Measurement Science and Standards in Forensic Handwriting Analysis:

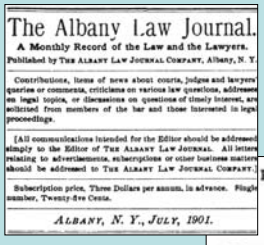
The ASTM years

Measurement Science and Standards in Forensic Handwriting Analysis:

The Last 100 Years

Measurement Science and Standards in Forensic Handwriting Analysis:

The Last 100 Years or So



The Albany Law Journal.

A Monthly Record of the Law and the Lawyers.

Published by The Albany Law Journal Company, Albany, N. Y.

Contributions, items of news about courts, judges and lawyers' queries or comments, criticisms on various law questions, addresses on legal topics, or discussions on questions of timely interest, are solicited from members of the bar and those interested in legal proceedings.

[All communications intended for the Editor should be addressed simply to the Editor of The Albany Law Journal. All letters relating to advertisements, subscriptions or other business matters should be addressed to The Albany Law Journal Company.]

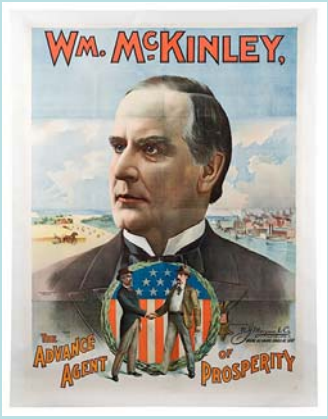
Subscription price, Three Dollars per annum, in advance. Single number, Twenty-five Cents.

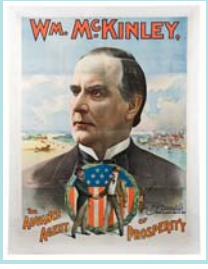
ALBANY, N. Y., JULY, 1901.

PHOTOGRAPHY AND FORGERY.

By Albert S. Osborne.

Photography is frequently of great assistance in detecting forgery or establishing the genuineness of a questioned handwriting. Modern lens makers, with the new Jena glass and the new formulas, are now able to construct lenses that make photographic reproductions with absolute accuracy of proportions and entirely free from distortion, and thus one of the early and legitimate objections to the use of photographs in court is entirely removed.



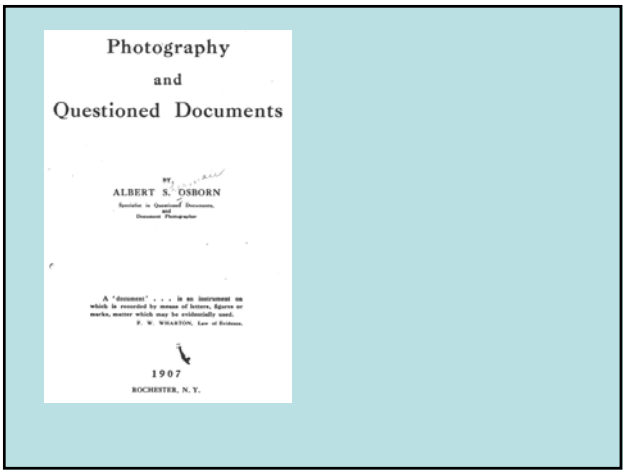

**ACT MARCH 3, 1901, c. 872.**

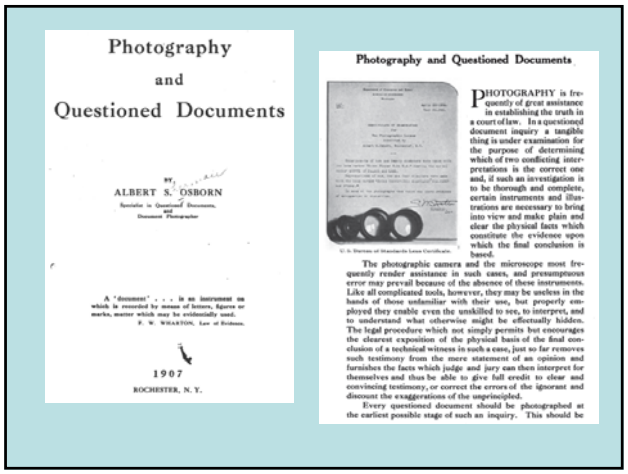
An Act to Establish the National Bureau of Standards. (31 Stat. 1449.)

