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MORRIS G. MOSES
Professional Engineer
325 HANSEN AVENUE
ALBANY, NEW YORK 12208

March 16,1987

Mr. William F. Donnelly,Chairman
Information Review Committee
Central Intelligence Agency
Washington,D.C. 20505

Dear Mr. Donnelly:

On September 23,1986,it was my pleasure to receive two sanitized items from the Committee and the DDS&T relative to activities of the Technical Operations Division,WWII Office of Censorship,NARA RG 216.

I currently find myself confronted with an anomaly in classified material,and would like to solicit the Committee's kind help in the dilemma.In 1984,parts of NARA RG 227(WWII Office of Scientific Research & Development) were declassified and released to me.Subsequent study of this material(some 100 or so pages) discloses material denied to me under earlier RG 216 requests.My personal appraisal is that there has been a compromise of material from RG 216.Material in question discusses steganography("pats" and "duffs")I.R. scanners("Wurlitzer Organ" operation) X-ray inspection ("Argus")and other operations of T.O.D. in detail.

Because of ethical considerations and the fact that the volume of material in question would pose an unusually heavy review burden on a page-by-page basis by Agency personnel,may I respectfully request the privilege of an informal personal interview with the Committee to discuss the matter? My hope is that the interview could be productive in securing further legitimate,responsible scholarly access to RG 216/TOD materials,short of in-toto release,but more voluminous than single document review requiring inordinate Agency manpower.

Please advise of any conditions prerequisite to such an interview.My studies encompass a definitive account of the social, economic,and technical roles that optics and photography played in WW II espionage.

May I thank the Review Committee for its past receptiveness and cooperation,and ask that you accept the enclosures with all good wishes and my compliments.

Very sincerely,
Morris G. Moses
Morris G. Moses

MGM/lb
cc:Walter Pforzheimer
Cynthia Fox,NARA

July 4, 1945

Refer to Sect. 19.1 EK
Div.19;wcl

Mr. C. J. Staud
Eastman Kodak Company
Kodak Park Works
Rochester, New York

Dear Mr. Staud:

As arranged by telegram yesterday, I am planning to be in Rochester on Wednesday, July 18, arriving at 9:40 a.m. and spending the one day there. I am now trying to get tickets. If there is any change, I shall let you know.

For your advance information, I am attaching a copy of a memorandum from Dr. W. S. Breon of the Office of Censorship together with a report on

25X1 [redacted]

Sincerely yours,

Warren C. Lothrop
Technical Aide to
Division 19

CC to Mr. G. A. Richter

SECRET

PHOTOGRAPHICA JOURNAL

VOLUME 3, No. 6 NOV.-DEC. 1986

Lassam
Paris Train Station becomes Musee D'Orsay

•

Isenburg
A Camera Changes Hands

•

Moses
Photo Patents and Everyman's CIA

•

Cross
A South African Collection - The Whysall Story

•

Liebhold
Why was photography invented? Was it cultural demand or progression of science? See the SPSE Pioneers Conference Review.

•

Gallery -
News and Notes

Happy New Year

See Page 2.

PHOTOGRAPHICA, PATENTS,

by Morris G. Moses

Editor's Note: Morris G. Moses of Albany, NY is an engineering graduate of Rensselaer Polytechnic Institute whose career has been principally in the chemical and nuclear process industries. Photographic history is Mr. Moses' hobby. His patent research and "detective work" have uncovered obscure historical data on cameras and photo processing which would still be dormant, were it not for his keen judgment and determined effort. Mr. Moses spoke at PhotoHistory VI sponsored by The Photographic Historical Society in Rochester. His paper and some of the patent-related illustrations are published here. JN

I must begin by taking to very gentle task those who decry their difficulties in researching the historical and technical details of photographica. To slightly paraphrase the good book, behold a wonderful thing has been put before you - yet a majority of you choose not to follow it. I will attempt to review patents as practical working sources of information, with the emphasis on the nuances and mechanics of the retrieval of information from them.

Early Background

The issuance of patents in the U.S. goes back to Colonial times which in turn inherited the practice from English patent law. The English were not the first to stimulate economy and commerce with patent protection and the very earliest world-wide patents were those granted in Venice, Italy in the first half of the fifteenth century. The first English patent was issued in 1641 to Samuel Winslow for a method of extracting salt. On February 16, 1790, Congress put the first patent bill up and this was signed by George Washington on April 10 of that year. The first U.S. patent was issued to Samuel Hopkins of Philadelphia on July 31, 1790 for the manufacture of potash. Numbering of U.S. patents began on July 13, 1836 with 9,557 un-numbered patents having been issued prior to that date. The first classification scheme of 1838 had 22 classes, and the classes that would relate most closely to photographica under that earliest scheme were class 2 - "Arts Polite";

Morris G. Moses

Class 4 - "Chemical Manufactures", and Class 14 - "Optical Instruments". The work of Daguerre and what soon followed would lead to the establishment of Class 95 which appeared in the index of 1872. The 1872 revision of the Patent Classification System was the largest single change in the patent reclassification efforts of the nineteenth century.

A Sampling of Photographic Patents Over the Years

It is an irony that those who sought to exploit their inventiveness through patent licensing in earliest days—Daguerre, Langenheim, Talbot and others—profited very little. Enforcement was difficult and attempts at restriction were regarded as hostile to others. Picking out some sample patents over the years from 1842 to 1872, we find "Daguerreotype Impressions-Mode of Fixing", Benjamin Stevens and Lemuel Morse, March 28, 1842; "Daguerreotype Pictures, Coloring" John Plumbe, October 22, 1842; "Daguerreotype Apparatus" William H. Lewis and H.J. Lewis, November 11, 1851; "Daguerreotype Pictures" Charles J. Anthony, January 1, 1851; "Daguerreotype Cases" J.F. Mascher, March 8, 1853 (Patent #9611); "Apparatus for Moving Stereoscopic Pictures" Albert Southworth and Josiah Hawes, #13,106, June 19, 1855; "Collodion for Photographic Pictures" July 15, 1856 and "Bituminous Ground for Photographic Pictures", October 21, 1856 - both of these by Victor M. Griswold; "Enlarging Photographs" #23,316, by D. Shive, Philadelphia, March 22, 1859; "Stereoscopic Picture Improvements #35635 William Southworth, June 17, 1862; "Photographic Rest for Support" #55,443 Oliver Sarony, June 5, 1866; "Phototometer" #55,797, S.G. Elliott, June 19, 1866 (a very early extinction-type exposure meter); "Printing Frame" #99, 462, Peter Murphy, February 1, 1870; "Photographic Lens" #126,979, R. Morrison, May 21, 1872 (an early lens design). The Daguerreotype era had run its course and the Collodion period was beginning to near its eclipse.

