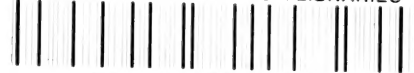


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HARE IN ONTARIO

By

Randolph L. Peterson and J. K. Reynolds

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RANDOLPH L. PETERSON AND J. K. REYNOLDS*

THE PRESENT POPULATION of European hares in southern Ontario apparently resulted from an introduction of nine animals near Brantford, Ontario, in 1912. These were secured from a German zoological exporter and the exact source of this introduced stock is not known. In the first published account of this introduction Dymond (1922) concluded that the species was *Lepus europaeus* and he inferred that it probably represented the race *L. e. europaeus* Pallas.

A year later Anderson (1923) added further notes concerning the status of this hare in Ontario, but carefully avoided using a subspecific name, pointing out the difficulties in making a definite identification with the limited amount of material available. The following year Miller (1924) listed *L. e. europaeus* as the form resident in Ontario and cited only Anderson (1923), not Dymond (1922). In the same year Silver (1924) reviewed the introductions into the United States, indicating that most of the original stock released there came from Hungary. It was not until eleven years later that Goodwin (1935) checked the identity of the New England introductions and showed that on the basis of the source of the stock, its coloration and large hind feet, the animal then occurring there was *L. e. hybridus* Desmarest.

Later Anderson (1947) followed Miller (1924) and Cross and Dymond (1929) in ascribing the name *L. e. europaeus* to the Ontario populations, but he cited only himself (1923) for the previous history of the form in Ontario. Downing (1948) and others have used the same name.

In his recent synopsis of the North American Lagomorpha, Hall (1951) lists both *europaeus* and *hybridus*. Citing Goodwin (1935), he restricts *hybridus* to the United States from New York eastward; following Anderson (1947), he refers the populations of Ontario and Michigan to *europaeus*. He cites Burt (1946) in defining the range of this hare in Michigan, although Burt did not employ a trinomial in his discussions of this species in Michigan.

Miller (1924) provides a diagnosis of the races in question, indicating that *europaeus* occurs in Denmark, through most of Germany and central France, and into Switzerland, while *hybridus* ranges from

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eastern Germany eastward into central Russia. Ellerman and Morrison-Scott (1951) follow Miller with virtually the same definition of ranges for these two subspecies.

Reynolds (1952) found that specimens examined by him did not conform to Miller's (1912) diagnosis of *L. e. europaeus* but he was unable to examine the necessary comparative material in order to settle this point. One skin and two skulls of *L. e. europaeus* from France in the Royal Ontario Museum of Zoology and Palaeontology proved to be so noticeably distinct from the Ontario examples of European hares that attempts were made to locate more European material in order to clarify the identity of the Ontario specimens.

We wish to acknowledge the cooperation of the following persons and institutions (the latter followed by abbreviations to be used in the text) in placing specimens at our disposal: Dr. G. H. H. Tate, American Museum of Natural History (A.M.N.H.); Dr. C. P. Lyman, Museum of Comparative Zoology (M.C.Z.); and Drs. D. S. Johnson and H. W. Setzer, United States National Museum (U.S.N.M.).

PELAGE

Ontario specimens conform with Miller's (1924) diagnosis of *hybridus*. Compared with *L. e. europaeus* from France and Germany (winter pelage), they have more extensive white markings on the side of the head and the whitish area below the eye is usually continuous with that of the throat. The rump is more contrastingly grey in colour, with its median area only slightly darker, whereas in *europaeus* the dark colour of the back extends to near the base of the tail. Although there is considerable variation in general coloration of the body in both races, *hybridus* averages lighter.

One specimen, from Halton County, Ontario, taken on January 28, 1932, is of particular interest. Although it has maintained faint suggestions of the normal colour pattern, the entire back, feet, and ears are pale greyish. The back has a diluted admixture of white and buff, the feet, legs and sides are slightly more buffy, and the ears are more greyish with dark grey tips. The upper side of the tail and crown of the head are also darker grey. The lower sides and underparts are almost entirely white, although the throat has a few scattered buffy hairs. At present we are not familiar with the grey winter pelage which *hybridus* is said to assume "habitually". The above specimen is the only one of its type we have seen and we are unable to say whether it represents the grey pelage referred to by Miller (1924) or a colour mutation.