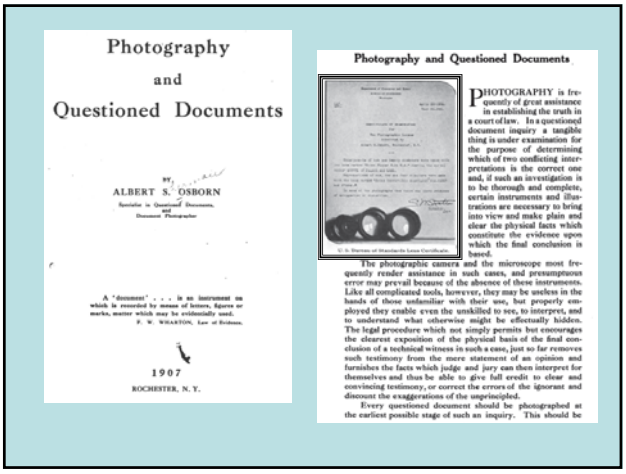
**National Bureau of Standards established.**

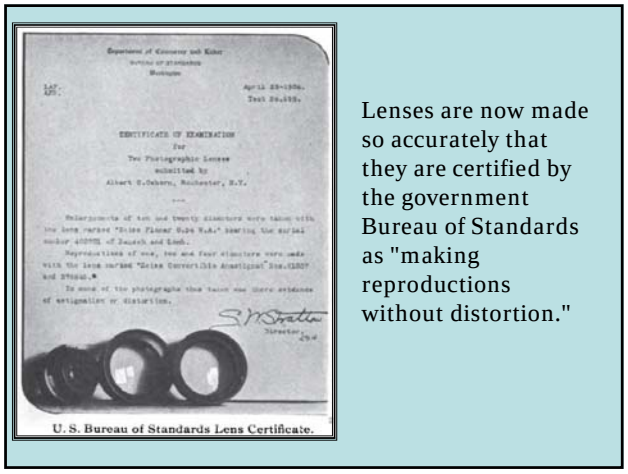
Be it enacted, etc., That the Office of Standard Weights and Measures shall hereafter be known as the National Bureau of Standards.

Act March 3, 1901, c. 872, § 1, 31 Stat. 1449.

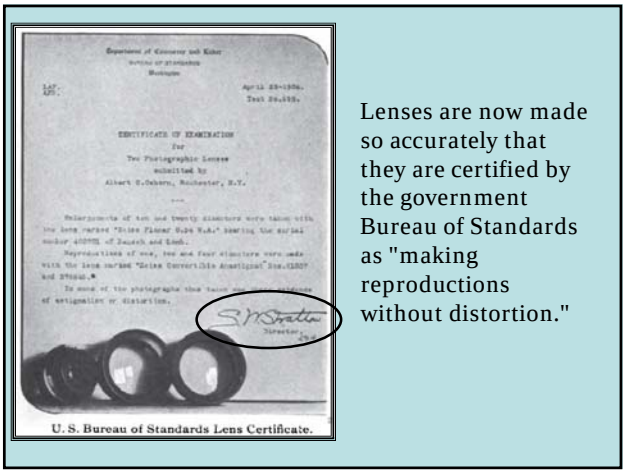



Lenses are now made so accurately that they are certified by the government Bureau of Standards as "making reproductions without distortion."

