

**BULLETIN NO. 254, DEPARTMENT OF THE  
INTERIOR, UNITED STATES GEOLOGICAL  
SURVEY, REPORT OF PROGRESS IN THE  
GEOLOGICAL RESURVEY OF THE  
CRIPPLE CREEK DISTRICT, COLORADO**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649198986

Bulletin No. 254, Department of the interior, United States Geological Survey, Report of Progress in the Geological resurvey of the cripple creek district, Colorado by Waldemar Lindgren & Frederick Leslie Ransome

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](http://www.triestepublishing.com)

**WALDEMAR LINDGREN & FREDERICK LESLIE RANSOME**

**BULLETIN NO. 254, DEPARTMENT OF THE  
INTERIOR, UNITED STATES GEOLOGICAL  
SURVEY, REPORT OF PROGRESS IN THE  
GEOLOGICAL RESURVEY OF THE  
CRIPPLE CREEK DISTRICT, COLORADO**



Bulletin No. 254

Series { A, Economic Geology, 49  
B, Descriptive Geology, 61

DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

---

REPORT OF PROGRESS

IN THE

GEOLOGICAL RESURVEY OF THE CRIPPLE  
CREEK DISTRICT, COLORADO

BY

WALDEMAR LINDGREN AND FREDERICK LESLIE RANSOME



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904



## CONTENTS.

---

	Page.
Letter of transmittal.....	5
Introduction.....	7
Production.....	8
Mining and metallurgy.....	9
Topography.....	11
General geology.....	11
First geological survey of the district.....	11
Modifications of earlier results.....	12
Economic geology.....	14
Earlier work.....	14
Extent of productive territory.....	14
Underground development.....	15
Brief review of the mines.....	15
Character of the ores.....	20
Structural characteristics of the deposits.....	22
Types of deposits.....	22
Depth of oxidized zone.....	26
Relations of ore bodies to depth.....	26
Underground water.....	31
Subterranean gases.....	32
Future of the district.....	33
Index.....	35

100

10

100

100

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

100

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10

10



## LETTER OF TRANSMITTAL.

---

DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., November 3, 1904.*

SIR: I have the honor to transmit herewith the manuscript of a preliminary report on a "Resurvey of the Cripple Creek district of Colorado," by Messrs. Waldemar Lindgren and F. L. Ransome, under my general supervision.

Although only ten years had elapsed since a careful study of the geology of this district was made by Messrs. Cross and Penrose, the people of Colorado had been so strongly impressed with the economic importance of a scientific examination of the ground opened by mining operations during that period, that they urgently requested this resurvey and have materially assisted in its execution.

The present report, made in advance of the final laboratory examinations, is a summary of those facts that bear upon the economic development of the region and are of immediate importance to the miners. I therefore request that it be published with the least possible delay, that its results may be promptly available to all interested in the region.

Very respectfully,

S. F. EMMONS,

*Geologist in Charge Section of Metalliferous Deposits.*

HON. CHARLES D. WALCOTT,

*Director United States Geological Survey.*

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters.

2. The second part of the document outlines the various methods and tools used to collect and analyze data. It highlights the need for consistent and reliable data sources to ensure the validity of the findings.

3. The third part of the document describes the process of identifying trends and patterns in the data. It notes that careful analysis is required to distinguish between significant changes and minor fluctuations.

4. The fourth part of the document discusses the challenges and limitations of the data collection process. It acknowledges that certain factors, such as incomplete data or measurement errors, can affect the results.

5. The fifth part of the document provides a summary of the key findings and conclusions. It states that the data indicates a general upward trend in the variables being studied, although there are some notable exceptions.

6. The sixth part of the document offers recommendations for future research and data collection efforts. It suggests that more comprehensive data sets and improved measurement techniques would be beneficial.

7. The seventh part of the document discusses the implications of the findings for policy-making and decision-making. It suggests that the data can be used to inform strategies and interventions.

8. The eighth part of the document provides a detailed breakdown of the data by region and time period. It shows that the trends are consistent across different geographical areas and over time.

9. The ninth part of the document discusses the potential sources of error and bias in the data. It notes that human error and sampling bias are common issues that need to be addressed.

10. The tenth part of the document concludes the report and reiterates the main findings. It emphasizes that the data provides a clear picture of the current state of affairs and offers valuable insights for future action.

# REPORT OF PROGRESS IN THE GEOLOGICAL RESURVEY OF THE CRIPPLE CREEK DISTRICT, COLORADO.

By WALDEMAR LINDGREN and FREDERICK LESLIE RANSOME.

## INTRODUCTION.

The Cripple Creek gold deposits were discovered in 1891. Shortly afterwards, in 1894, an examination of the new district was undertaken by the United States Geological Survey, Mr. Whitman Cross having charge of geology and petrography and Mr. R. A. F. Penrose, jr., undertaking the examination of the mines. Their report, accompanied by a geological map, was published in the Sixteenth Annual Report of the Geological Survey, Part II, pages 1-207, and has for the last ten years served as a useful and accurate geological guide to mining operations.

With the astonishingly rapid development of the Cripple Creek mines the opportunities for geological study multiplied, revealing great complexity of vein phenomena and stimulating a desire for further investigation, particularly with a view of obtaining some evidence as to the persistence of the veins in depth. This desire found expression in a request by citizens of Colorado for a reexamination of the district by the United States Geological Survey and in an offer of cooperation, whereby the cost would be equally divided between the State of Colorado and the National Survey. The necessary amount having been subscribed in Cripple Creek, Colorado Springs, and Denver, the State contribution was put in the hands of Mr. John Wellington Finch, State geologist of Colorado, and by him disbursed. The cordial thanks of the geologists in charge of the work are due to Mr. Finch for his hearty and efficient cooperation.

The reexamination began with a thorough revision of the topographic map of Cripple Creek by Mr. R. T. Evans, Mr. E. M. Douglas in charge. This involved a great deal of painstaking work, nearly every prospect hole being located, as well as all shafts and tunnels. The new map is on the scale of 1:19,495, or about 2½ inches to the mile, and includes practically the same area as the old map, a small strip only being added on the western side, so that the total area mapped is about 40 square miles. The small developments outside of this area