The Dawn of Gelatin and Flexible Films

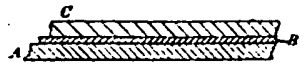
The deceiving simplicity of the Eastman and Goodwin film patents of the 1880's belie the legal battles surrounding them and the tremendous fortunes that were to be made based on them. One of the Eastman patents, #306, 594, "Photographic Film" showed only three layers designated simply as "A, B, and C". The drawing for Goodwin's patent #610,861 was a shaded square! In this same period, as the 1880's drew to an end, were some of Frank Brownell's work on camera design: #575,208, January 12, 1897, #579,126 on March 23, 1897, and #579,949 on April 6, 1897. Brownell had begun his distinguished career which can be traced pretty well through his patents. In 1900, we find some of the evidence of Henry Reichenbach's work on "Camera Backs" in patent #661,894 issued on November 13 of that year. Closer study of the patent literature in this period will show some of Eastman's and Reichenbach's collaborations on early film coating technologies.

The First Three Decades of the 20th Century

Eastman's first Kodak camera with cylindrical lens-shutter took form in the patent #388,850, patented September 4, 1888. The cameras had

AND EVERYMAN'S C.I.A.

306,594. PHOTOGRAPHIC FILM. GEORGE EASTMAN, Rochester, N. Y., assignor to the Eastman Dry Plate Company, same place. Filed Mar. 7, 1884. (No model.)



Claim.—1. As a new article of manufacture, a sensitive photographic film consisting of a coating of insoluble sensitized gelatine, a paper or equivalent support, and an interposed coating of soluble gelatine.

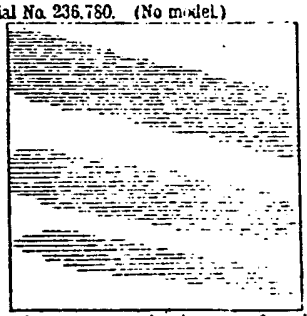
2. In a photographic film, the combination of the support A, the insoluble sensitive gelatino-argentic-emulsion film C, and the soluble interposed gelatine layer B, substantially as described.

3. In a film for photographic purposes, the combination of a backing sheet or support of paper or like material, a film of sensitized gelatine adapted to withstand the solvent action of water, and an intermediate film of soluble gelatine.

4. The herein-described sensitive flexible photographic film, consisting of the support A, having a layer of insoluble sensitized gelatine, C, attached thereto by means of an interposed soluble gelatine subsra-

One of the Eastman roll film patents.

610,861. PHOTOGRAPHIC PELLICLE AND PROCESS OF PRODUCING SAME. HANNIBAL GOODWIN, Newark, N. J. Filed May 2, 1887. Serial No. 236,780. (No model.)



Claim.—1. An improvement in the art of making transparent flexible, photographic-film pellicles, the same consisting in dissolv-

One of the Goodwin roll film patents.

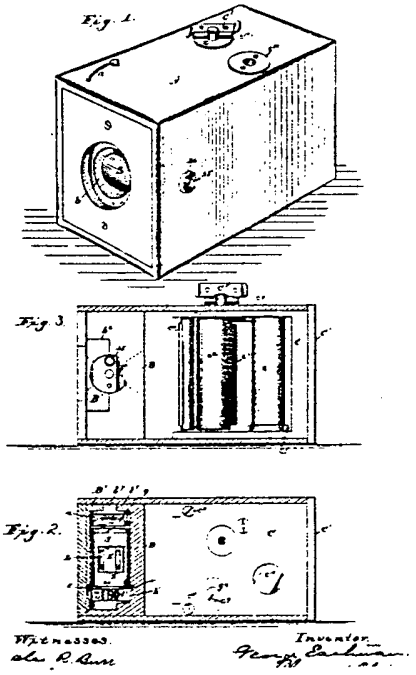
The deceiving simplicity of the Eastman and Goodwin film patents of the 1880's belie the legal battles surrounding them and the fortunes which were made based on these patents.

(No Model.) 3 Sheets—Sheet 1.

G. EASTMAN.

CAMERA.

No. 388,850 Patented Sept. 4, 1888.



The milestone Kodak Camera patent of 1888.

begun to come out of production earlier in June 1888. With the price of $10 for 100 photographs and the volume of advertising placed in over a dozen magazines of that era, amateur photography was put on the map forever. The subtleties of technical and economic warfare in these formative years of flexible film can be traced out in the patent literature, and the fortunes of Brownell, Turner, and the Eastman and Blair companies are forever inscribed in the patent literature for any diligent researcher.

In the early part of the century, the sleeping giant of photography woke up all over the world, and a cursory inspection of the patent literature has produced the following patents listed at random:

"Camera" #843,140, William Folmer, February 5, 1907; "Focusing Screen" #856,618, Frank A. Brownell, June 11, 1907; "Photographic Camera" #855,004, Lodewyk Holst and Louis Borum, May 28, 1907; "Folding Camera" #903,533, Frederick A. Anthony, November 10, 1908; "Vest Pocket Camera" Magnus Niell, #904,005, November 17, 1908 (This is the inventor of the well-known EXPO watch camera, itself the subject of patent #769,319, dated September 6, 1904); "Camera" Bartram Walker, #910,750, January 26, 1909; "Chronometric Camera Shutter' #916,346, March 23, 1909; 'Photographic Camera Shutter" Fred Schmid #975,464, November 15, 1910; "Magazine Developing Camera" #1003533, Charles Spery, September 19, 1911; "Shutter Operating Mechanism" Reinhold Heidecke, October 7, 1913, #1075101; "Motion Picture Camera" #1151566, Herman Casler, August 31, 1915; "Autographic Camera" #1240910, Roy Wilmot, September 25, 1917; "Film Magazine" #1215534, Albert S. Howell, February 13, 1917; "Silent Camera Shutter" #1298755, Albert Matter & Fred Conley, April 1, 1919; "Stylus Attachment for Camera" #1473798, Charles Speidel, November 13, 1923; "Enlarging Camera" #1573314, Emanuel Goldbert, Dresden, Germany, February 16, 1926; "Film Photographic Camera" #1733234, Umberto Nistri, Rome, Italy, October 29, 1929; "Exposure Guide for Cmaera Shutters" #1795797, William A. Riddell, Eastman Kodak Company, March 10, 1931; "Printing Apparatus for Photographic Purposes" #1796258, Oskar Barnack, Leitz-Wetzlar, March 10, 1931; "Distance Meter" #1930432, Oskar Barnack; "Photographic Camera" #2032061, Heinz Kuppenbender, Dresden, February 25, 1936 (one of the many patents useful in tracing out the history and technology of the CONTAX); "Photographic Camera" #2104094, Hubert Nerwin, Dresden, February 4, 1938 (One of the patents issued on the TENAX to a name many will recognize). The above is but a brief sampling of patents issued in the early 20th century when the photographic industry was undergoing a revolution in terms of apparatus for the amateur, as well as professional. The point in the recital is that you will have recognized names or certain developments through patents. Now let us take a look at the mechanics and practical methodologies of retrieval of research information from the patent literature.