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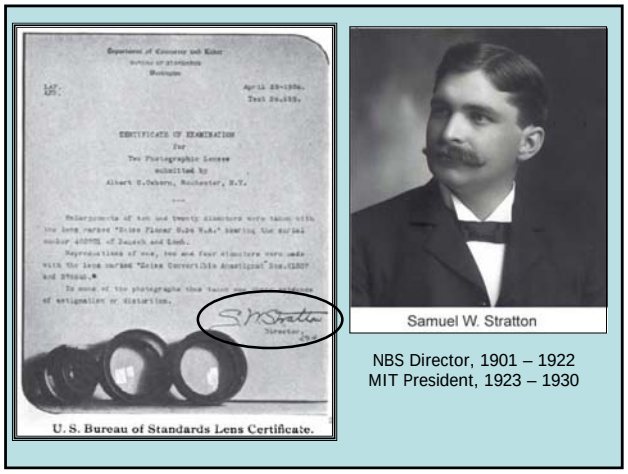
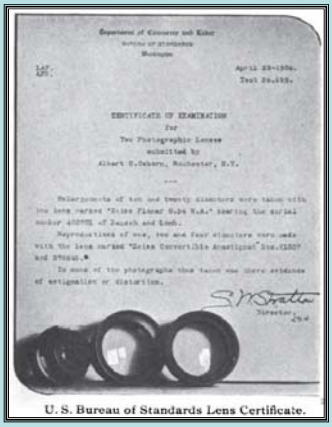


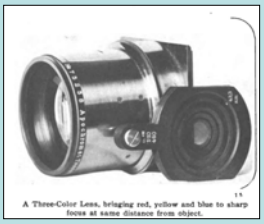



Samuel W. Stratton

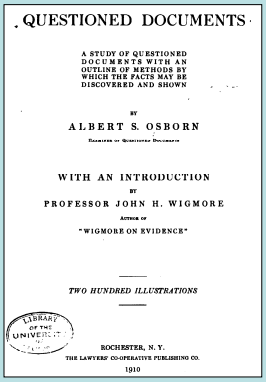
NBS Director, 1901 – 1922
MIT President, 1923 – 1930



U. S. Bureau of Standards Lens Certificate.



A Three-Color Lens, bringing red, yellow and blue to sharp focus at same distance from object.



QUESTIONED DOCUMENTS

A STUDY OF QUESTIONED DOCUMENTS WITH AN OUTLINE OF METHODS BY WHICH THE FACTS MAY BE DISCOVERED AND SHOWN

BY

ALBERT S. OSBORN

WITH AN INTRODUCTION

BY

PROFESSOR JOHN H. WIGMORE

"WIGMORE ON EVIDENCE"

TWO HUNDRED ILLUSTRATIONS

ROCHESTER, N. Y.

THE LAWYERS' CO-OPERATIVE PUBLISHING CO.

1910

Lenses are now made so accurately that they are certified by the government Bureau of Standards as "making reproductions without distortion."

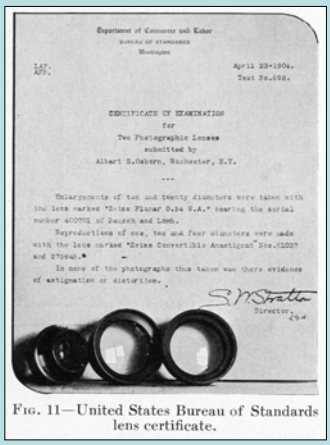


Fig. 11—United States Bureau of Standards lens certificate.

Fig. 10—A three-color lens, designed to bring the primary colors to sharp focus at same distance from object. This lens is certified by the United States Bureau of Standards.

Fig. 12—Four inch and one and three-eighths inch focus Micro-Photographic Lenses and Special Mounting Tube. Both lenses certified by United States Bureau of Standards.

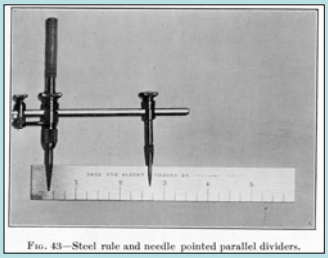
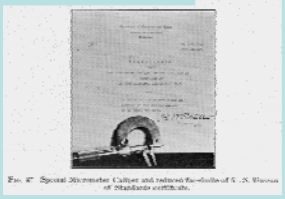


Fig. 43—Steel rule and needle pointed parallel dividers.

… very accurate measurements can be made with this scale ….

Every graduation throughout its whole length certified by the United States Bureau of Standards to be accurate within one thousandth of an inch.

… Fig. 47 a special micrometer caliper, made by Brown & Sharpe from a special design …. The screw thread of this instrument as well as of that shown in Fig. 46 has been certified by the United States Bureau of Standards to be correct to one ten-thousandth of an inch.

