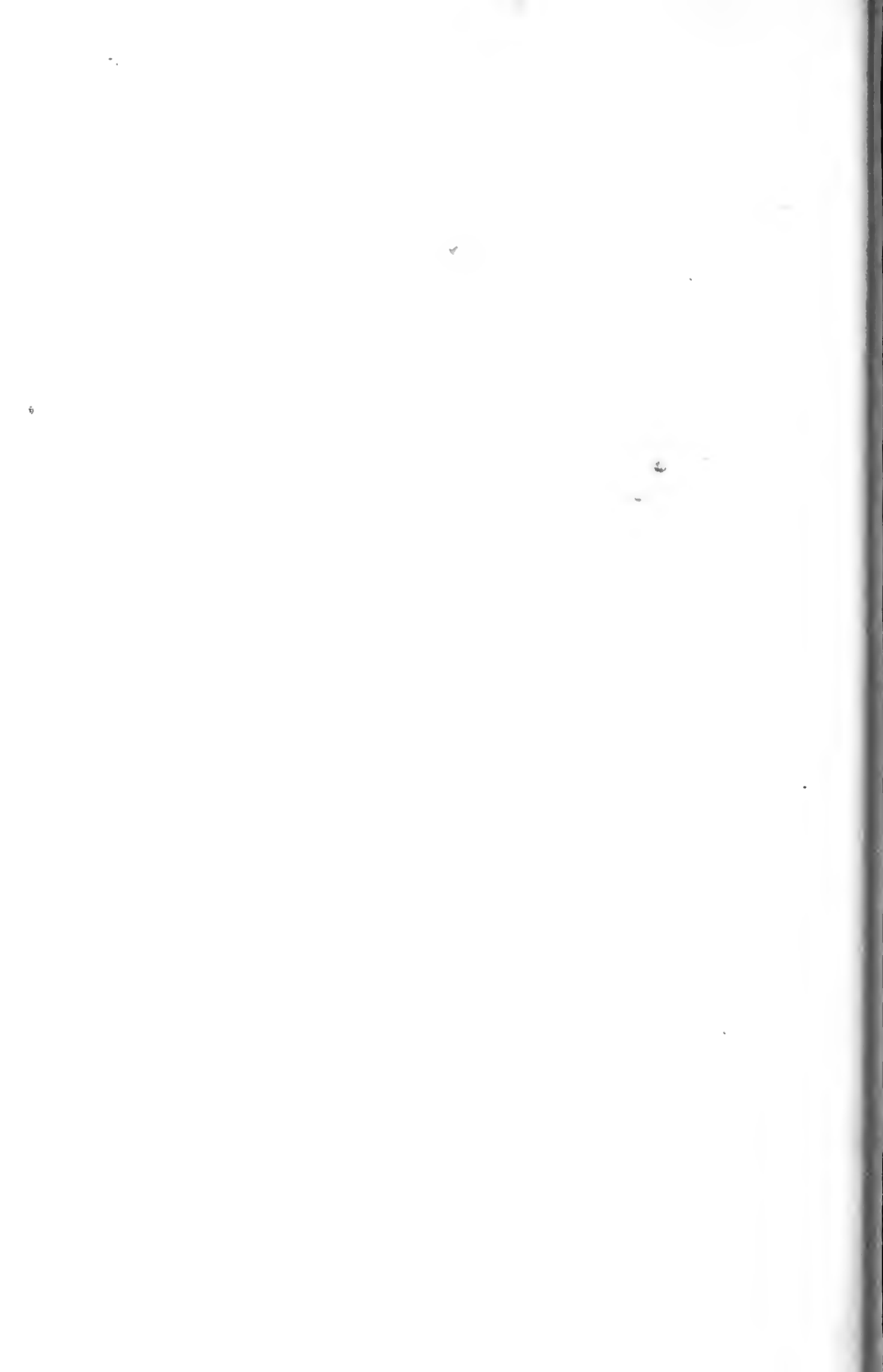
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