How to Find the Winning Numbers

There are several tools in the patent research game. One, the basic of these, is the classification table which breaks down the "art," as it is called, into subclassifications. The current class number for photography is class 354 and this is further broken down currently into over 400 subclasses. just about every optical and mechanical configuration is covered and an example will show how the system is applied. The patent office periodically puts out lists, called subclass lists, on which appear the patent number of those arts corresponding to the subclasses in the 354 tables.

Taking subclass 205 as an example, we go to the 354/205 listings and find that the first patent number shown is #472,257. This patent turns out to be one for a "Photographic Camera" issued to Benjamin Edwards of London. It issued in the U.S. on April 5, 1892 and had previously issued as British patent #11,416 on July 16, 1889. Already we have quite a bit of background on one of the first patents for an early focal plane roller-blind shutter. The remaining patent numbers under the 205 group will give the researcher in focal plane shutters a good beginning into the history and technology of this particular art. It will not be a perfect coverage, however, since it must be borne in mind that patent classification systems have evolved over a century and have always been subject to human interpretation.

You will also note that although you have entered the classification under 354, older patents will show up as having been classified under the very early classes of 2, 4, or 18 or in the intermediate class of 95 which appeared from 1872 to the late 1960's. Other vital tools in the researcher's armory will be the Annual Indices and the weekly gazettes. The Annual Index, published from 1842 in various formats, permits the researcher to enter the patent literature chronologically by subject, inventor's name, and in many cases, by assignee. There are many subtleties in subject searching and you will soon discover that "Optical device or part thereof" can hide the details of a lens design if you are not persistent in your searches. From time to time, the Patent Office has issued what they call "definitions" in which they try to explain variations in the terminologies they employ for differing arts and subclasses.

Another device in the patent literature is the file wrapper, or patent office official file history. This document, often several hundred pages in length, gives the running account of all paper work that ensued from the moment the inventor first filed his application for the patent until the time it was granted. This document will include what are called all office actions, denials and grants of claims (the legal heart of the patent) and very often, addresses which are of vital importance in reconstructing the history and often finding the inventor or his heirs personally.

The assignment indexes, another tool, often permit the researcher to start with nothing but a company to whom the inventor might have sold his rights and work back to the patent where only the company's name and a time span are known, and where the indexes might have missed such facts. In short, there are many strategies in research—the major ones being the annual indexes, the subclassification lists, the file histories, and the assignment "libers" (or books).

Where to Find the Winning Numbers

PUBLIC PATENT DEPOSITORY LIBRARIES

ALABAMA
Birmingham Public Library

ARIZONA
Tempe—Science Library, Arizona State University

CALIFORNIA
Los Angeles Public Library
Sacramento—California State Library
Sunnyvale—Patent Information Clearinghouse

COLORADO
Denver Public Library

DELAWARE
Newark—University of Delaware Library

GEORGIA
Atlanta—Price Gilbert Memorial Library, Georgia Institute of Technology

ILLINOIS
Chicago Public Library

INDIANA
Indianapolis-Marion County Public Library*

LOUISIANA
Baton Rouge—Troy H. Middleton Library, Louisiana State University

MASSACHUSETTS
Boston Public Library

MICHIGAN
Detroit Public Library

MINNESOTA
Minneapolis Public Library and Information Center

MISSOURI
Kansas City—Linda Hall Library
St. Louis Public Library

NEBRASKA
Lincoln—Engineering Library, University of Nebraska—Lincoln

NEVADA
Reno—University of Nevada Library*

NEW HAMPSHIRE
Durham—University of New Hampshire Library

NEW JERSEY
Newark Public Library

NEW YORK
Albany—New York State Library
Buffalo & Erie County Public Library
New York Public Library, The Research Libraries

NORTH CAROLINA
Raleigh—D.H. Hill Library, North Carolina State University

OHIO
Cincinnati & Hamilton County Public Library
Cleveland Public Library
Columbus—Ohio State University Libraries
Toledo/Lucas County Public Library

OKLAHOMA
Stillwater—Oklahoma State University Library

PENNSYLVANIA
Cambridge Springs—Alliance College Library*
Philadelphia—Franklin Institute Library
Pittsburgh—Carnegie Library of Pittsburgh
University Park—Pattee Library, Pennsylvania State University

RHODE ISLAND
Providence Public Library

SOUTH CAROLINA
Charleston—Medical University of South Carolina Library

TENNESSEE
Memphis & Shelby County Public Library

TEXAS
Austin—McKinney Engineering Library, University of Texas*
Dallas Public Library
Houston—Fondren Library, Rice University

WASHINGTON
Seattle—Engineering Library, University of Washington

WISCONSIN
Madison—Kurt F. Wendt Engineering Library, University of Wisconsin
Milwaukee Public Library

A listing of locations for the U.S. Public Patent Depository Libraries (PDL's). Note that Ohio and Pennsylvania each have four such libraries.

