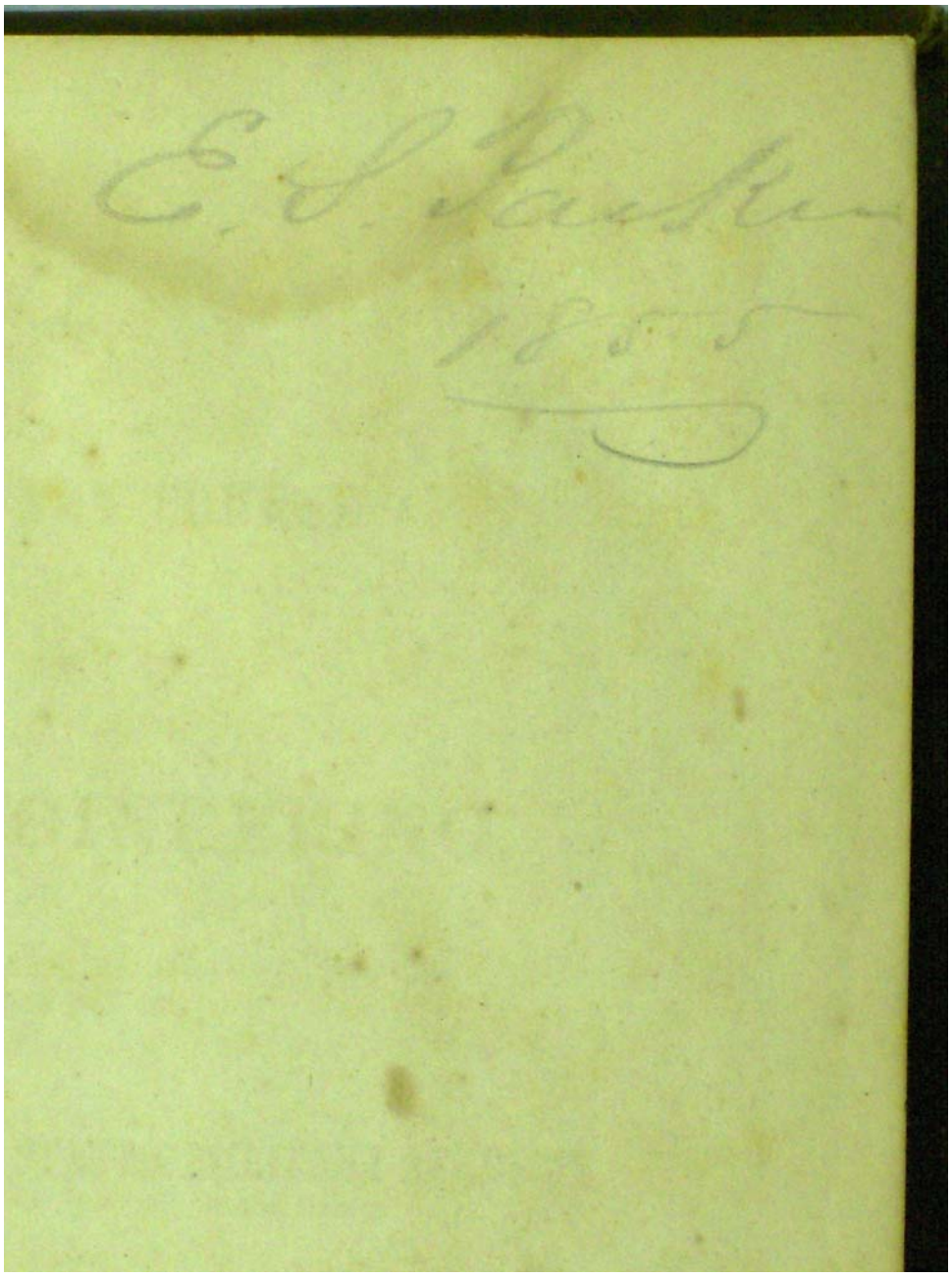

AN

ELEMENTARY COURSE

OF

CIVIL ENGINEERING,

FOR THE USE OF

CADETS OF THE UNITED STATES' MILITARY ACADEMY

BY

D. H. MAHAN, M. A.,

PROFESSOR OF MILITARY AND CIVIL ENGINEERING IN THE MILITARY ACADEMY.

SIXTH EDITION,

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NEW YORK:

JOHN WILEY, 167 BROADWAY.