A specimen from near Leningrad, Russia (M.C.Z. No. 25351), taken on December 6, 1886, has light greyish colour extending well up on its sides, behind the ears, and down on to the upper portion of the front and hind limbs. This light area joins the broad greyish rump, restricting the dark back colour to a relatively small area along the

TABLE I. Summary of Cranial Measurements of *L. e. europaeus* and *L. e. hybridus*.

Subspecies and Source of data	Occipito-incisoral Length	Occipito-nasal Length	Condylobasal Length	Zygomatic Breadth	Interorbital Constriction	Postorbital Constriction	Breadth of Braincase	Length of Nasals	Width of Nasals	Length of Diastema	Greatest W. across Paroccipital Processes	Least Length of Palatine Bridge	W. of Palate between PM ¹ (Alveolar)	L. of Maxillary Toothrow (Alveolar)
(A) <i>L. e. europaeus</i> Miller (1912)	—	99.0 (12)	88.4 (12)	47.6 (14)	21.2 (14)	13.8 (14)	32.9 (13)	44.6 (14)	22.6 (14)	28.8 (14)	—	—	—	18.1 (14)
France, Germany	99.4 (6)	100.1 (4)	87.7 (6)	46.9 (7)	20.8 (7)	13.8 (7)	32.7 (6)	43.9 (5)	21.6 (7)	28.8 (7)	28.8 (6)	6.7 (7)	13.5 (7)	18.4 (7)
(B) <i>L. e. hybridus</i> Russia	101.8 (2)	101.8 (2)	90.0 (2)	48.1 (1)	20.1 (2)	12.8 (2)	33.1 (1)	46.0 (2)	21.8 (2)	29.3 (2)	32.1 (2)	6.5 (2)	14.3 (2)	18.4 (2)
Connecticut	103.1 (1)	102.8 (1)	91.5 (1)	47.5 (1)	21.0 (1)	13.2 (1)	34.2 (1)	47.0 (1)	21.6 (1)	30.5 (1)	31.3 (1)	7.9 (1)	14.2 (1)	19.2 (1)
Massachusetts	103.1 (1)	102.2 (1)	92.4 (1)	48.9 (1)	21.0 (1)	14.3 (1)	34.8 (1)	47.5 (1)	23.1 (1)	29.8 (1)	29.5 (1)	7.9 (1)	14.4 (1)	17.8 (1)
Ontario	100.6 (47)	100.2 (47)	89.4 (47)	47.3 (39)	21.6 (48)	14.1 (48)	33.4 (47)	45.4 (48)	23.3 (48)	29.3 (48)	30.5 (46)	6.9 (48)	14.2 (48)	18.0 (47)

All measurements are in millimeters; numbers in parentheses indicate the numbers of specimens in each sample.