Before assuming that a trip to Washington, DC will strain the pocketbook to the point of discouragement, the researcher is admonished to discover the world of treasures that lay in store for him in near-magic places called Patent Depository Libraries. These Libraries (PDL's) have been established by Act of Congress and are located in over 58 locations, scattered through the 50 states. Most of these patent libraries are no more than a few hours driving time from any point in the United States. They all contain complete collections of U.S. patents from the very earliest, as well as the working tools such as indices, classification manuals, subclass listings and definitions. Up to a few years ago, the only common technique for searching the subclass listings was through microfilm reels in the PDL's. However, in 1983, a program called CASSIS (Classification and Search Support Information System) was set up in the PDL's. CASSIS is a computer peripheral work station which allows the patron researcher at the remote depository library to go directly "on-line" to the main patent data storage memories in the Patent and Trademark Office itself. CASSIS has several "menus" among which are: (1) Given a given class and subclass, CASSIS will print out the subclass listings back to the earliest (2) Given key words, CASSIS will identify all classifications whose titles contain those words (3) CASSIS will display Classification titles in several different ways to permit cross-checking of subclassifications where more than one technical interpretation has been given the art. CASSIS programs designed to be implemented in the future include search by inventor's name for a limited time period as well as search by assignee's name for a limited time period. The author has found that the strategy of using the original "hard copy" patents (actual paper copies available at the PDL), combined with the microfilm subclass lists plus the CASSIS, will multiply and often be synergistic—i.e. yield more than any individual strategy by itself or—two strategies might add up to the equivalent of three.

The greatest news to many people is that the Patent Depository Libraries are free to the user. The only admonition given at this time to the researcher is that they call or write in advance to assure that a trained staff member will be available to work with them during initial visits when the collections first pose an otherwise mass of confusion. After a few sessions in the PDL, the average researcher will "hear the bells" and "see the lights go on" in his search for photographic facts.

Expect the Unexpected

The basic information about the patent is usually par for the course,

but occasionally, bonuses will creep into the research. For a few years, in the writer's quest for knowledge of the history and technology of the subminiature camera, he was perplexed as to the origins of the ULCA camera—a novelty subminiature made in Pittsburgh, circa 1936. The clue was under his nose all the time in the form of the patent number, cast, in tiny numbers of course, on the back of the camera. The magic number disclosed that the camera had been the product of a German inventor, one G. Henneberger and had come to America by way of the English toy trade and licensing to the Wolverine Toy Company. The German patent and the English patent all left a trail.

Innocuously tucked in the pages of the file history for patent #2420628 was something called a page headed "Secrecy Order." The patent issued on May 13, 1947 to one Joseph Stoiber of Eastman Kodak Company, having been filed on February 6, 1945. Under the terms of the Patent Secrecy acts in effect at that time, the invention had been classified secret, and the order subsequently rescinded after the end of World War II. What was the need for secrecy? The patent was for the famous Kodak "Matchbox" camera—issued to the OSS (predecessor of the CIA) during World War II. From the file history, it was a short step to the very beginnings of the camera's conception by a member of OSS and its subsequent production by Kodak.

An unexpected windfall during the author's researches into the conceptual days of the famed MINOX camera came when he discovered an assignment sheet for the camera. The assignment reveals that on May 19, 1937, Walter Zapp, the primary inventor of the camera, appeared before the American Consul in Riga, Latvia in connection with his patent on the camera. You will note a consular seal and fee stamp on the lower part of the assignment. At the time, Zapp paid the equivalent of $2.00 American money for the stamp, never dreaming that decades later, collectors would gladly pay well over 100 times that amount for a specimen of the first working version of his inimitable MINOX. There are a million stories in Patent City.

Still another example of the twists and turns in the unexpected paths of patents is the patent for a winding mechanism, invented by one Paul Harter of Germany in 1954. Some of you are way ahead of me in recognizing the shape of the lever. Despite the availability of an illustrated parts list for lever-wind RETINA cameras, the writer could never find an explanation of how the rack gearing and shutter winding mechanisms were supposed to work. That is, until he discovered this particular patent and noticed the shape of the lever itself. It was very rewarding, even if the text had to be read three times to be understood. It was additionally rewarding when the existence of the patent was made known to a repairman who returned the favor in services.

Foreign Patents Don't Have to Be Foreign

Foreign patents and patent systems certainly deserve the researcher's attentions and although the PDL's in general have small holdings in these areas, it is wise to know the rudiments of foreign search techniques. They basically parallel those of the U.S. in methodology—the indices, classifications, subclassifications, and all the ancillary documentation. The largest collection of foreign patents and foreign patent documentation in the U.S. is held in the Scientific Library of the Patent Office at Alexandria, Virginia and is available by appointment. Classification schemes for British class 98, German class 57, Japanese class 103 and other analogous classes in foreign photographic patents are available from Alexandria or directly from each respective foreign patent office. They are rarely available totally translated, but it is well worth the effort to struggle with a foreign dictionary or to find a friendly translator. There does exist in Alexandria a foreign cross-reference file which lists foreign patent numbers against known U.S. patent numbers. In 1954, the first successful attempts to begin an International Patent Classification scheme (IPC) began. The alpha-numeric combination chosen for photography was IPC GO 3b and it is possible by means of what is known as a Concordance to cross-reference the American class 354 or British 98 or any other into IPC and go back in time for foreign documentation. When it comes to Russian patents, the most obvious and well-documented source would be the All Union Scientific Library in Moscow. Unfortunately, they are slow in corresponding. The undaunted researcher will enjoy the service rendered by the British Science Library in this area if he cannot fill in the gaps he finds in the Russian holdings at the U.S. Patent Office.

For the adventuresome type, one can go back into the Japanese patent literature to the year 1886 and find abstracts, along with indices by inventor's name and subject of invention. One patent found by the author in the 25th year of the Showa Era (Western time—1950 A.D.) was that shown for the cigarette lighter camera in Japanese Patent 26-4826. Many of you will recognize it as the Echo-8 lighter camera of 1951. The British began indexing in 1854, retrospective for 1617 to 1852 on up to the present. The first French index was published in 1856, retrospective to 1844 through 1851 and on up to the current times. The U.S. Scientific Library in the Patent Office now holds nearly 14 million foreign patents and hundreds of thousands of anciallary documents in the foreign patent literature. As an exercise in paper chasing, the writer managed to find 41 foreign patents, all issued on the MINOX camera, including those from Poland, Norway, Finland, Estonia, and Egypt. Paraphrasing what Revlon cosmetics says about variety of lipstick colors, the patent offices of the world can truly boast, "we've got your number" to the conscientious researcher. Worthwhile mentioning here, as adjuncts to foreign patent retrieval are the British "Photographic Abstracts" begun in 1920 and issued annually up to the present. These contain patent reference infomation, and only recently have had to publish this data at irregular intervals because of the explosion of material in this area of photography.