1853.

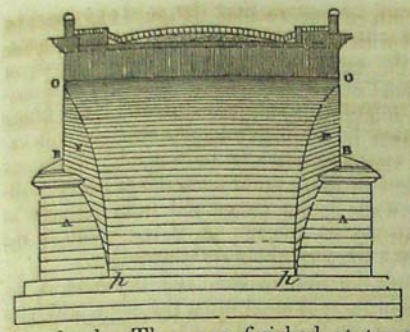


Fig. 114—Represents a cross section and elevation through the crown of Fig. 113, showing the arrangement also of the roadway, foot-paths, parapet, and cornice.

water-level. They are finished at top with a coping stone to preserve the masonry from the action of rain, &c.: this stone, termed the *hood*, may receive a conical, a spheroidal, or any other shape which will subserve the object in view, and produce a pleasing architectural effect, in keeping with the locality.

In streams subject to freshets and ice, the up stream starlings should receive a greater projection than those down stream, and, moreover, be built in the form of an inclined plane (Fig. 115)

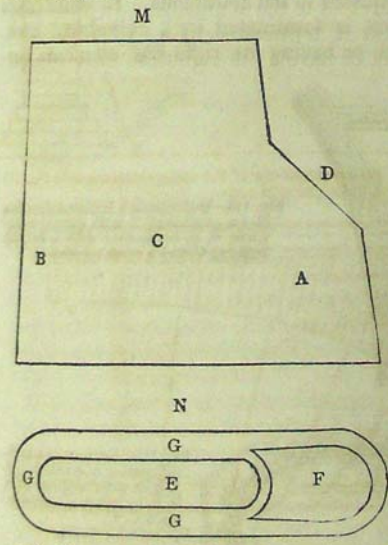
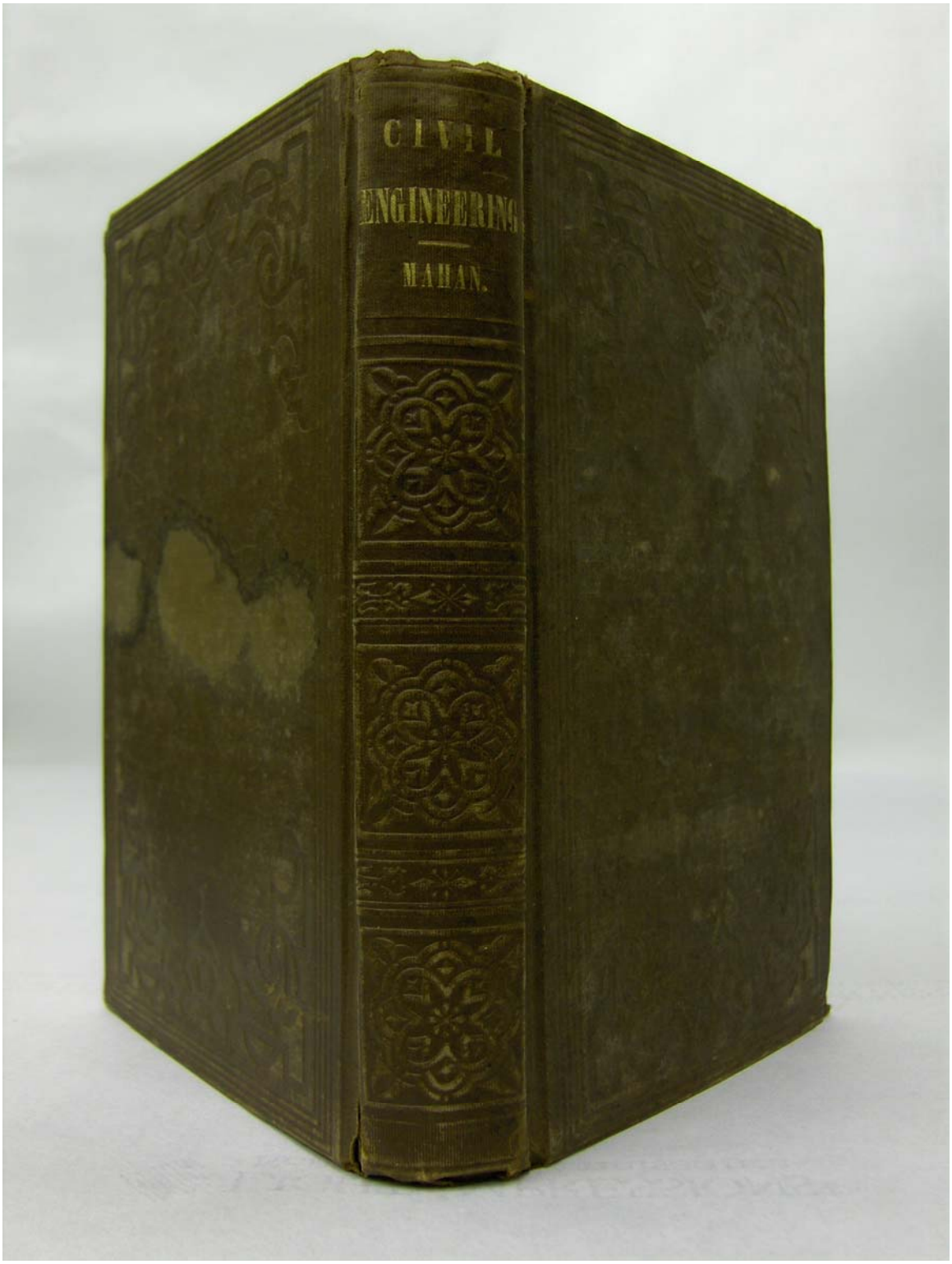