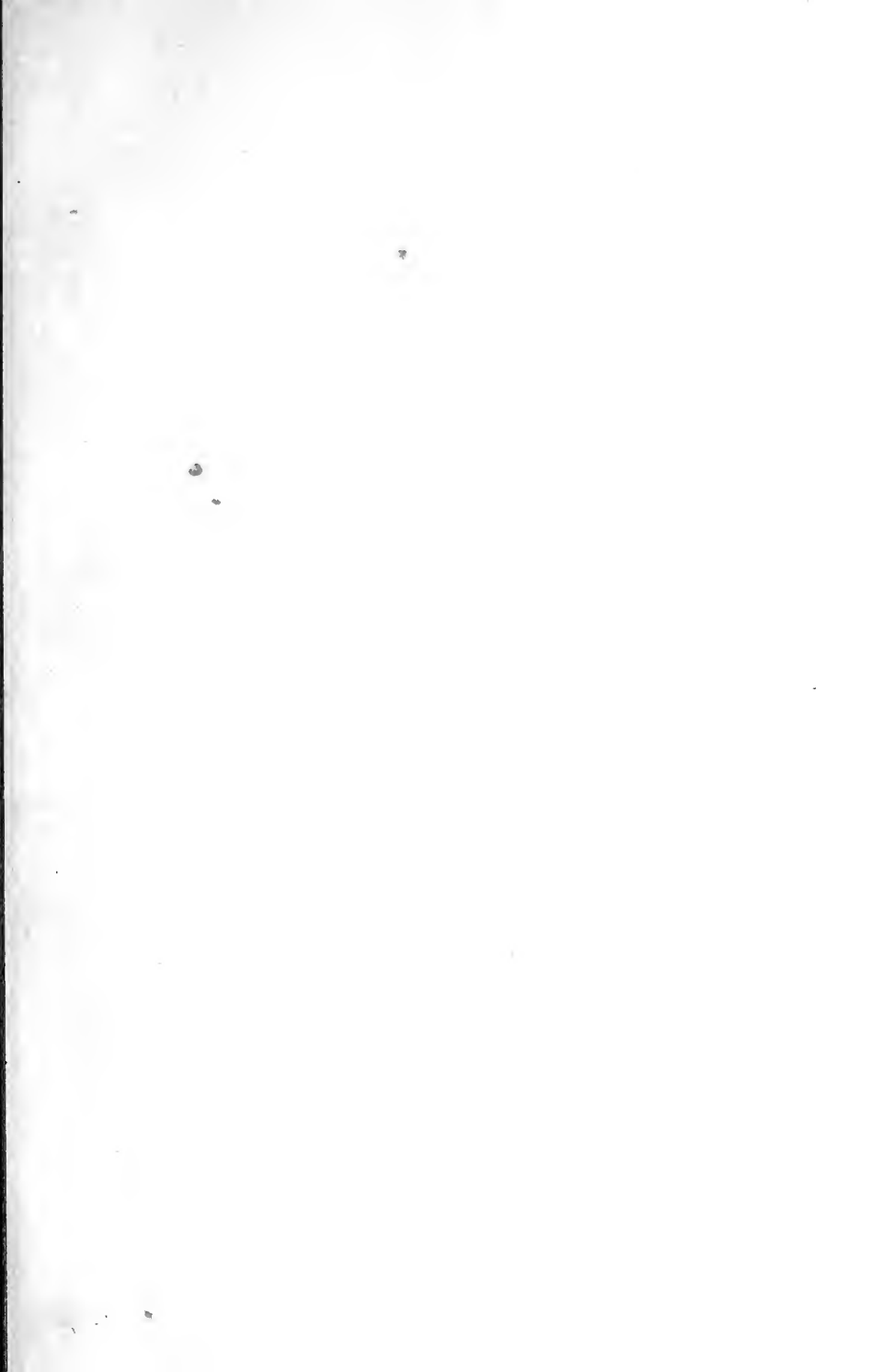


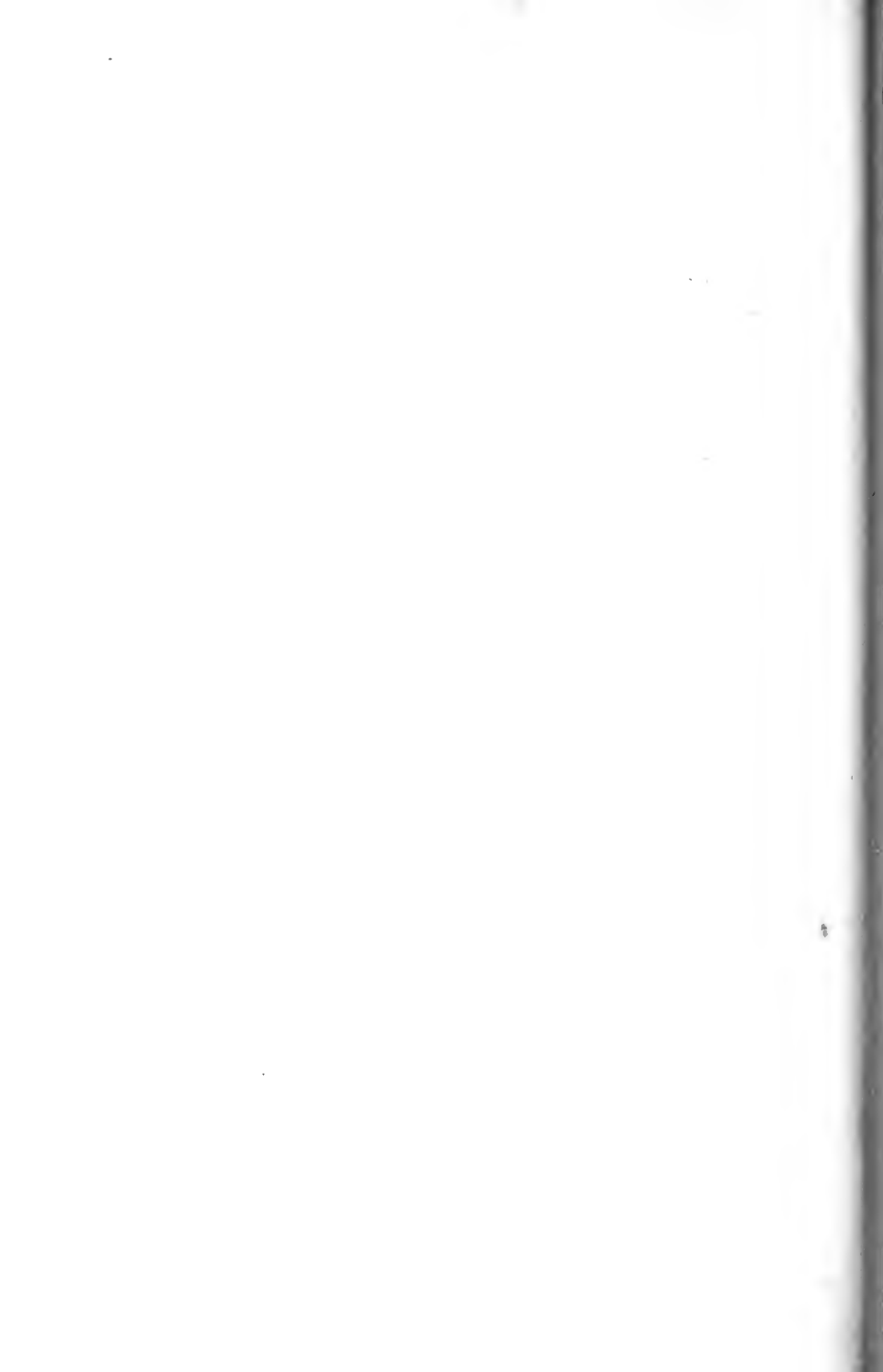