But What About the C.I.A.?

Patents have helped the writer not only find pure technical information and historical facts, but often were the key to many interviews with living inventors. Patents also lead to archival repositories—but that subject is best left for another discourse. The next time you feel stumped for some historic or technical information—something you cannot find in the price guides or secondary literature or the popular magazines—try something that has been under all our noses for well over a century. Try your hand at the patent literature of the world—everyman's C.I.A. After some practice, you will begin to realize that those initials have another meaning for patent literature hunters of photographica—they really stand for Camera Intelligence Agency.

May 10, 1945.

Dr. Robley D. Evans,
Room 6-315, Department of Physics,
Massachusetts Institute of Technology,
Cambridge 39, Mass.

Dear Dr. Evans:

Enclosed are photostats of 5 pages of a report we received covering the German method of making micro-dots. Dr. Lothrop told me you were busily engaged in 'simulation' work and thought that the attached would be of value.

Sincerely,

E. C. Pierce.

Enclosures:
As above.
Return receipt.
cc: Dr. Lothrop

Secrets Of A World War II Matchbox Camera

by Morris G. Moses

The early 1930s were the beginning of applications for microphotography in libraries, and when Frank Bobb received his Rockefeller grant in 1938, he had little idea that he would father one of today's rare photographic collectibles. Bobb, born in Philadelphia on August 18, 1911, was trained as a librarian and documents analyst. In 1941, Vernon D. Tate, then chief photoghraphic specialist at the National Archives, informed Bobb that microfilm technicians were desperately needed by the government. On April 22, 1942, Bobb became a member of the office of the Coordinator of Information (COI) in Washington, D.C. The Coordinator of Information was changed later in 1942 to be replaced by the Office of War Information, and also the Office of Strategic Services (OSS) under General William "Wild Bill" Donovan. The OSS would later evolve into the present-day CIA.

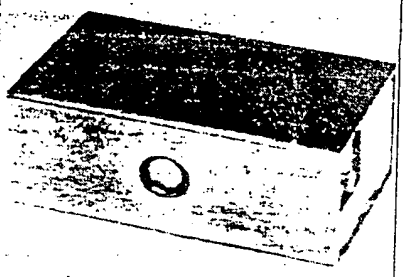
It was here in OSS that Frank Bobb's staff was merged into the OSS Reproduction Branch headed by Major Robert Lefebvre. Lefebvre was a chemist with special training in inks and printing technologies. The Reproduction Branch was originally known as the "Duplicating Section" when it was part of COI. In the 1942 merger of COI into OSS, the "Duplicating Section" was enlarged into a photographic, printing, and reproduction operation with a plant worth well over $1,000,000 having 116 military and 39 civilian employees under Lefebvre. The talents and extreme security maintained in the Reproduction Branch were such that the White House, Joint Chiefs of Staff, Army, Navy, and State Departments—although having their own reproduction facilities—realized the superior speed, quality, and tight security of the OSS Reproduction Branch. As a consequence, all Top Secret and critically sensitive UN Conference documents were sent to OSS Reproduction for processing. Work from Yalta, Teheran, Quebec, Potsdam as well as key British material was published by OSS Reproduction.

OSS Reproduction was also charged with the responsibility for training field agents of OSS in various techniques involving photographic devices, and during WW II put over 900 agents thru training schools devoted to these objectives. Included in the ingenious devices conceived by OSS Reproduction was the "Gilhooley" — a portable photostat outfit, and also another device called "Press-X" — an offset printing press that weighed 13 pounds and printed up leaflets 5" by 8". Together with accessories, the press fit into a suitcase 14" by 25" by 7". But the gem that came out of OSS Reproduction was what was later loosely-known as the "Kodak Matchbox" camera.

In early 1943, an OSS officer, just returned from overseas, was complaining of the severe loss of on-ground photo intelligence. Cameras used at that time were either bulky or difficult to camouflage. The handful of scarce Minox cameras that were to be had required sighting at eye level, and had highly reflective metallic bodies that could draw dangerous attention to their

continued on page 110

DESCRIPTION: The Matchbox is a small black metal camera that resembles an ordinary penny match box in shape and size. Its dimensions are 2-3/8" x 1-1/2" x 7/8". The wide-angle lens is on one side edge, and the simple operating button is at one end. The lens has two openings, F.5 and F.16, easily adjusted by a small pin. There are two shutter speeds: instantaneous and bulb exposure. The fixed focus is from 4-1/2 ft. to infinity. The camera holds 2 ft., or 34 exposures, of any type of 16mm film. The image produced on the negative is 14mm square. It must be loaded and unloaded in the dark.



ACTUAL SIZE

PURPOSE: Matchbox is an extremely small, accurate camera for general or documentary photography. It can be easily concealed and operated in one hand. There are innumerable means of camouflage or concealment. The camera can be requisitioned with labels like a Swedish or Japanese matchbox, or it can be requested plain for camouflage by the operator.

The camera is issued with 100ft. of Plux X and 100 ft. of Super XX unperforated film. Any type of perforated or unperforated 16mm film will roll on the positive take up spool. A tripod for documentary use is available on requisition. A compact developing kit is in preparation and will be ready in the near future.

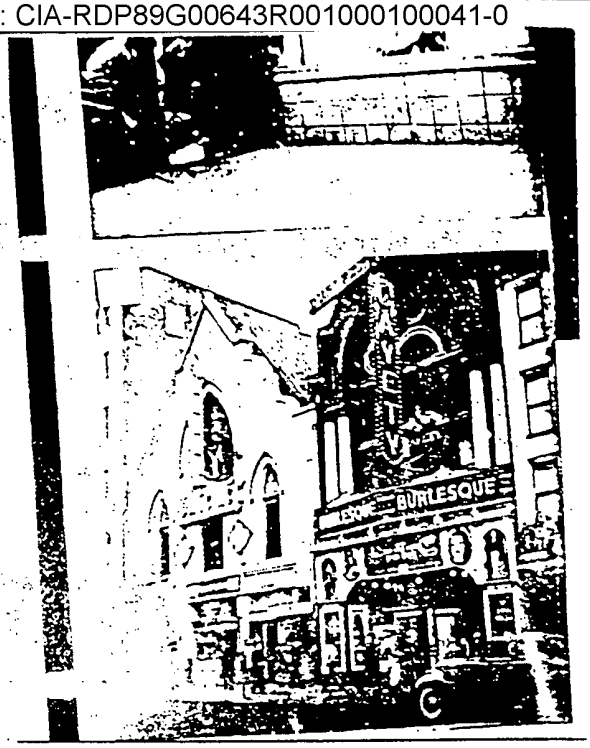
Size 2-3/8"x1-1/2"x7/8"
Weight .....4 oz.