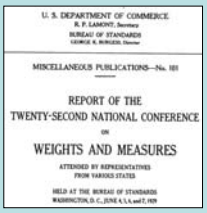


[In] 1913 … Albert S. Osborn, author of *Questioned Documents*, sent some micrometers to the Bureau for calibration.

By chance, the instruments were tested by Dr. Wilmer Souder of the weights and measures division, who became interested in the scientific detection of crime.

His laboratory, with Dr. Stratton's encouragement, was for almost two decades the principal crime research center in the Federal Government, long antedating the organization of a crime laboratory in the Federal Bureau of Investigation.

Rexmond C. Cochrane, *Measures for Progress: A history of the National Bureau of Standards*, Washington, DC, National Bureau of Standards, U. S. Department of Commerce,1966, p. 302.


U. S. DEPARTMENT OF COMMERCE
R. P. LAMONT, Secretary
BUREAU OF STANDARDS
GEORGE K. BURGESS, Director

MISCELLANEOUS PUBLICATIONS—No. 101

REPORT OF THE
TWENTY-SECOND NATIONAL CONFERENCE
ON
WEIGHTS AND MEASURES
ATTENDED BY REPRESENTATIVES FROM VARIOUS STATES
HELD AT THE BUREAU OF STANDARDS
WASHINGTON, D. C., JUNE 4, 5, 6, and 7, 1929

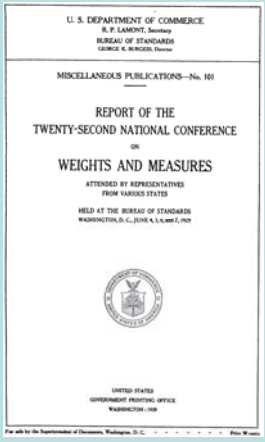
**IDENTIFICATION BY PRECISION METHODS OF COMPARISON AND MEASUREMENT**

By WILMER SOUDER, *Bureau of Standards*

**Interest in Standards**

The bureau has taken up the problems of identification of written and typewritten documents, signatures, guns, bullets, etc., in an effort to establish standards for this class of work.

There are, now available, a few experts who make identifications in a logical and precise manner, but there are many so-called experts who recognize no limitations, no standards, and no equipment as essential in this field.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UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1929

For sale by the Superintendent of Documents, Washington, D. C. - - - - - - - - Price 10 cents

**IDENTIFICATION BY PRECISION METHODS OF COMPARISON AND MEASUREMENT**

By WILMER SOUDER, *Bureau of Standards*

**Justification from Probability**

The justification for this definite conclusion of positive identification is based on the "law of probability." Briefly, and in non-technical terms, this law is interpreted from the fraction which represents the ratio of the number of times a specific characteristic appears divided by the maximum number of appearances possible, and for two or more characteristics appearing simultaneously the probability ratio is represented by the product of the individual fractions.

**IDENTIFICATION BY PRECISION METHODS OF COMPARISON AND MEASUREMENT**

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**IDENTIFICATION BY PRECISION METHODS OF COMPARISON AND MEASUREMENT**