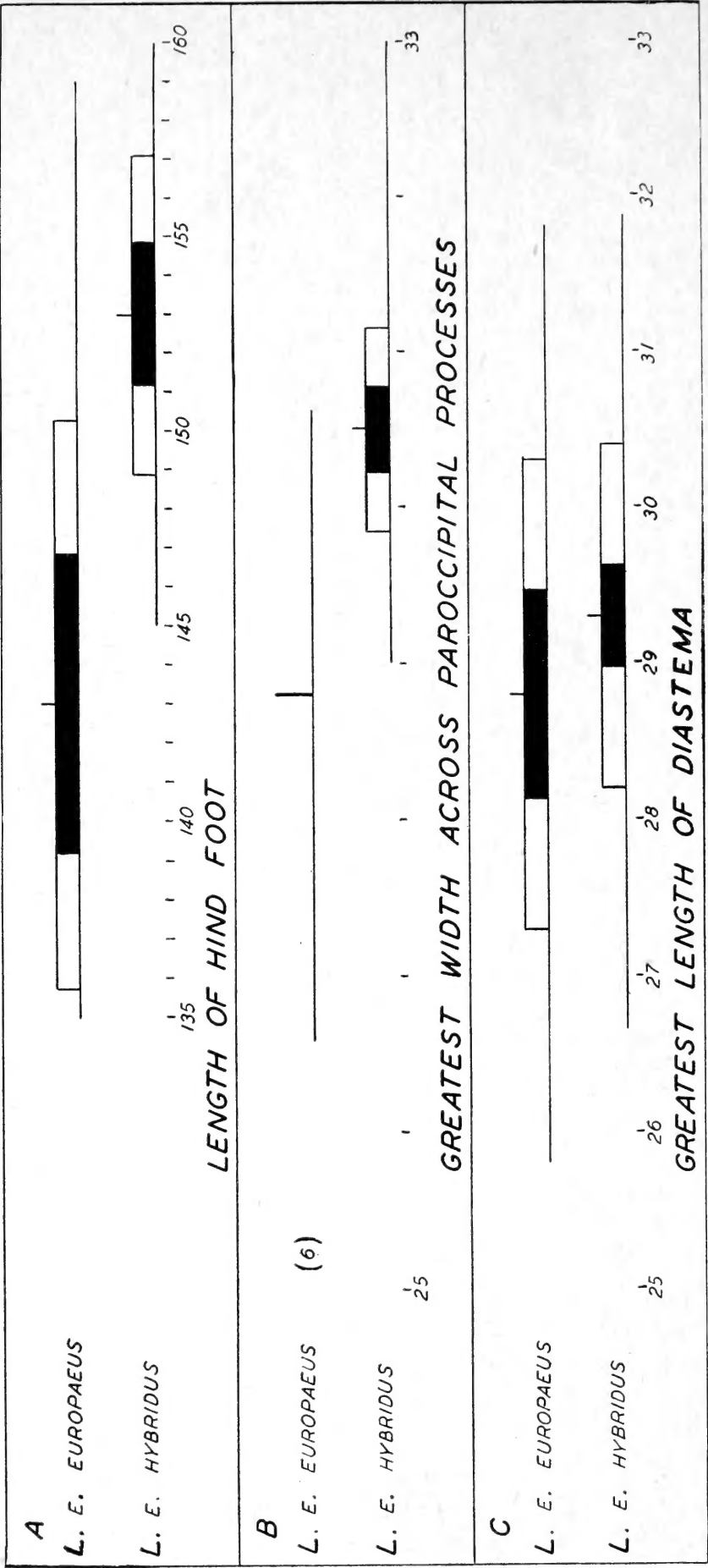


FIG. 1. Comparative measurements of *Lepus europaeus europaeus* and *L. e. hybridus*.

middle of the back. The under fur of the rump is greyish, while that of the remaining light area is more buffy. The colour of the underparts, feet, head, ears, tail, and central region of the back are essentially the same as most Ontario specimens except that the rump is noticeably lighter. We find that one specimen each from Daghestan, Caucasus, near Petrovsk, Russia; Washington, Connecticut; and North Adams, Massachusetts (all from M.C.Z.) are indistinguishable from specimens of *L. e. hybridus* from Ontario.

CRANIAL MEASUREMENTS

The cranial measurements of available specimens of *L. e. europaeus* and *L. e. hybridus* were compared with similar measurements presented by Miller (1912) and with those of Ontario specimens. These data, summarized in Table I, suggest that the skulls of *europaeus* differ from those of *hybridus* in having a narrower width across the paroccipital processes. In the former this width is usually about equal to the length of the diastema, while in the latter the greatest width of the paroccipital processes is usually greater than the length of the diastema. These comparisons are presented graphically in Fig. 1 (B and C), using the method of Hubbs and Hubbs (1953). A summary of the cranial measurements of the skulls of 48 specimens of *L. e. hybridus* from Ontario is given in Table II(A).

GROSS MEASUREMENTS

Miller (1912) has drawn attention to the greater size of the hind foot of *L. e. hybridus* compared with that of *L. e. europaeus*. In comparing the gross measurements of Ontario specimens with those of *L. e. europaeus* we found that this difference is statistically significant (Fig. 1(A)). The measurements of Ontario specimens are summarized in Table II(B).