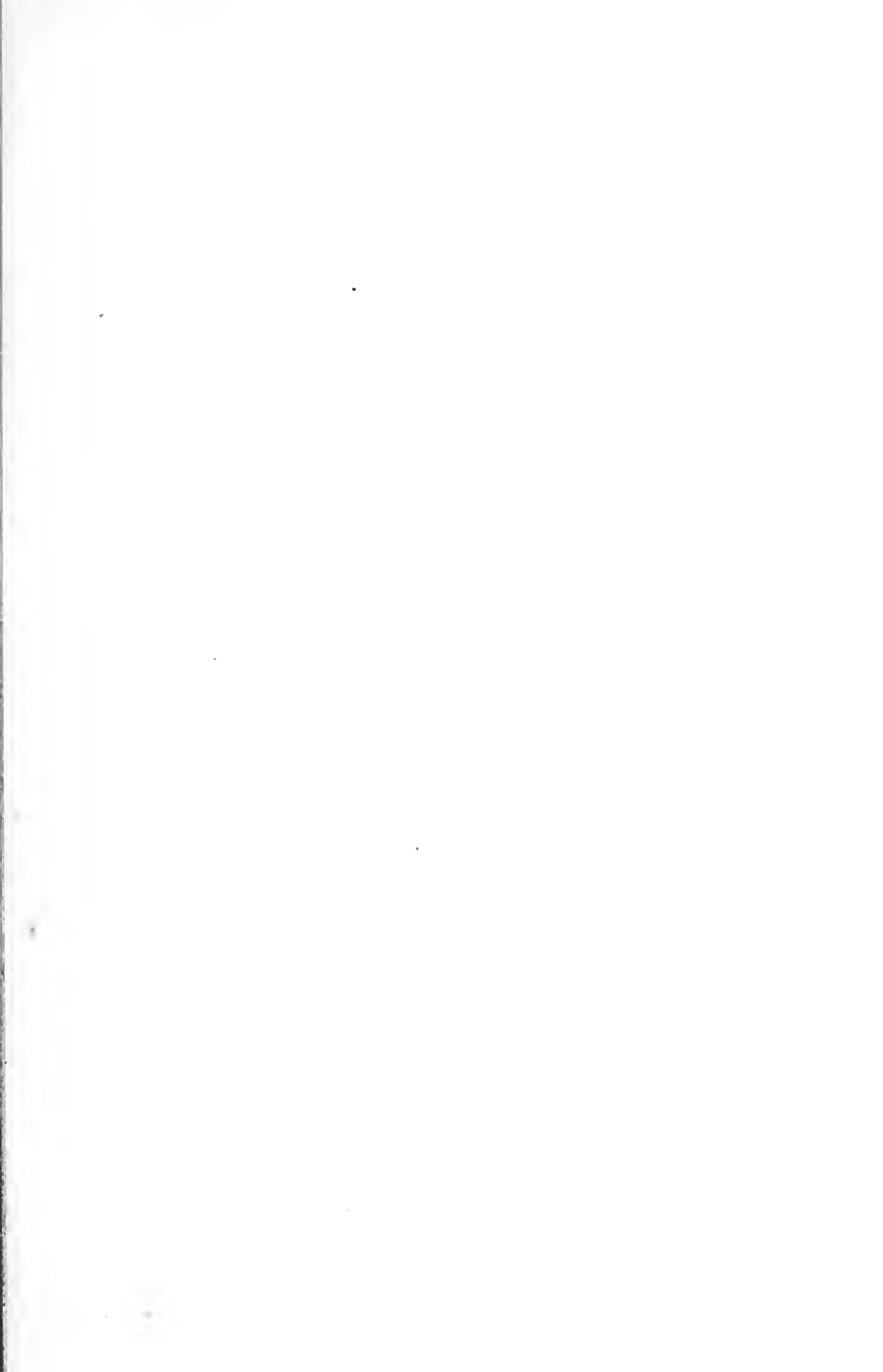




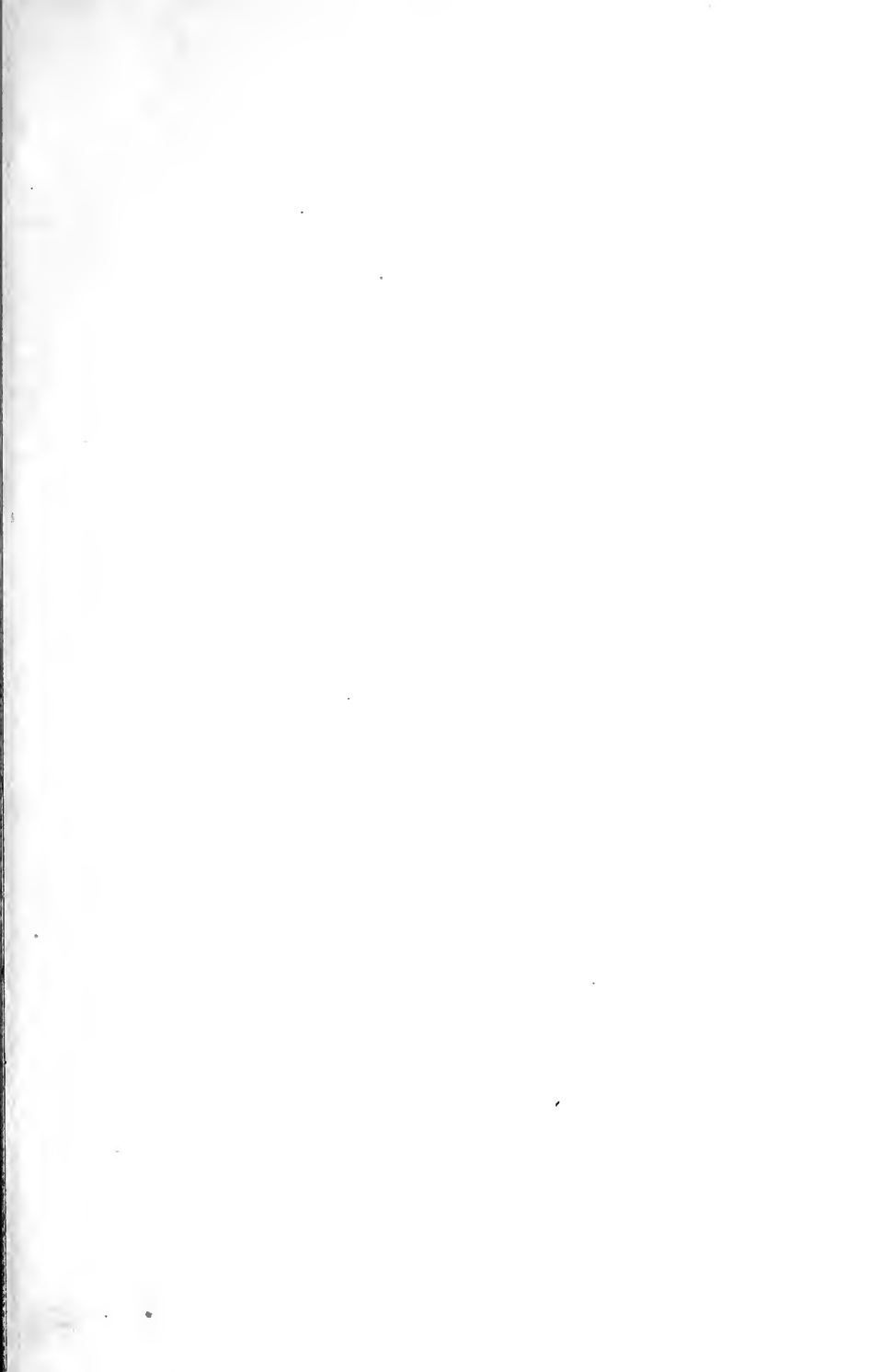