Fig. 115—Represents a side elevation M and plan N of a pier of the Potomac aqueduct, arranged with an ice-breaker starling.
A, up-stream starling, with the inclined ice-breaker D which rises from the low-water level above that of the highest freshets.
B, down-stream starling.
C, face of pier.
E, top of pier.
F, horizontal projection of top of ice-breaker.
GG, horizontal projection of faces of pier and starlings.

to facilitate the breaking of the ice, and its passage through the arches.

567. Where the banks of a water-course spanned by a bridge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REPORT
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1870.

ANNUAL REPORT

OF THE

COMMISSIONER OF INDIAN AFFAIRS

TO THE

SECRETARY OF THE INTERIOR

FOR

THE YEAR 1870.

WASHINGTON.
GOVERNMENT PRINTING OFFICE.
1870.

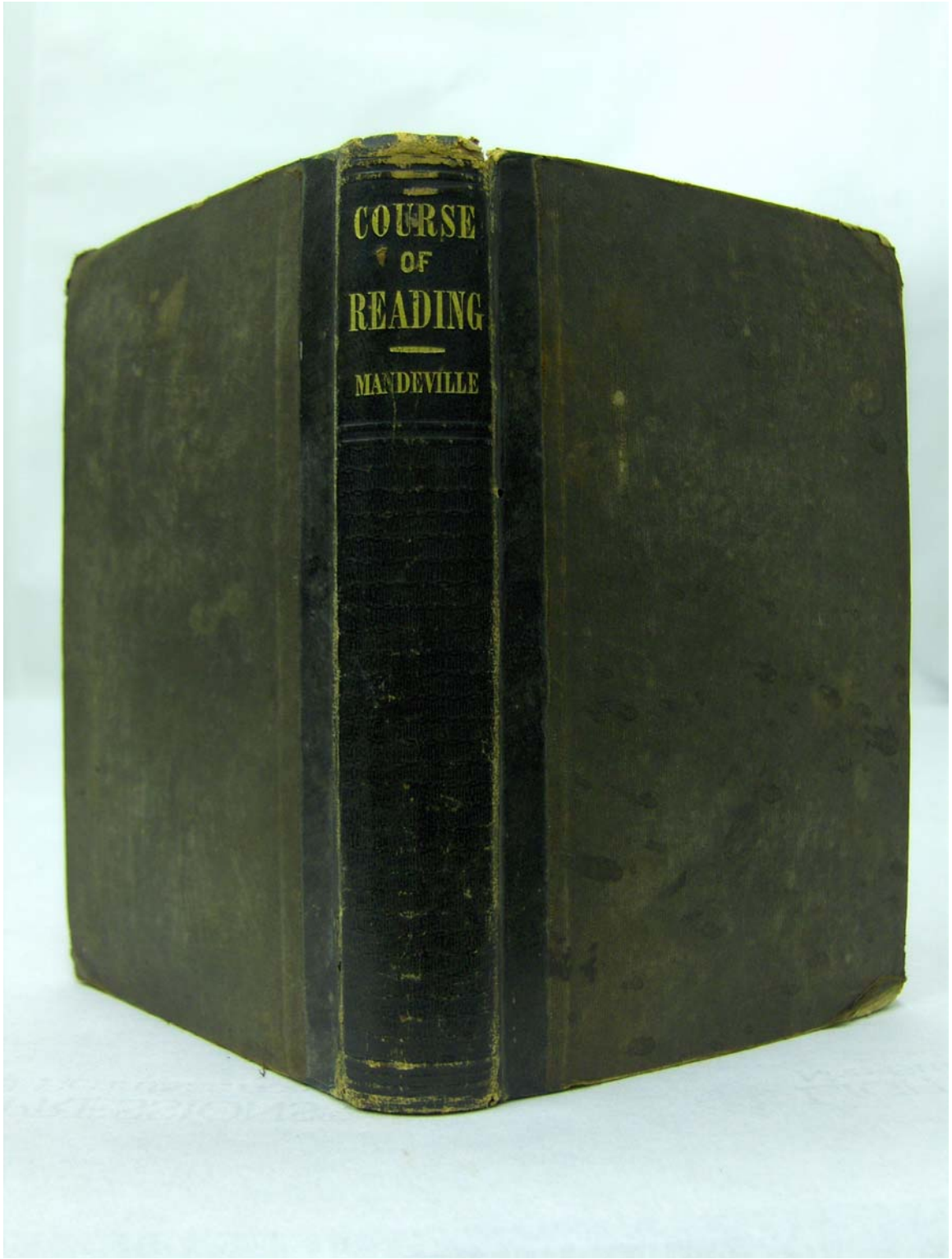
dian Territory by reason of the projected roads north and south and east and west through that Territory. Other roads in the South, aiming to reach the Pacific, will, of necessity, pass through immense tracts of Indian country, or country claimed by them. So with the Northern Pacific, which road must necessarily pass through several reservations, the quiet possession of which is guaranteed to the Indians by the solemn faith of treaties. Other roads are projected through the great Sioux district. The Sioux now are the most powerful and war-like tribe of Indians in the United States, and their persistent and determined opposition to railroads is well known. Any attempt, therefore, to penetrate their country in this way must produce a collision. These are matters which should receive the attention of the authorities of the Government and of Congress, and such steps be early taken as will avoid all difficulty.

As the annual reports of the various superintendents and agents of the Department embrace a mass of information in regard to the location, condition, and circumstances worthy of note, respecting the tribes under their charge, I omit on this occasion the usual detail of particulars in relation to each superintendency and agency, and refer to those reports, which are herewith appended.

Very respectfully, your obedient servant,

E. S. PARKER,
Commissioner.

Hon. J. D. Cox,
Secretary of the Interior.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AND THE