Matchbox Cameras continued from page 104

operators. During a discussion with the returnee officer, Frank Bobb noticed a box of matches on the table and asked the officer where they came from. The officer remarked that box matches were much more common overseas than foldover cardboard safety match books. Bobb reasoned that a camera, scaled down to pocket matchbox size could be a great asset in intelligence work. A functionally simplified camera, with just two aperture settings and one instant speed and "bulb" was sketched out by Bobb and taken to Adam Archinal, a camera repairman in New York City.

Adam Archinal had started one of the first camera repair shops in New York City in 1904, and did work for Victor Keppler, Martin Munkacsi, Paul Outerbridge, and Nikolas Muray. Archinal was also the designer of an early reflex camera used for press photography in the 1920s and 1930s. Archinal studied Frank Bobb's sketches and proceeded to fabricate the first prototype of the OSS matchbox camera. The prototype was taken up to the tower offices of Eastman Kodak by Bobb and Lefebvre in late 1943, and largely thru the urgings of Dr. Kenneth Mees, contract negotiations for production runs of matchbox cameras began between Kodak and OSS procurement under W.L. Rehm of OSS.

Frank Bobb was awarded the Legion of Merit on February 7, 1945 for his services from March 1943 to December 1944. It is especially interesting to quote from part of the citation — "Through his ingenuity, persistence, and technical ability, First Sergeant Bobb conceived, developed, and perfected a mechanical device for recording vital information.....He also assisted materially in the development and improvement of other technical articles of equipment required in connection with military operations..". Hidden at that time in those words of the citation was the early conception and fabrication of the first working prototypes of the subsequently mass-produced models of the matchbox cameras manufactured by Eastman Kodak.



An enlarged print from a test roll of matchbox camera film. Photo taken with early production run camera in May 1944. GAYETY Burlesque, 513 9th Street, N.W. (on right) is a Washington, D.C. "landmark". Partial upper print shows shoeshine operator at 521 9th Street.

FRANK BOBB

Next Month-Part II — The Matchbox In Rochester.

The writer would like to thank John Taylor and Dr. Sharon Gibbs Thibodeau of the National Archives, and also John Wright and Larry Strawderman of the Central Intelligence Agency for their generous help over a three-year-long paper chase. Above all, the author will always be indebted to Frank Bobb and Robert Lefebvre for their many contributions-both four decades ago, and more recently. ●

INSTRUCTIONS FOR OPERATING 16MM CAMERA

A. Hold the camera with the lens away from you with the film advance disc to the right.

B. Notice that the film advance disc contains slots and by rotating it *toward the lens* an indenture in the case falls into the slots. When this occurs, a slight noise is heard and resistance felt. To advance the film, which must be done after each exposure, rotate the disc toward the lens until the indenture falls into the slot.

C. On the same end below the film advance disc will be found the instantaneous button. Push this button in slowly yet firmly for snapping the shutter and taking the picture. It operates at approximately 1/75th of a second.

D. On the left side of the camera will be found a small diaphragm control pin, a large lever for bulb exposures and a small lever for locking the bulb exposure lever, both are in a horizontal position. The small pin controls the lens diaphragm. When it is in the lens is open at F 5, when it is out the lens is open at F II. In very bright sunlight use F 11, under ordinary light conditions use F 5.

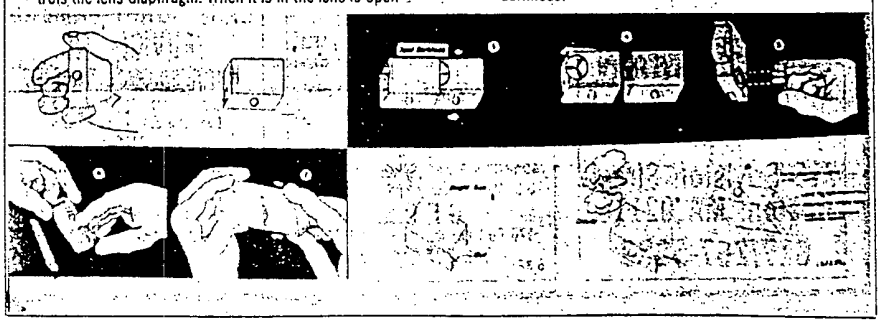
E. Bulb exposures can be made by placing the lever for locking the bulb exposure lever in a horizontal position and pushing the bulb exposure lever toward the diaphragm control pin. The shutter will remain open as long as the lever is held in that position and close when the lever is released. To lock the bulb exposure lever, thereby avoiding accidental exposures, move the locking lever toward the bulb exposure lever.

F. The lens covers approximately a 45° angle so many good pictures can be taken by holding the camera close to the hip and shooting.

G. The camera holds any type of 16 millimeter film, perforated or nonperforated, in two foot lengths.

H. The subject is in focus from four feet to infinity.

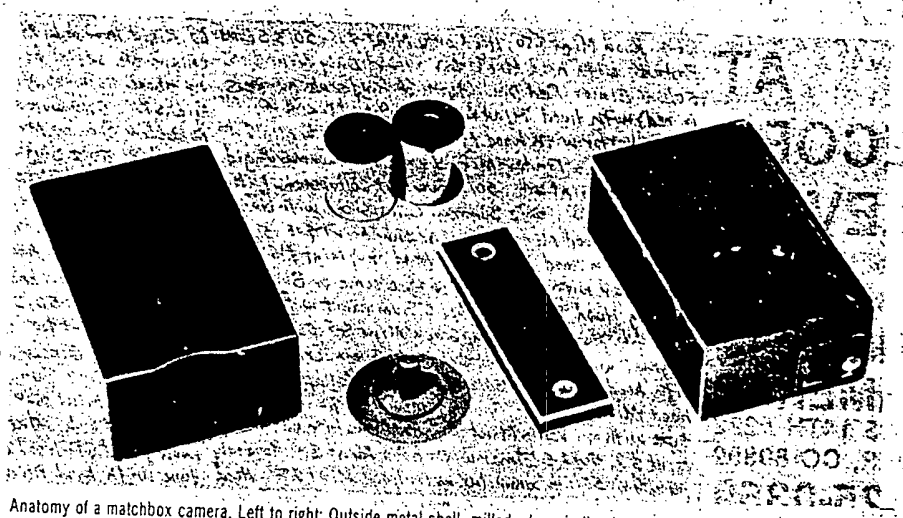
I. The camera *must* be loaded and unloaded in total darkness.