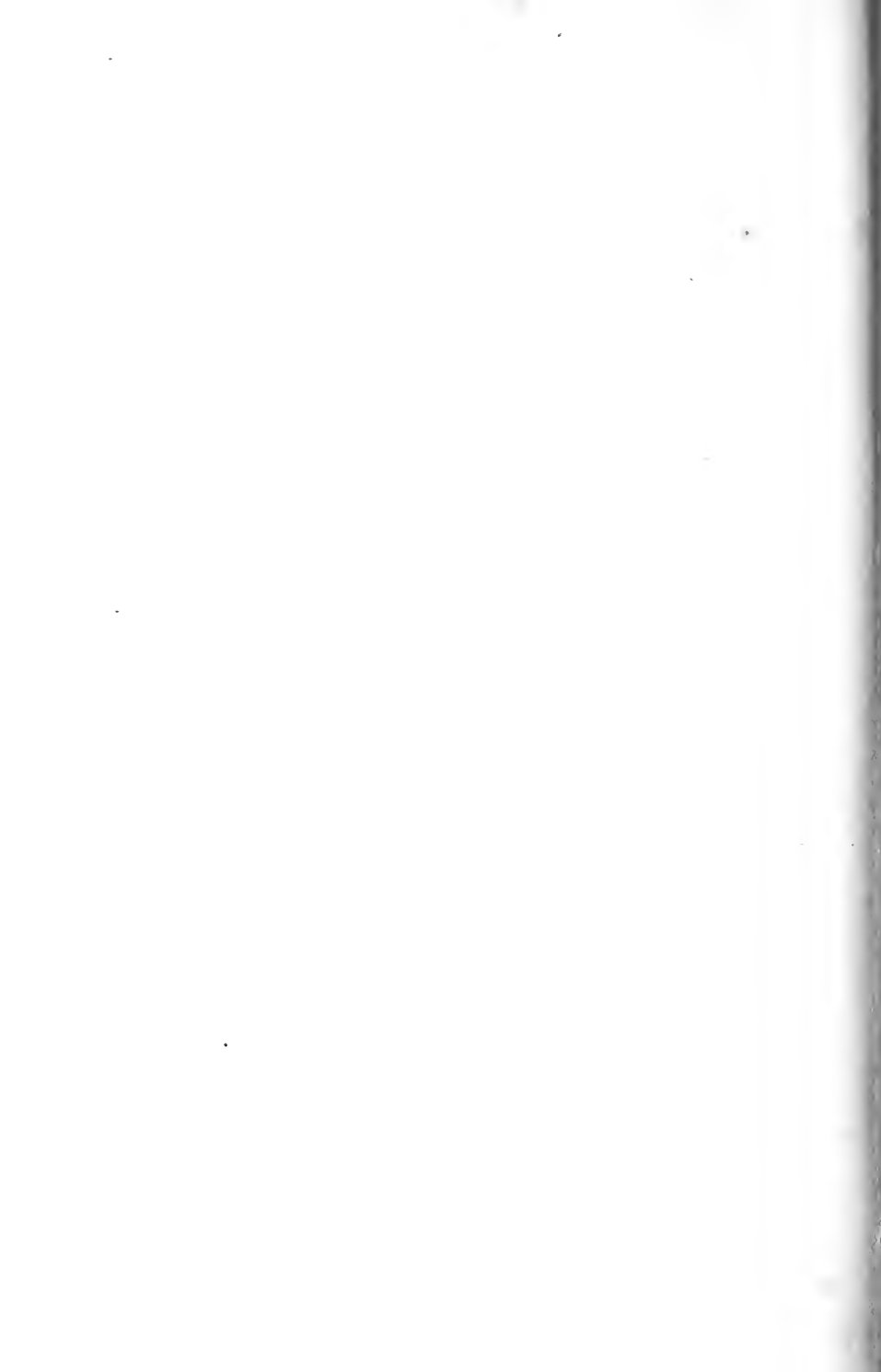


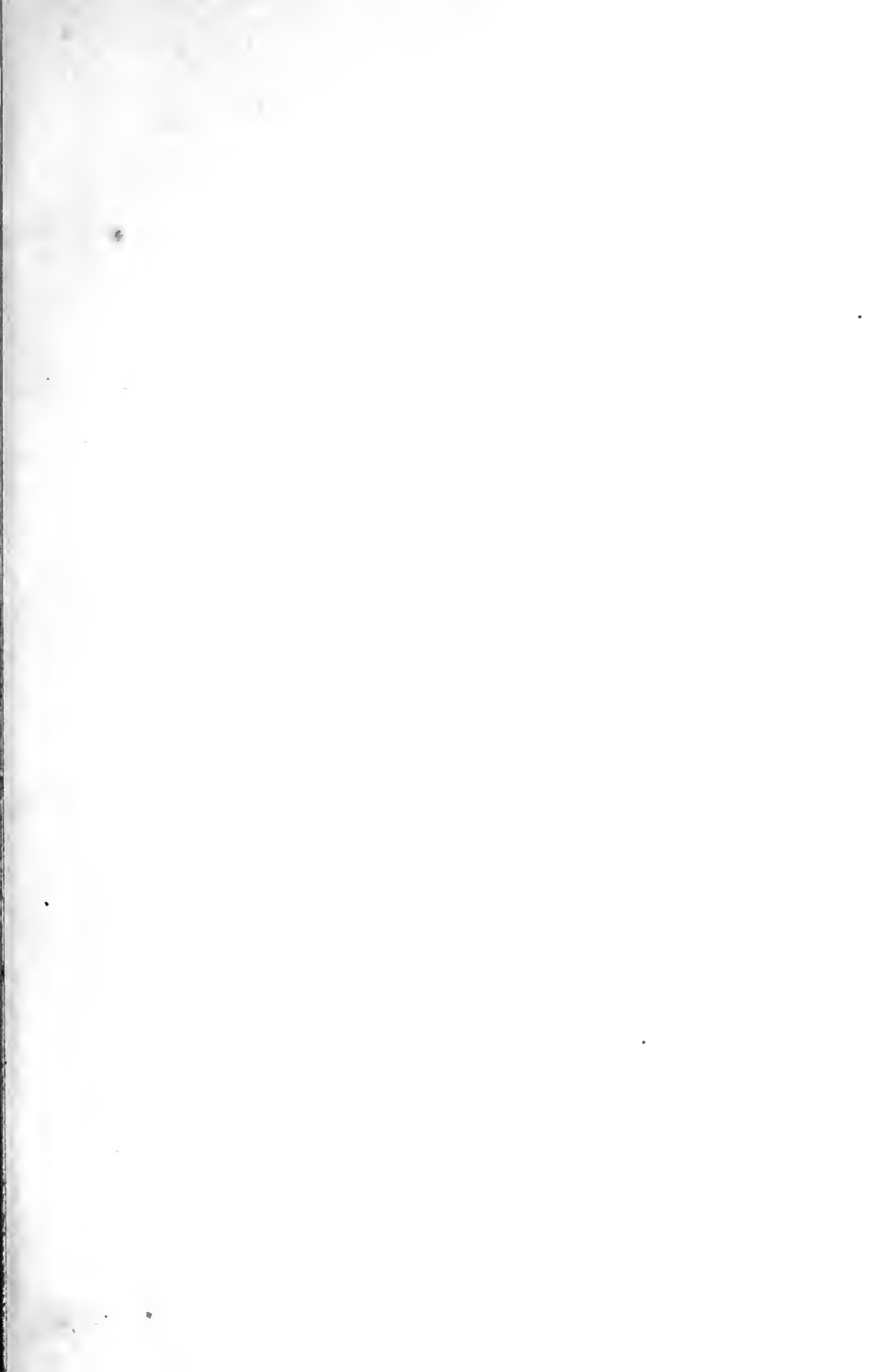