By WILMER SOUDER, *Bureau of Standards*

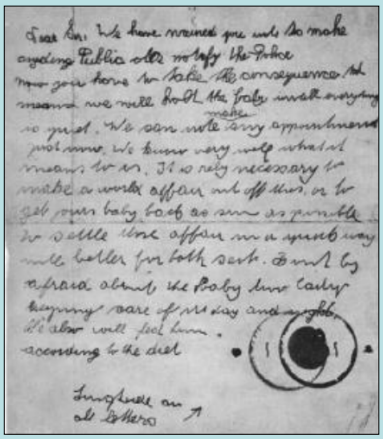
**Identification of Documents**

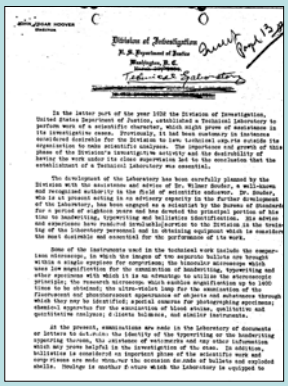
**Typewritten Documents.**

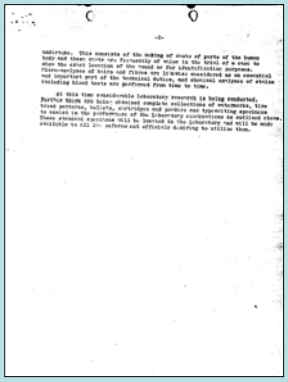
**Handwritten Documents.**

Expertness in this field necessitates the acquisition of many qualities of art which are difficult, if not impossible, of specification as belonging to any one particular phase of precision measurement. Experts develop an art which can not be transmitted by instruction. It may be acquired by those who have talents in this field and who are willing to put forth the efforts necessary to master the fundamentals. The author has witnessed methods of procedure and displays of results by experts and is convinced of the correctness of these conclusions.

**Ballistic Identifications**







The development of the laboratory has been carefully planned by the Division with the assistance and advice of Dr. Wilmer Souder ….

The development of the Laboratory has been carefully planned by the Division with the assistance and advice of Dr. Wilmer Souder, a well-known and recognized authority in the field of scientific endeavor. Dr. Souder, who is at present acting in an advisory capacity in the further development of the Laboratory, has been engaged as a scientist by the Bureau of Standards for a period of eighteen years and has devoted the principal portion of his time to handwriting, typewriting and ballistics identification. His advice and experience have rendered invaluable service to the Division in the training of the laboratory personnel and in obtaining equipment which is considered the most desirable and essential for the performance of its work.

Dr. Souder … has been engaged as a scientist by the Bureau of Standards … and has devoted the principal portion of his time to handwriting, typewriting and ballistics identification. His advice and experience have rendered invaluable service to the Division in the training of the laboratory personnel and in obtaining equipment ….

NOTES TO DU PONT HELD POSTDATED

Experts Testify Raskob Wrote Letter on Stock Deals Prior to Date They Bore

NO OBJECTION BY DEFENSE

Government's Case in $1,800,000 Tax Proceeding Enters Its Final Stage

In the $1,800,000 income tax proceeding against John J. Raskob and Pierre S. du Pont in the Old Postoffice Building, the Treasury yesterday called as an expert document witness Wilmer Souder of the National Bureau of Standards. He was one of the prosecution experts concerning the ransom notes at the trial of Bruno Richard Hauptmann for the murder of the Lindbergh baby.

He was followed by Alwyn Cole, a disputed documents expert of the Treasury Department, who testified independently to the same effect: that two letters admittedly written by Mr. Raskob to Mr. du Pont and signed on Jan. 10, 1930, were postdated Jan. 27 when they were written.

*NY Times*, May 25, 1937

DEFINITION AND SCOPE OF WORK OF THE EXAMINER OF QUESTIONED DOCUMENTS, DOCUMENT EXAMINER, OR DOCUMENT ANALYST

by Alwyn Cole, Examiner of Questioned Documents, Office of the Treasurer of the U.S., Washington, D.C.

One who makes critical examinations, comparisons, and analyses of documents: To establish genuineness or to expose forgery, or to reveal alterations, additions or deletions; to identify persons through documents or parts of documents, as by showing the authorship of handwriting, or the source of typewriting; to aid in fixing liability or culpability for any kind of fraud that makes use of documents, and generally to help protect the integrity of documents. Typical problems in this field are the identification of handwriting, typewriting, ink, paper, writing instruments, and establishment of the date, source, history, and relationships of documents. Other problems are the decipherment and sometimes restoration of obscure, deleted, or damaged parts of documents. Use is made of the microscope and other optical aids, of photographic cameras, and of a wide variety of photographic material adaptable for use with a variety of lighting methods including radiations in infrared and ultraviolet. Questions about documents are answered through the application of knowledge gained from experience and through application of knowledge and techniques in a number of other fields, such as chemistry, physics, mathematics, language studies, etc. The field of interest embraces

