

**A PRELIMINARY REPORT
PREPARED
FOR SUBMISSION
TO ITS PRINCIPALS**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649060818

A Preliminary Report Prepared for Submission to Its Principals by American Committee on Electrolysis

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

AMERICAN COMMITTEE ON ELECTROLYSIS

**A PRELIMINARY REPORT
PREPARED
FOR SUBMISSION
TO ITS PRINCIPALS**

J. H. Libbey
7/13/16

A PRELIMINARY REPORT

Prepared for Submission to its Principals

BY

THE AMERICAN COMMITTEE
ON ELECTROLYSIS

APPOINTED BY

National Engineering Societies
and other

Interested Associations and Corporations

(PRINTED—NOT PUBLISHED)

This preliminary report is intended to include only statements of fact. It does not attempt to draw conclusions or to make recommendations or to discuss questions of law.

NEW YORK CITY
October, 1916

KF 1864



J. Harold Libby

Additional copies of this report may be procured from the Secretary of the American Institute of Electrical Engineers, 33 West 39th St., New York.

at

One dollar per copy.

COMMITTEE

BION J. ARNOLD, Chairman

American Electric Railway Association.

ALBERT S. RICHEY	Worcester, Mass.
R. P. STEVENS,	Youngstown, O.
CALVERT TOWNLEY,	New York City,

American Gas Institute.

ALBERT F. GANZ,	Hoboken, N. J.
J. A. GOULD,	Boston, Mass.
JACOB D. VON MAUR,	St. Louis, Mo.

American Institute of Electrical Engineers.

BION J. ARNOLD,	Chicago, Ill.
F. N. WATERMAN,	New York City
PAUL WINSOR,	Boston, Mass.

American Railway Engineering Association.

D. J. BRUMLEY,	Chicago, Ill.
E. B. KATTE,	New York City,
W. S. MURRAY,	New Haven, Ct.

American Telephone and Telegraph Company.

A. P. BOERI,	New York City,
F. L. RHODES,	New York City,
H. S. WARREN,	New York City,

American Water Works Association.

A. D. FLINN,	New York City,
D. D. JACKSON,	New York City,
E. E. MINOR,	New Haven, Ct.

National Bureau of Standards.

E. B. ROSA, Sec'y.	Washington, D.C.
--------------------	------------------

National Electric Light Association.

L. L. ELDEN,	Boston, Mass.
D. W. ROPER, Treas.	Chicago, Ill.
PHILIP TORCHIO,	New York City,

Natural Gas Association.

B. C. OLIPHANT,	Buffalo, N. Y.
FORREST M. TOWL,	New York City,
S. S. WYER,	Columbus, O.

SUB-COMMITTEES

1: PLAN AND SCOPE:

CALVERT TOWNLEY, Chairman.
ALBERT F. GANZ,
E. B. KATTE,
D. W. ROFER,
E. B. ROSA,
H. S. WARREN,
F. N. WATERMAN,
S. S. WYER.

2: PRINCIPLES AND DEFINITIONS:

E. B. ROSA, Chairman,
A. P. BOERI,
D. J. BRUMLEY,
D. D. JACKSON,
R. P. STEVENS.

3: METHODS OF MAKING ELECTROLYSIS SURVEYS:

J. D. VON MAUR, Chairman,
L. L. ELDEN,
E. E. MINOR,
B. C. OLIPHANT,
F. L. RHODES,
PAUL WINSOR.

4: EUROPEAN PRACTICE:

PHILIP TORCHIO, Chairman,
J. A. GOULD,
W. S. MURRAY,
FORREST M. TOWL,
CALVERT TOWNLEY.

5: AMERICAN PRACTICE:

F. N. WATERMAN, Chairman,
ALBERT F. GANZ,
E. B. KATTE,
ALBERT S. RICHEY,
D. W. ROFER,
H. S. WARREN
S. S. WYER.

6: PUBLICATION:

E. B. KATTE, CHAIRMAN,
A. D. FLINN,
ALBERT F. GANZ,
ALBERT S. RICHEY,
E. B. ROSA,
PHILIP TORCHIO,
H. S. WARREN,
F. N. WATERMAN,
S. S. WYER.

PREFACE.

Those familiar with the history of the electric railway industry in the United States in the early 90's and subsequently for a decade, will recall the great rapidity with which the electric railway was developed and the litigation that resulted between the gas and water companies and the electric railway companies over the introduction into the field of the electric railway using a grounded return circuit. The utility companies whose properties were threatened with damage from electrolysis due to these grounded return circuits of the railway companies, attempted by all legitimate means to prevent the acceptance of the grounded return circuit, with the result that in one or two cases,—for instance, in the city of Cincinnati, a complete metallic overhead return circuit was adopted and is still in operation, but the electric railway operated with a grounded return circuit in connection with the overhead trolley became the standard, and rapidly spread throughout the country, and still remains the standard for electric traction systems.

At first when the electric railway systems were small, and light cars were used, the quantity of current flowing through the rails was not large, and the possibility of damage from electrolysis was comparatively small, but as the systems were extended and the weight and number of cars greatly increased, the problem became much more serious, and began to demand special attention. It is only within the past four or five years that the subject has been sufficiently well understood by engineers generally to make it probable that their opinions could be made to agree upon standard methods for the prevention or adequate mitigation of electrolysis.

At the present time, due to the fact that the grounded return circuit system has been so long established and so extensively adopted, with the result that millions have been invested in copper for supplemental rail return circuits, the engineers now endeavoring to seek a solution of the question find themselves confronted with the problem not only how best to design and install a new system to prevent damage from electrolysis, but also

what can be done with the electric railway systems as they exist in cities today.

While recourse to the courts has always been open, the proving in court of the precise amount of damage that has been occasioned by electrolysis, as distinct from other causes, and accurately proportioning such damage between various electrical companies, has made the fixing of responsibility extremely difficult. In view of this unsatisfactory condition it was thought best by the National Societies representing those connected with the various utilities involved to take up the subject comprehensively and endeavor, if possible, by co-operation among themselves and with other interested associations and corporations to gather and classify information, and if then found feasible to agree upon and recommend methods which without being financially prohibitive will nevertheless practically eliminate damage from electrolysis.

The American Institute of Electrical Engineers with this object in view invited the following bodies to officially appoint representatives to serve upon a committee for which the name The American Committee on Electrolysis was finally adopted:

American Electric Railway Association.

American Gas Institute.

American Institute of Electrical Engineers.

American Railway Engineering Association.

American Telephone & Telegraph Company.

American Water Works Association.

National Bureau of Standards.

National Electric Light Association.

Natural Gas Association.

The first meeting of the Committee was held in the Directors' Room, American Institute of Electrical Engineers, 33 West 39th Street, New York City, May 27th, 1913, to make preliminary arrangements, and the second meeting held at the same place on February 25, 1914, resulted in the selection of a permanent chairman and secretary, and the appointment of the various sub-committees.

The result of the work of these sub-committees is embodied in the various sections of the accompanying report.

Owing to the complexity of the subject and the need for thorough discussion in the several technical bodies, and for further investigation by the interests involved the Committee has thought best not to attempt to issue a final report at the

present time, but has endeavored to present the subject in this preliminary report by such statements of fact as its members can, at this time, unanimously agree upon, with the expectation that, after the consideration of these statements of fact by the bodies whom the members of this committee represent, and such further investigation as may be necessary by the Committee, a report will ultimately be prepared, embodying principles, rules and recommendations which will form a basis for solving this complicated problem.

New York City,
September 21st, 1916.