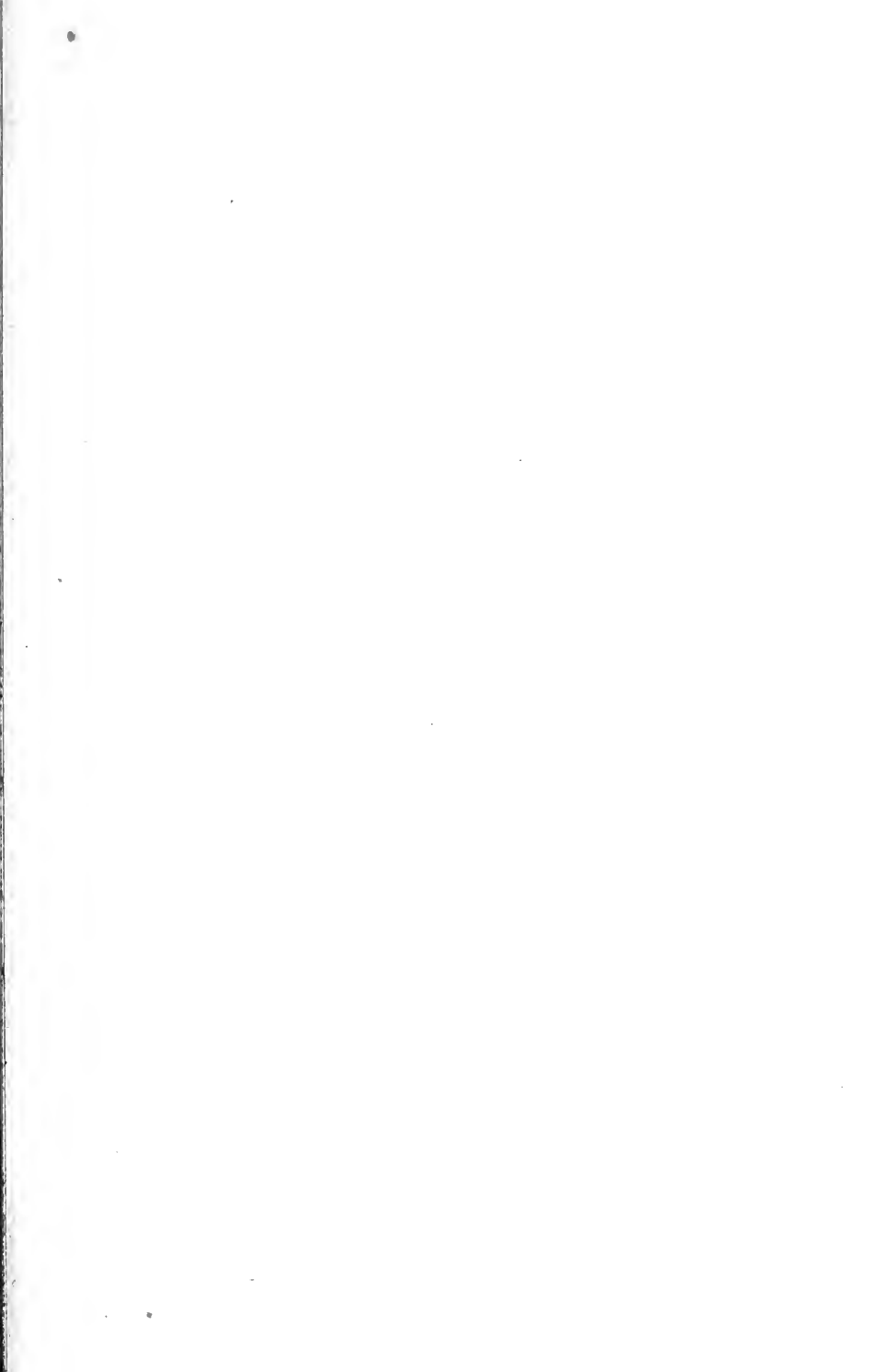




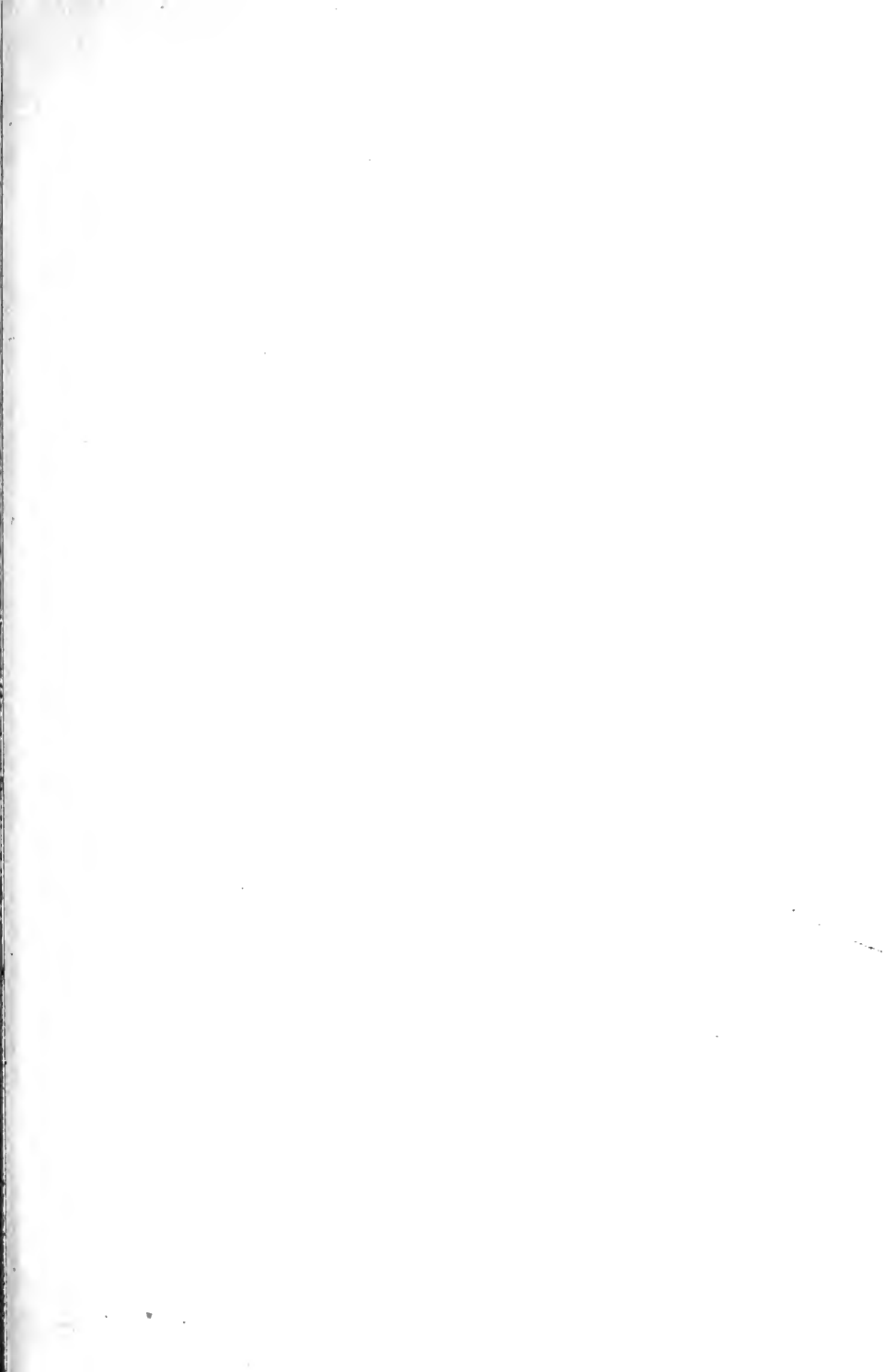