processes and the materials that go into the production as well as the methods, machines, instruments, and by which the parts of documents are formed or brought work often includes the study of the information document for discovery of evidence of spuriousness, or of persons, or to show significant relationships. The are usually incorporated into written reports for use tive and executive officers, boards, commissions, lawyers, s, and are often made the subject of testimony under and criminal trials which require the demonstration, visual aids, or reasons for conclusions or determinaire further explanation under cross-examination. Upon rs in this field are known by the term "handwriting ment examination as here defined includes expertise identification. It does not involve the employment e or engrossing skills, nor does it involve a study of character. Questions about documents arise in busicivil and criminal trials, or in any matter affected ty of written communications and records. esent concerning the examiner of questioned documents ted at the annual business meeting of the ty of Questioned Document Examiners, Toronto, Canada, June, 1969, and was adopted as a description or definition of the document examiner by the Society at that meeting.

Forensic Science

Charles R. Kingston

"Forensic Science is the application of those portions of all sciences as they relate to law."

Kingston, Charles R., **"Forensic Science"**, *Standardization News* STDNA, Vol. 1, No. 4, p. 8 (April 1973)

## ASTM E30

**1970 – American Society for Testing and Materials (ASTM) Committee E30 on Forensic Sciences Founded**

**Report on Forensic Science** By RICHARD L. BRUNELLE

A few Associate Referees have mentioned the reluctance of their administrators to provide time for their methods evaluation work and also to provide finances for their travel to the annual AOAC meetings. It is hoped that persistent efforts by Associate Referees in pointing out the importance of this methods evaluation program will eventually solve this problem.

Continuous efforts should be made by all forensic scientists to propagate this program, because the courts are demanding that experts use tried and proven methods for the examination of physical evidence. It is the responsibility of the crime laboratories to take the initiative in this respect and not leave the decisions of which methods must be used to parties unfamiliar with crime laboratory problems.

In the year ahead, continued efforts will be made to select Associate Referees to study additional areas of forensic science and to increase participation in the overall forensic methods evaluation program.

JOURNAL OF THE AOAC (Vol. 55, No. 2, 1972)

**Report on the American Society for Testing and Materials E-30 Committee Meeting**

Recently a new committee (E-30) dealing with the forensic sciences has been formed within the framework of the American Society for Testing and Materials (ASTM). The scope of that committee will include the development of nomenclature, definitions, equipment, methods, and standard reference materials for the collection, preservation, scientific examination, and reporting of physical evidence for forensic purposes.

The General Referee on Forensic Science has been appointed to serve as liaison officer to represent AOAC and work with ASTM Committee E-30 because there is some overlap of the work done by the 2 groups. The following is a report on the ASTM E-30 committee meeting on forensic science held February 22 and 23, 1971 in Phoenix, Arizona, in conjunction with the 23rd Annual Meeting of the American Academy of Forensic Sciences (AAFS). On February 22, 1971, the Committee met with approximately 40 attendees. Joseph English, Chairman of the Committee, gave a brief history of why the Forensic Science Committee was established and related that the following 7 subcommittees exist: Pathology-Biology, Criminalistics, Jurisprudence, Fingerprints, Toxicology, Questioned Documents, and Firearms and Tool Marks.

William Cavanaugh, Managing Director of ASTM, gave a brief talk regarding ASTM functions. He stated that it provides the framework to develop standards, but only the practitioners of the specialties actually set the standards. He explained that ASTM has its headquarters in Philadelphia with a staff of 140, that there are now 110 main committees made up of 22,000 professionals, and that these committees have some 2,000 subcommittees or task forces.

John Gunn, Chief of Laboratory Operations of the Bureau of Narcotics and Dangerous Drugs, represented the AOAC at the subcommittee meetings of the Criminalistics and Toxicology Sections. He also attended the main committee meeting of E-30, where a report was made by the various subcommittees.

JOURNAL OF THE AOAC (Vol. 55, No. 2, 1972)

## ASTM E30.02

1970 – ASTM Committee Founded

**1972 – First Standard**

**E444 Standard Descriptions of Scope of Work Relating to Forensic Document Examiners**

## Precedential

Alwyn Cole – an individual

He's from the Government and he's here to help

Adopted by another organization (ASQDE – 1969) then by ASTM

## ASTM E30

From 1972 to 1989

E444 was 3 standards in E30

The first standard.