It has been stated (Anon. 1947) and is widely held among hunters in Ontario that the European hares here sometimes attain a weight of twenty pounds or more. In the course of handling 973 specimens, however, Reynolds (1952) found only four which exceeded 5000 gm. (about eleven pounds). The largest weighed 5600 gm. (about twelve and one-half pounds).

SPECIMENS EXAMINED

Unless otherwise indicated, specimens are in the Royal Ontario Museum of Zoology and Palaeontology. *Lepus e. europaeus*—a total of 14, as follows: *France*: Bretigny, 1; near Cadillac, Gironde, 1; Gironde, 1; 2 mi. NE Is-Sor-Tile, Cote-d'Or, 1 (U.S.N.M.); Poiseul-la-Grange, Cote-d'Or, 1 (A.M.N.H.). *Germany*: near Hamburg, 6 (A.M.N.H.); Magdeburg, 1 (U.S.N.M.). *Switzerland*: Werdenberg, St. Gallen, 1 (U.S.N.M.); Wittenbach, St. Gallen, 1 (U.S.N.M.). *Lepus e. hybridus*—a total of 82, as follows: *Russia*: near Leningrad, 1

TABLE II. Measurements of *L. e. hybridus* from southern Ontario.

Dimension	Number of Specimens	Mean (mm.)	Standard Deviation	Standard Error
(A) <i>Cranial Measurements</i>				
Occipito-incisoral length	47	100.6	2.0	0.29
Occipito-nasal length	47	100.2	2.2	0.33
Condylbasal length	47	89.4	2.0	0.29
Zygomatic breadth	39	47.3	1.4	0.23
Interorbital constriction	48	21.6	1.4	0.20
Postorbital constriction	48	14.1	1.1	0.16
Breadth of braincase	47	33.4	1.1	0.16
Length of nasals	48	45.4	2.0	0.29
Width of nasals	48	23.3	1.5	0.21
Diastema	48	29.3	1.1	0.16
Greatest width across paraoccipital processes	46	30.5	0.9	0.13
Least length of palatine bridge	48	6.9	0.6	0.09
Width of palatine bridge (Alveolar)	48	14.2	0.8	0.12
Length of maxillary toothrow (Alveolar)	47	18.0	0.6	0.09
(B) <i>Gross Measurements</i>				
Total length—R.O.M.Z.P.	23	652	22.4	4.8
Reynolds (1952)	260	681	24.2	1.5
Tail—R.O.M.Z.P.	19	100	5.4	1.2
Reynolds (1952)	260	92	9.8	0.6
Hind Foot—R.O.M.Z.P.	22	153	4.1	0.9
Reynolds (1952)	260	151	4.6	0.3
Ear from Crown—Reynolds	260	123	3.6	0.2
Ear from Notch—R.O.M.Z.P.	4	98	2.2	1.1
Weight (gm.)—Reynolds (1952)	693	4180	380	15

(M.C.Z.); Daghestan, Petrovsk, Caucasus, 1 (M.C.Z.). *Connecticut*: Washington, 1 (M.C.Z.). *Massachusetts*: near North Adams, 1 (M.C.Z.). *Ontario*: Brant Co.—Dumfries South Twp., 1; Scotland, 2; Halton Co.—2½ mi. N. Trafalgar, 1; Middlesex Co.—Duncrief, 4; Ilderton, 1; Komoka, 1; Lobo Twp., 14; McGillivray Twp., 8; Oxford Co.—Blenheim Twp., 1; Kintore, 20; Oxford East Twp., 1; Woodstock, 2; Parry Sound District—Burk's Falls, 1; Perth Co.—Mornington Twp., 5; Victoria Co.—Lindsay, 1; Waterloo Co.—Centreville, 1; Galt, 1; Kitchener, 3; Wilmot Twp., 1; Wellington Co.—Puslinch, 1; York Co.—King, 3; Nobleton, 1; Pottageville, 1; Toronto, 1; Vaughan Twp., 1; Woodbridge, 1.