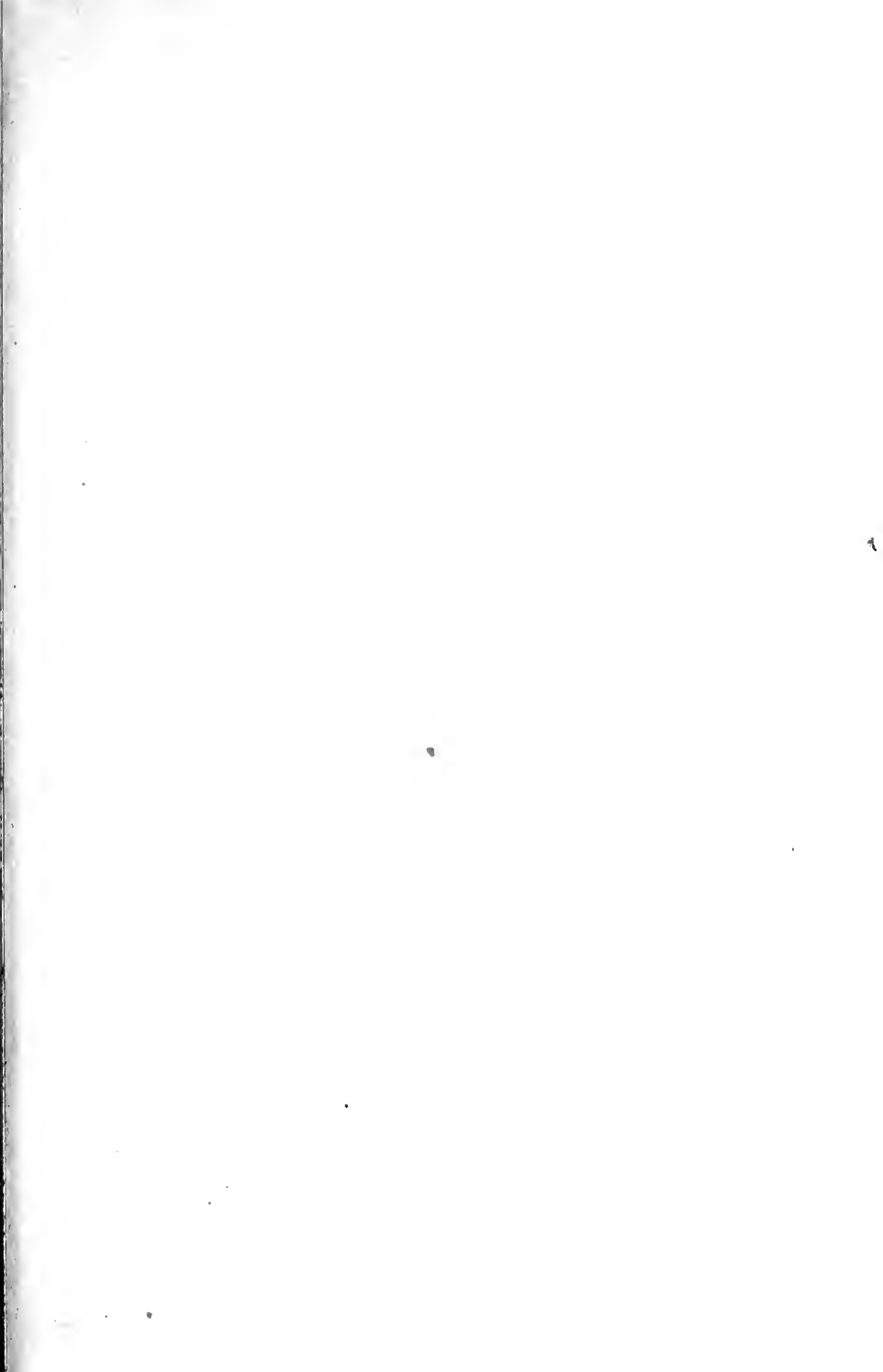




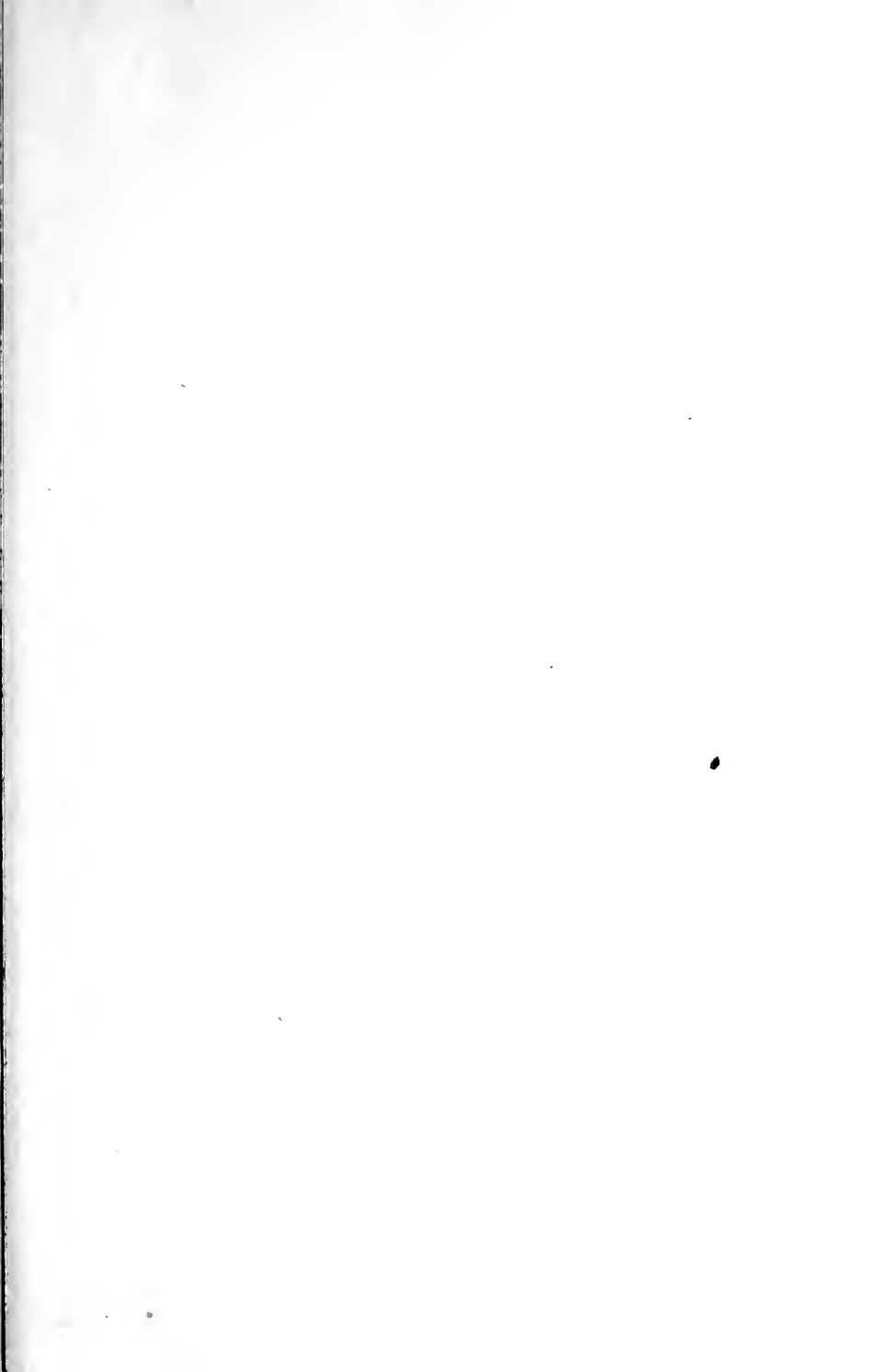