The last standard.

The only standard.

## ASTM E30

**1989 – E30 revived**

## Following Precedent

Based on work by Government types

Started with procedures adopted by another organization

Brunelle and Pro
JOAC 55:823–826 (1972)

Kelly and Cantu
JOAC 58:122–125 (1975)

## Additional Precedents

Work moved forward by federal sponsored task group

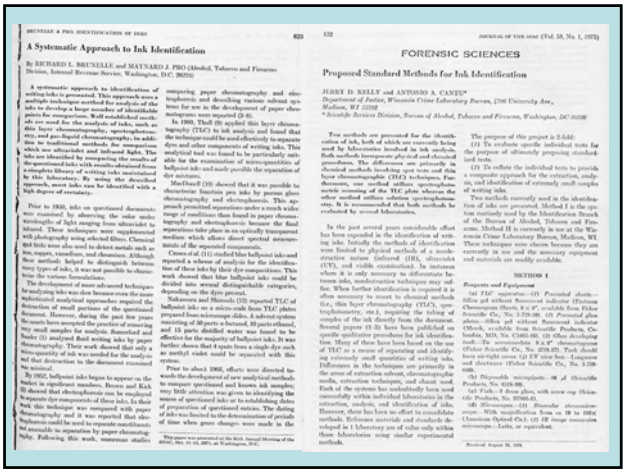
US Secret Service (Larry Stewart)

Group included practitioners from government and private practice

1996 – Group continued work with E1789 Standard Guide for Writing Ink Identification

1989 – E30 revived

**1991 – E1422 Standard Guide for Test Methods for Forensic Writing Ink Comparison**



A Systematic Approach to Ink Identification

By RICHARD L. BRUNELLE and MAYNARD J. PRO (Alcohol, Tobacco and Firearms Division, Internal Revenue Service, Washington, D.C. 20224)

FORENSIC SCIENCES

Proposed Standard Methods for Ink Identification

JERRY D. KELLY and ANTONIO A. CANTU*

Department of Justice, Wisconsin Crime Laboratory Bureau, 1700 University Ave., Madison, WI 53706

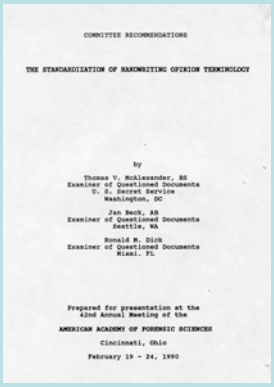
* Scientific Services Division, Bureau of Alcohol, Tobacco and Firearms, Washington, DC 20226

1989 – E30 revived

1991 – E1422 Standard Guide for Test Methods for Forensic Writing Ink Comparison

**1995 – E1658 Standard Terminology for Expressing Conclusions of Forensic Document Examiners**

## ASTM E30.02



COMMITTEE RECOMMENDATIONS

THE STANDARDIZATION OF HANDWRITING OPINION TERMINOLOGY

by

Thomas V. McAlexander, BS
Examiner of Questioned Documents
U. S. Secret Service
Washington, DC

Jan Beck, AB
Examiner of Questioned Documents
Seattle, WA

Ronald N. Dick
Examiner of Questioned Documents
Miami, FL

Prepared for presentation at the
42nd Annual Meeting of the
AMERICAN ACADEMY OF FORENSIC SCIENCES
Cincinnati, Ohio
February 19 - 24, 1990

McAlexander, T. V., Beck, J., and Dick, R., "The Standardization of Handwriting Opinion Terminology," *Journal of Forensic Science*, 36:2 (1991), pp. 311–319.

## Following Precedent

Based on work by Government and private practice examiners

Adopted by other organizations first
AAFS, ASQDE

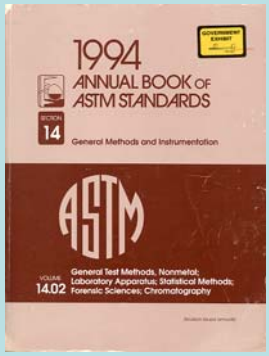
## The Courts

1993 – *Daubert*

1995 – *US v. Starzypyzel*

Tried using E444
and the new E1658

*Court not too impressed*




## *Finding Sources*

1997 – Published material having been exhausted, more low hanging fruit was sought.