SUMMARY

The European hare, introduced in 1912 and now established in southern Ontario, appears to belong to the race *Lepus europaeus hybridus* Desmarest.

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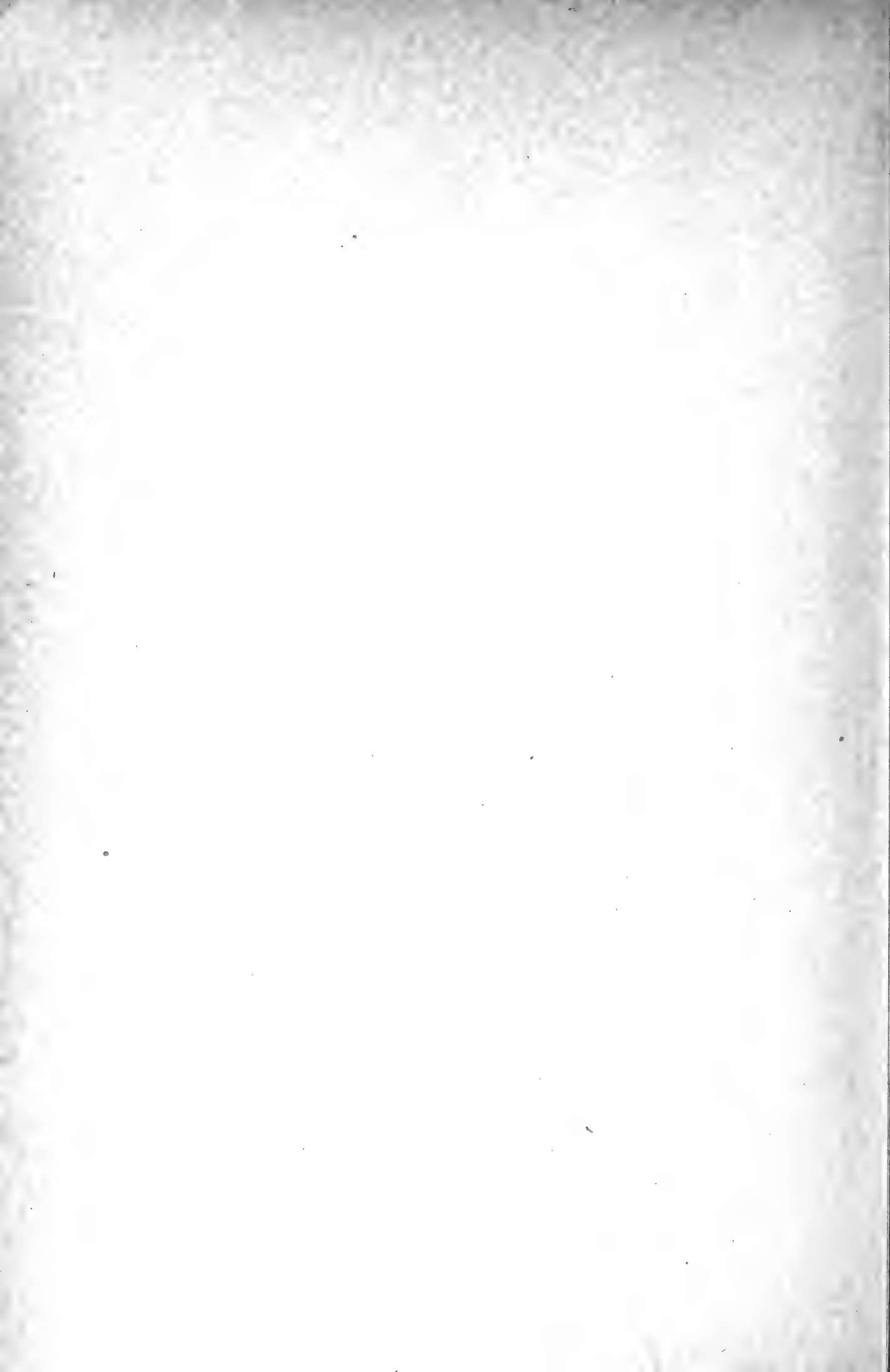
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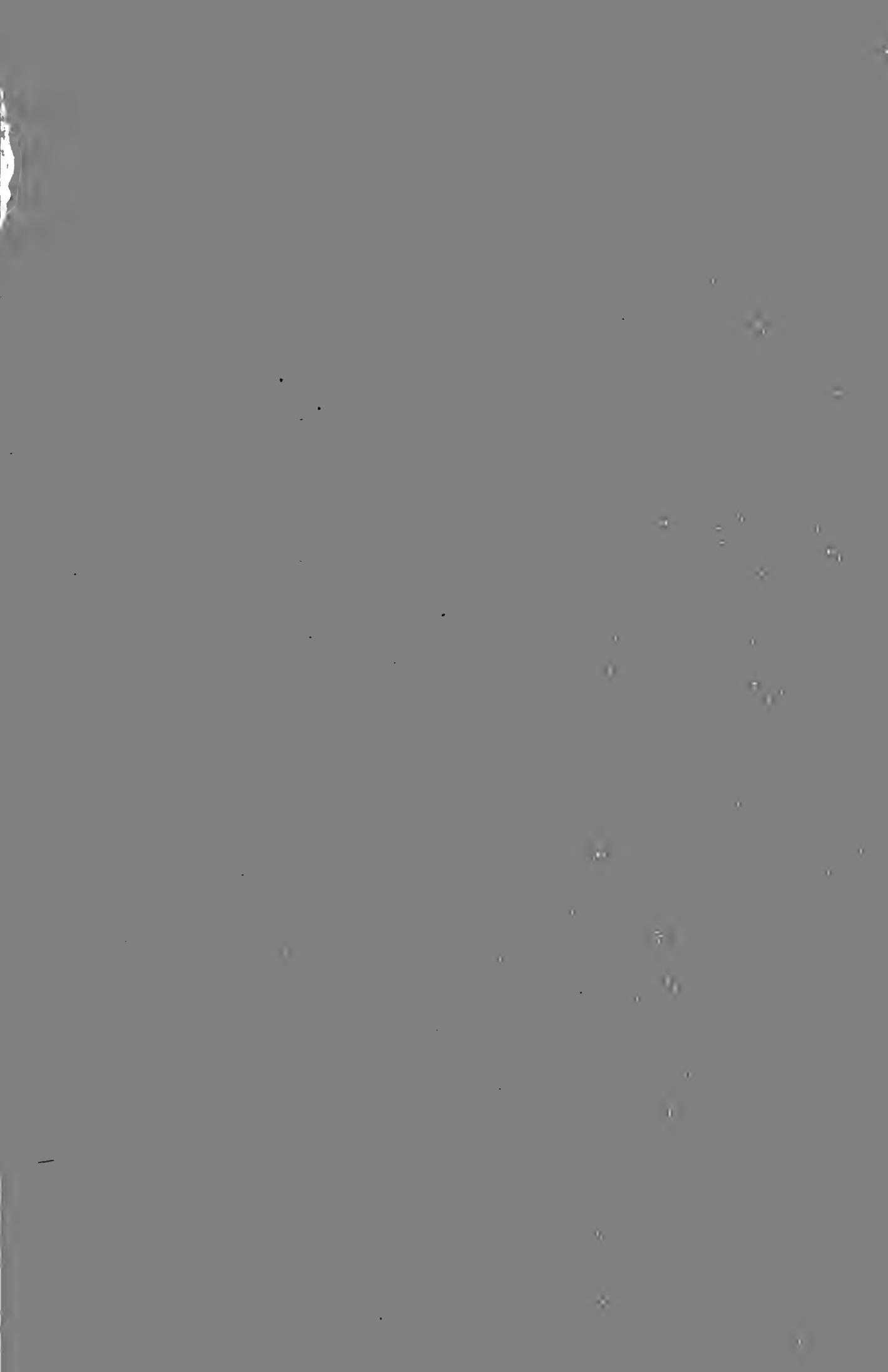
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