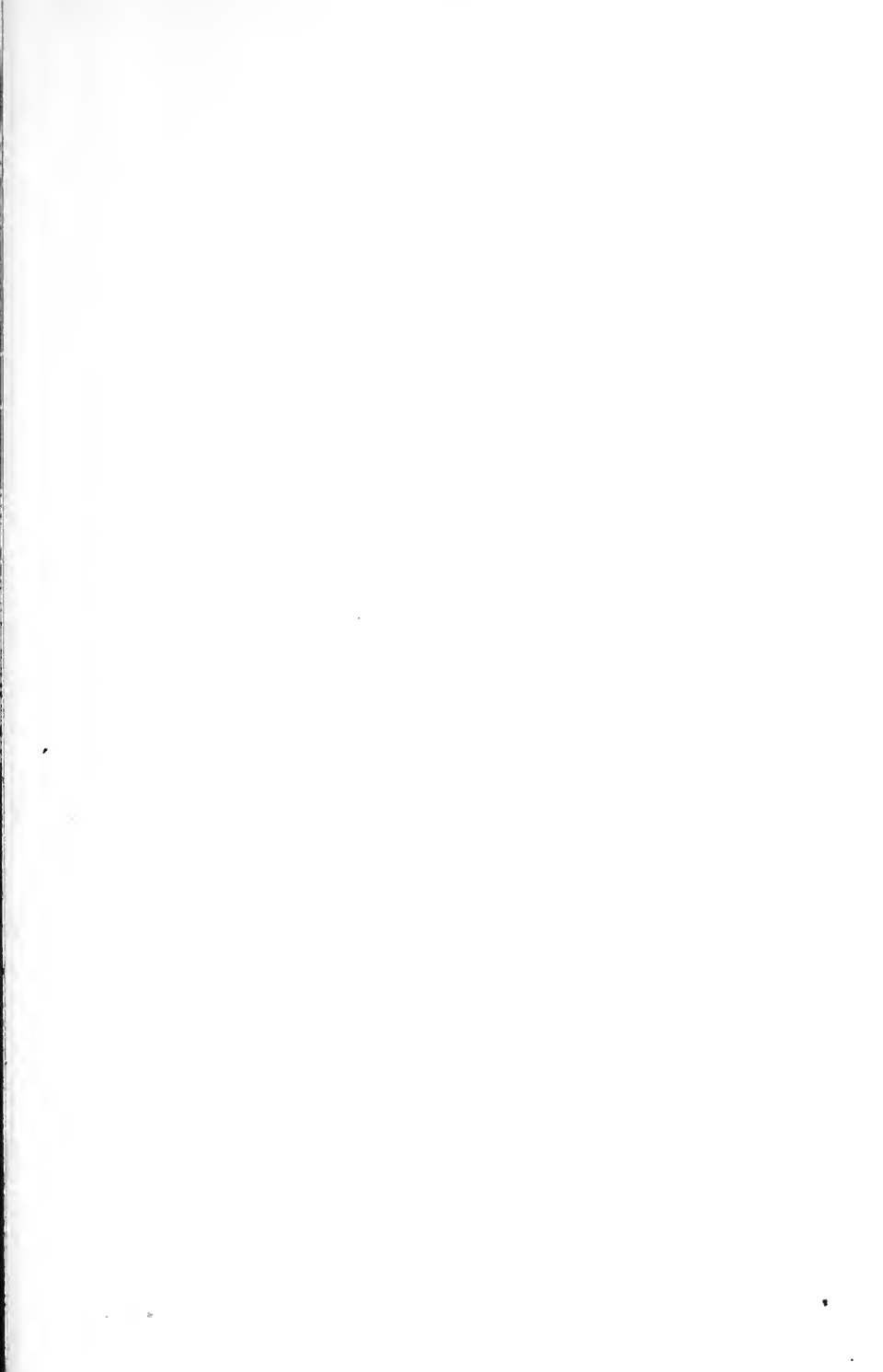