Secrets Of A World War II Matchbox Camera

by Morris G. Moses

Part 2 — The Matchbox Goes to Rochester



Anatomy of a matchbox camera. Left to right: Outside metal shell, milled-edge winding knob (top side with engraved transport - distance - indication notches not shown), reeled film, back, and plastic (bakelite) molded inner body.

After an initial abortive attempt in early Fall 1943, to interest Kodak in the project, the OSS team consisting of Colonel Robert Lefebvre, Major Watts Hill, and Sergeant Frank Bobb finally convinced Kodak, thru interventions of Dr. C.E. Kenneth Mees, to take on the contract for manfacturing the matchbox cameras. The Office of Scientific Research and Development (OSRD) had been created on June 28, 1941, for bringing together all skilled scientific manpower. A year earlier, on June 27, 1940, the National Defense Research Council (NDRC) had been set up as a liaison between industry and government. One of the divisions of NDRC charged with development of more exotic hardware of war was Division 19, established in April 1943 to fill the needs of OSS, Division 19, whose euphemistic title was "Miscellaneous Weapons," spawned projects for pencil-shaped time-delay explosives detonators, water-soluble microfilm for emergency destruction by swallowing, and infrared night viewing equipment. One of the early contracts that passed thru Division 19 for production of matchbox cameras (initially under a camouflage project) was OSS Contract #677.

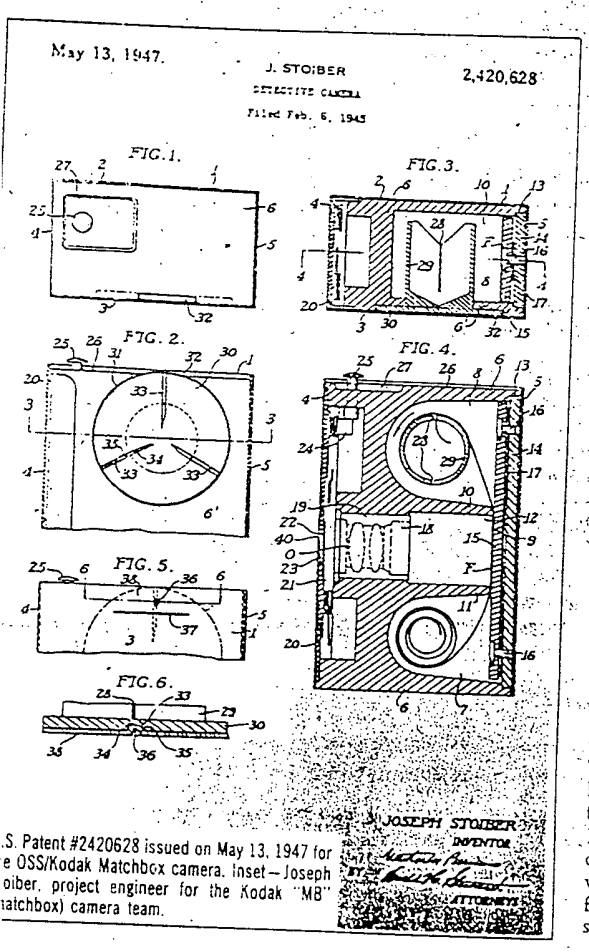
Kodak's initial skepticism towards producing the cameras in Summer 1943 was based partly on such a small format's ability to successfully render high-resolution continuous tone images. The doubts were present despite successes in 16mm microfilming equipment of the late 1930s. The team chosen at Kodak consisted of Joseph Stoiber, Joe Boon, and Henry Hood. Stoiber, who headed the team, was born in Jagerwirth, Bavaria, Germany in 1897 and had attended the Mashinenbau Hochschule there. Stoiber arrived in the U.S. in 1926 and went to work for Kodak in November 1927 as a draftsman in the development department. In 1939, he was promoted to development engineer, and by 1945 had become a supervisory design engineer. The matchbox prototype, fabricated by Adam Archinal of New York City for the OSS in mid 1943, became the basis for refined production designs subsequently made by Kodak and Stoiber's group.

The cameras utilized variants of a Kodak microfilm lens designated as a "formula 89W Tessar-type." The focal length was approximately 25mm, and the original speed rating was f.3.5. The two major versions of the camera differed primarily in the manner of film configuration. The earlier "Model I" took the film wound in coils only, whereas the later "Model 2" took film wound on reels as well as coils. The top disc of the winding knob was engraved with transport guide lines at either 120 degrees "3-slot" or 180 degrees "2-slot." The former was for coils and the latter was for reels. The shutter was a simple guillotine-type operating at a nominal 1/50 second instantaneous speed, and also capable of "bulb" setting. A sliding brass plate provided two stops, one at f.5.0. and one at f.11. No viewfinder was included in the design on the philosophy that bringing the camera to the face was too conspicuous, and also that a waist-level reflex finder would pose parallax problems. The darkroom loading scheme was decided on earlier by OSS as an additional precaution to prevent agents from unnecessary visibility of the camera, and also as an economy in eliminating any daylight-cassette manufacturing problems.