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ON THE PLAN

OF

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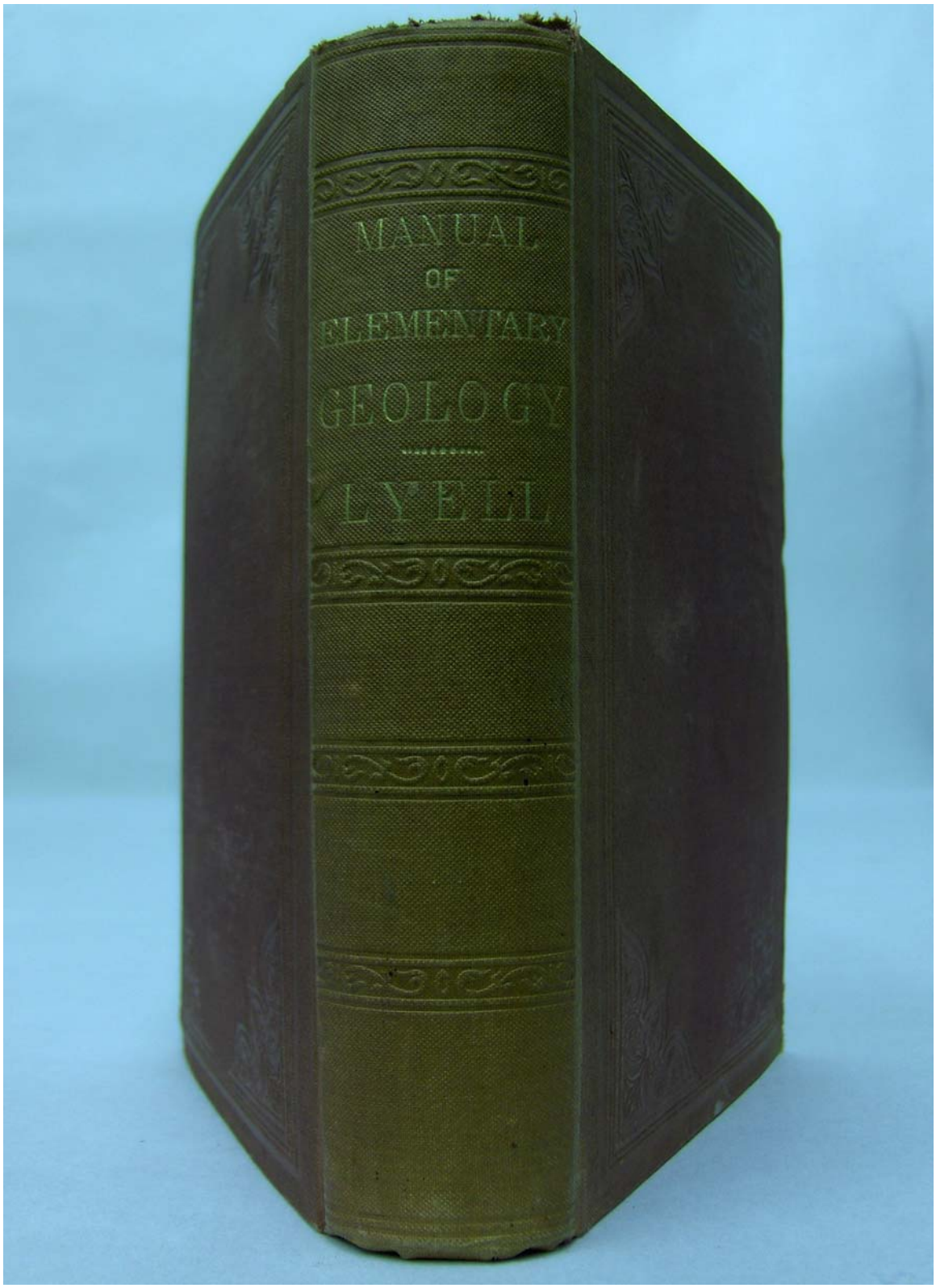
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AS ILLUSTRATED BY GEOLOGICAL MONUMENTS.

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AUTHOR OF "PRINCIPLES OF GEOLOGY," ETC.