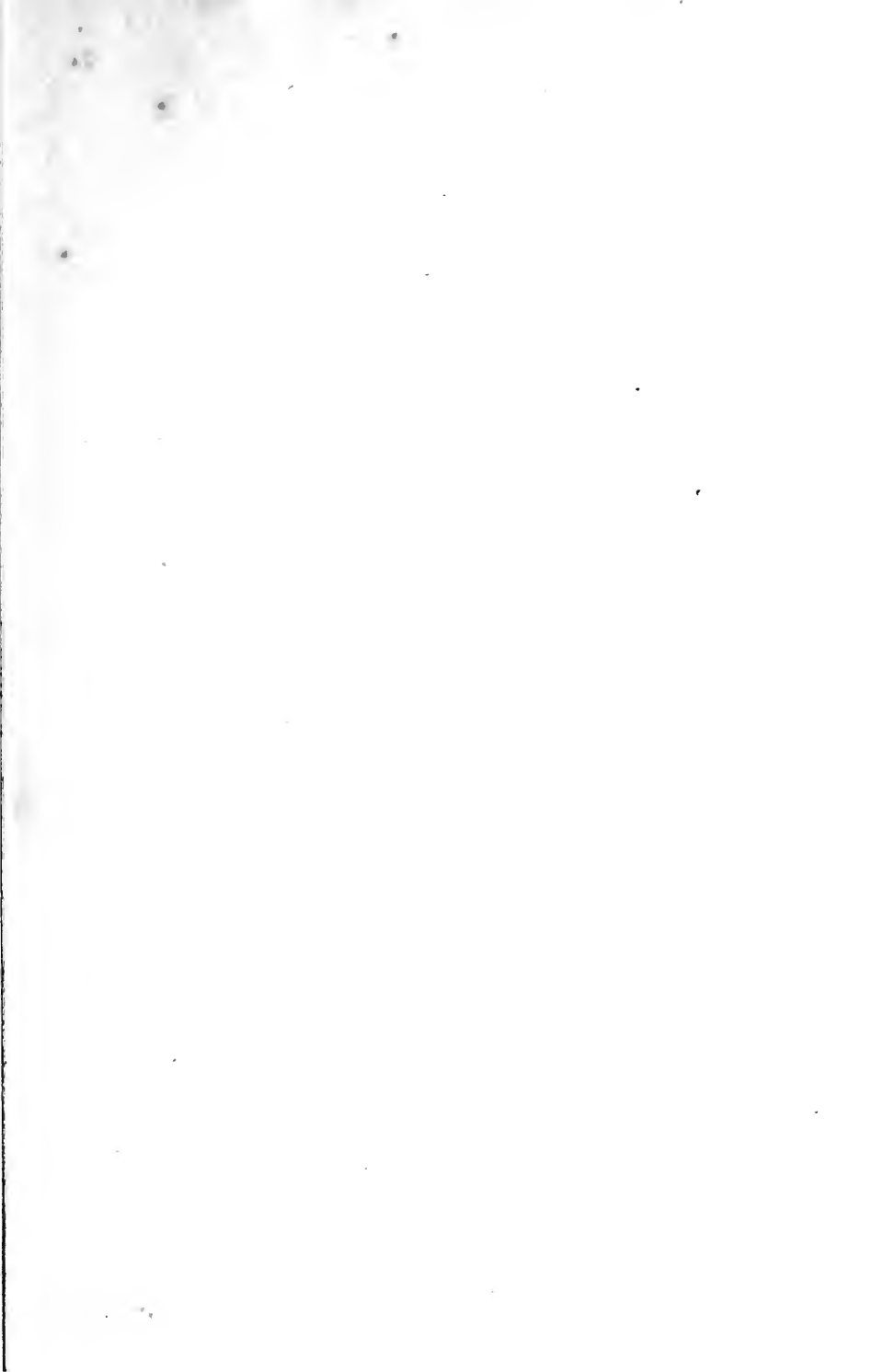












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