SOPs drafted for ASCLD/LAB were collected as part of ASQDE program dealing with Daubert challenges.

Objective to meld the best parts for set of ASCLD/LAB compliant documents.

## SWGDOC and ASTM E30.02

**1997 – TWGDOC started**

The FBI formed the Technical Working Group on Forensic Document Examination (TWGDOC) in May 1997. At the first meeting of TWGDOC, the importance of standardizing procedures for handwriting comparison was again recognized as a primary task. TWGDOC's first sub-group, Standard Operating Protocols, was formed and has been meeting regularly since.

*From NIJ Solicitation, June 1998*

## SWGDOC and ASTM E30.02

1997 – TWGDOC started
1999 – Changed to SWGDOC

**2003 – First SWGDOC generated Standards**

*some organizational & procedural issues needed to be worked out*


## SWGDOC and ASTM E30.02

The Standards Development Process

## SWGDOC and E30.02

SWGDOC developed consensus standards
Using ASTM formatting
Issued as a SWGDOC Standard
Entered the ASTM process
Got an ASTM Work Item WK# and an E30.02 Technical Contact to handle it
The ASTM process proceeded until the Item was issued as an ASTM Standard
The SWGDOC Standard withdrawn so there was only one Standard at a time

Some of the Support Staff

*. . . and they can type*

E2195-02 Standard Terminology Relating to the Examination of Questioned Documents
E2285-03 Standard Guide for Examination of Mechanical Checkwriter Impressions
E2286-03 Standard Guide for Examination of Dry Seal Impressions
E2287-03 Standard Guide for Examination of Fracture Patterns and Paper Fiber Impressions on Single-Strike Film Ribbons and Typed Text
E2288-03 Standard Guide for Physical Match of Paper Cuts, Tears, and Perforations in Forensic Document Examinations
E2289-03 Standard Guide for Examination of Rubber Stamp Impressions
E2290-03 Standard Guide for Examination of Handwritten Items
E2291-03 Standard Guide for Indentation Examinations

E2331-04 Standard Guide for Examination of Altered Documents

E2325-05 Standard Guide for Non-destructive Examination of Paper

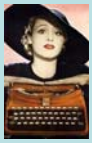
E2388-05 Standard Guide for Minimum Training Requirements for Forensic Document Examiners

E2389-05 Standard Guide for Examination of Documents Produced with Liquid Ink Jet Technology

E2390-06 Standard Guide for Examination of Documents Produced with Toner Technology

E 2494-08 Standard Guide for Examination of Typewritten Items

*It was ballot ready in 2001*



E2710-11 Standard Guide for Preservation of Charred Documents

E2711-11 Standard Guide for Preservation of Liquid Soaked Documents

E2765-11 Standard Practice for Use of Image Capture and Storage Technology in Forensic Document Examination


**YES**

**2012 - ASTM 30.02 was Dissolved**

## Some Items in Process in 2012

Standard Guide for the Examination of **Handwritten Items for Simulation and Tracing**

Standard Guide for the Examination of Documents Produced with **Thermal Printing Technology**

Standard Guide for Examination of **Counterfeit Documents**

Standard Guide for the Examination of **Line Intersections**

Standard Guide for the Examination of **Folds and Creases**

## Some Items in Process in 2012

- Standard **Classification of Typewriter Type Styles**
- Standard **Classification of Conventional Printing Processes**
- Standard **Classification of Writing Instruments**
- Standard **Classification of Facsimile Devices** using Transmitting Terminal Identifier/Receiving Terminal Identifier (TTI/RTI)

## Some Items in Process in 2012

- Standard Guide for the **Dating of Documents**
- Standard Guide for **Minimum Requirements for Notes** in Forensic Document Examinations
- Standard **Practice for the Case Review of Forensic Document Examinations**
- Standard Guide for the **Continuing Education and Professional Development** of Forensic Document Examiners