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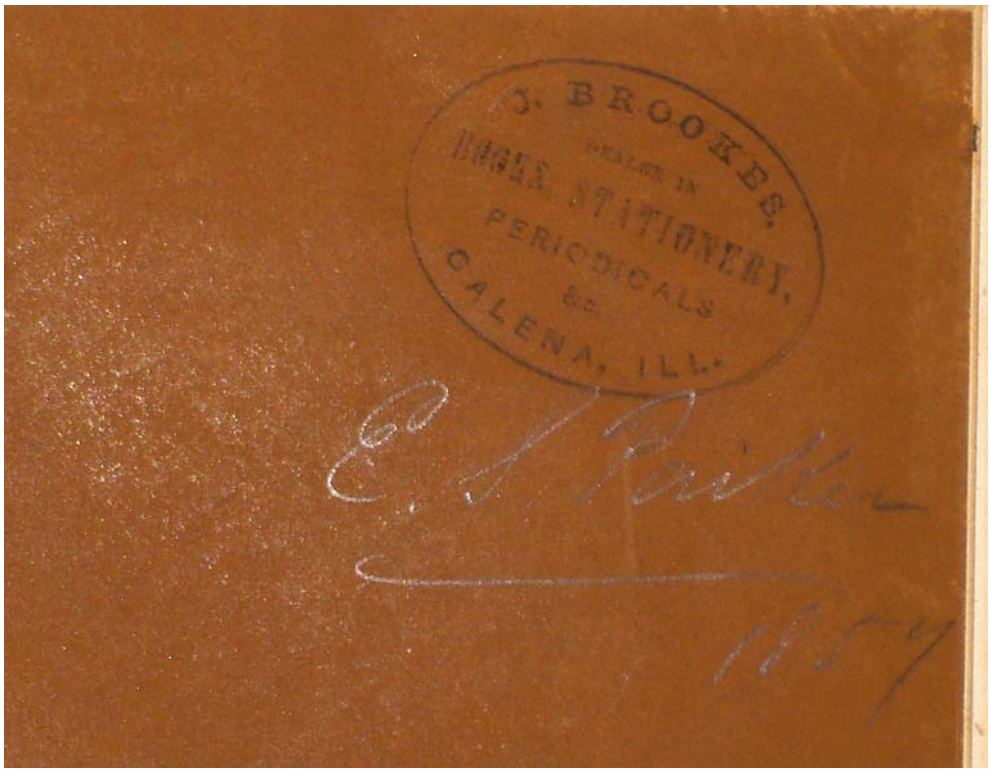
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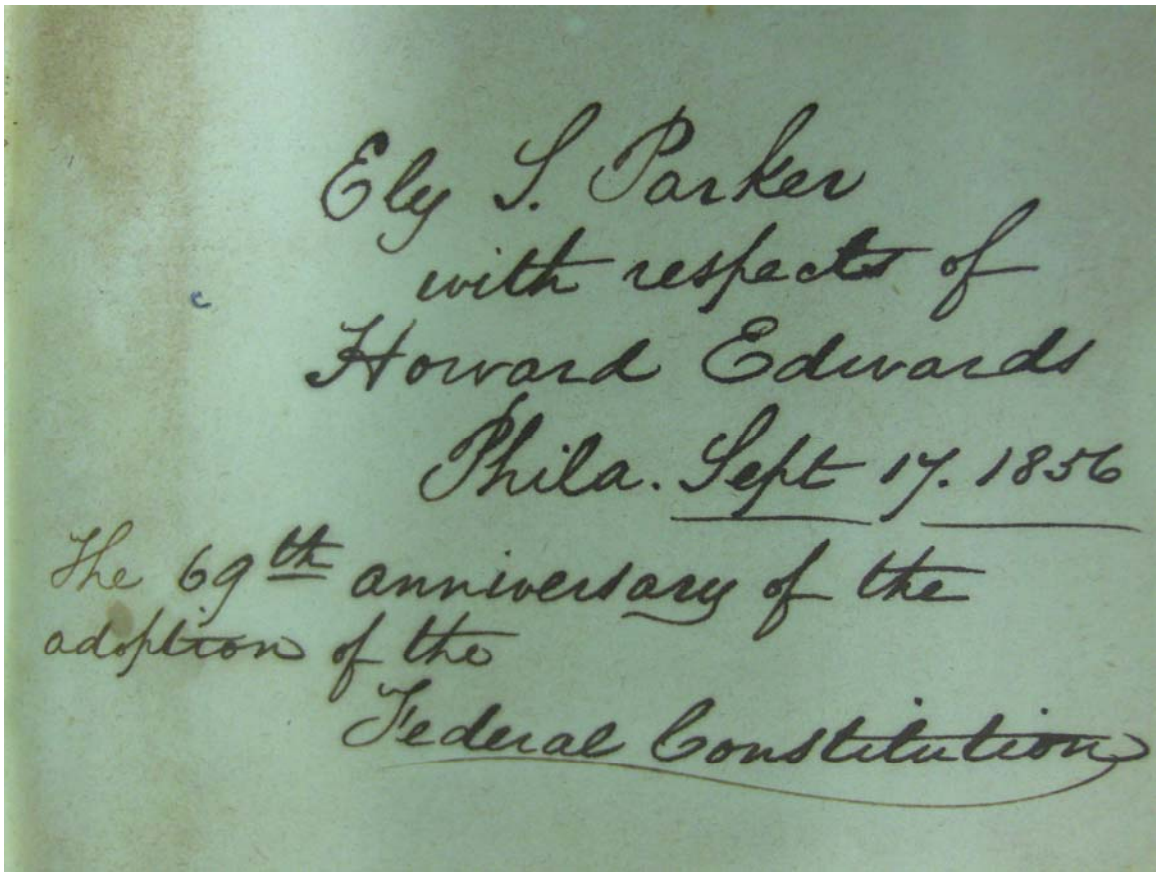
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Howard Edwards
Phila. Sept 17. 1856
The 69th anniversary of the
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