According to financial records pieced together from accounting file cards of NDRC and OSRD, the total direct amounts expended in matchbox camera construction added up to $92,168.88. An initial contract proposed "a run of 450 to 500 units" in January 1944, and supplementary contract revisions established "continuing additional production of approximately 500 more improved units" in September 1944. OSS correspondence and receipts over the period of January 1944 to the end of 1945 are fragmented, and totals documented by archival records only account for 846 cameras produced under contract. On the basis of those records found by the author,

Kodak had to be pressured into taking the contract for Matchbox spy cameras.

continued on page 12

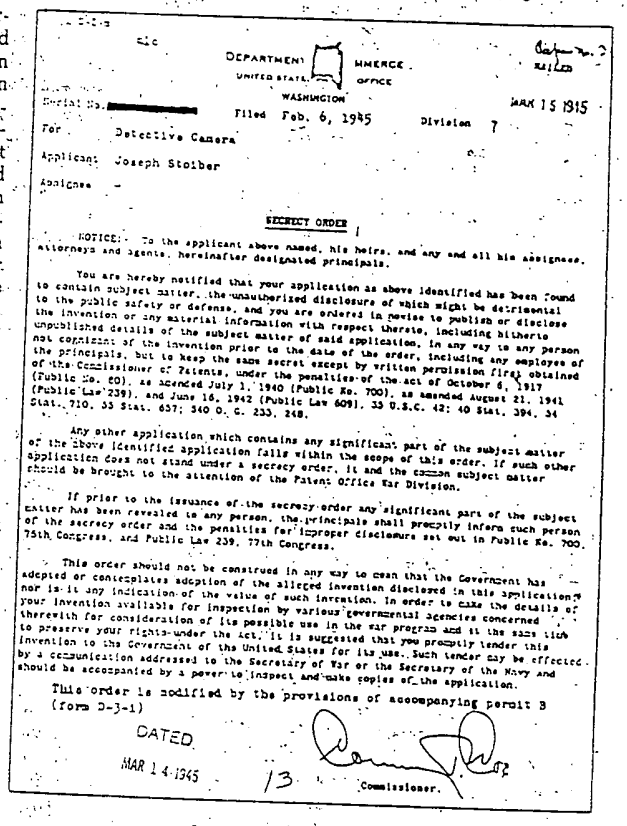


May 13, 1947. J. STOIBER. 2,420,628. DETECTIVE CAMERA. Filed Feb. 6, 1945.

FIG. 1. FIG. 2. FIG. 3. FIG. 4. FIG. 5. FIG. 6.

JOSEPH STOIBER INVENTOR

U.S. Patent #2420628 issued on May 13, 1947 for the OSS/Kodak Matchbox camera. Inset—Joseph Stoiber, project engineer for the Kodak "MB" (matchbox) camera team.



DEPARTMENT OF COMMERCE, UNITED STATES PATENT OFFICE, WASHINGTON

Serial No. [redacted] Filed Feb. 6, 1945 MAR 15 1945

For Detective Camera Division 7

Applicant Joseph Stoiber

Assignee —

SECRECY ORDER

NOTICE: To the applicant above named, his heirs, and any and all his assignees, attorneys and agents, hereinafter designated principals.

You are hereby notified that your application as above identified has been found to contain subject matter, the unauthorized disclosure of which might be detrimental to the public safety or defense, and you are ordered to refrain from publishing or disclosing the invention or any material information with respect thereto, including hitherto unpublished details of the subject matter of said application, in any way to any person not cognizant of the invention prior to the date of the order, including any employees of the principals, but to keep the same secret except by written permission first obtained of the Commissioner of Patents, under the penalties of the act of October 6, 1917 (Public No. 60), as amended July 1, 1940 (Public No. 700), as amended August 21, 1941 (Public Law 239), and June 16, 1942 (Public Law 609), 35 U.S.C. 42; 40 Stat. 394, 34 Stat. 710, 35 Stat. 657; 340 O. G. 233, 248.

Any other application which contains any significant part of the subject matter of the above identified application falls within the scope of this order. If such other application does not stand under a secrecy order, it and the common subject matter should be brought to the attention of the Patent Office War Division.

If prior to the issuance of the secrecy order any significant part of the subject matter has been revealed to any person, the principals shall promptly inform such person of the secrecy order and the penalties for improper disclosure set out in Public No. 700, 75th Congress, and Public Law 239, 77th Congress.

This order should not be construed in any way to mean that the Government has adopted or contemplates adoption of the alleged invention disclosed in this application, nor is it any indication of the value of such invention. In order to make the details of your invention available for inspection by various governmental agencies concerned therewith for consideration of its possible use in the war program and at the same time to preserve your rights under the Act, it is suggested that you promptly tender this invention to the Government of the United States for its use. Such tender may be effected by a communication addressed to the Secretary of War or the Secretary of the Navy and should be accompanied by a power to inspect and make copies of the application.

This order is modified by the provisions of accompanying permit B (form D-3-1)

DATED MAR 14 1945

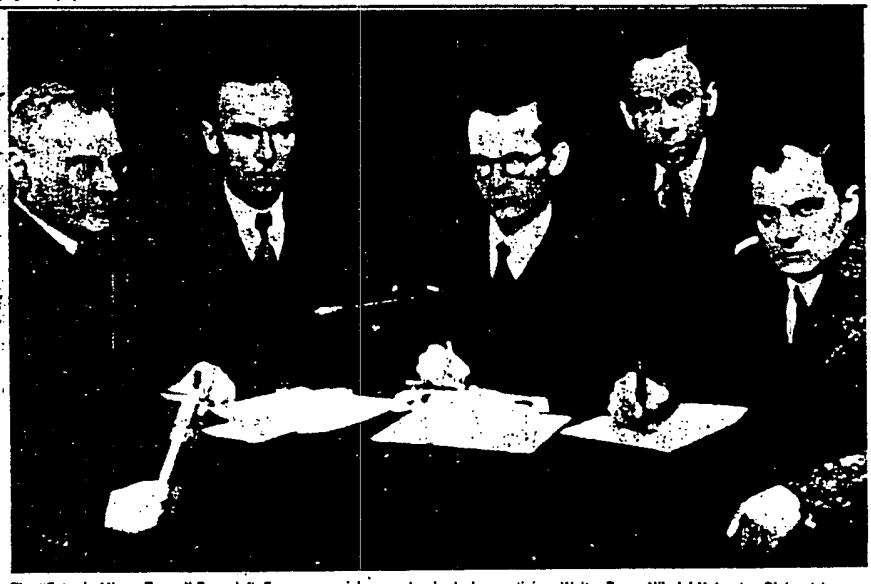
Commissioner.

The Secrecy Order issued by the U.S. Patent Office in March 1945 covering restricted disclosure of the filing application. The title of the patent was simply "Detective Camera."

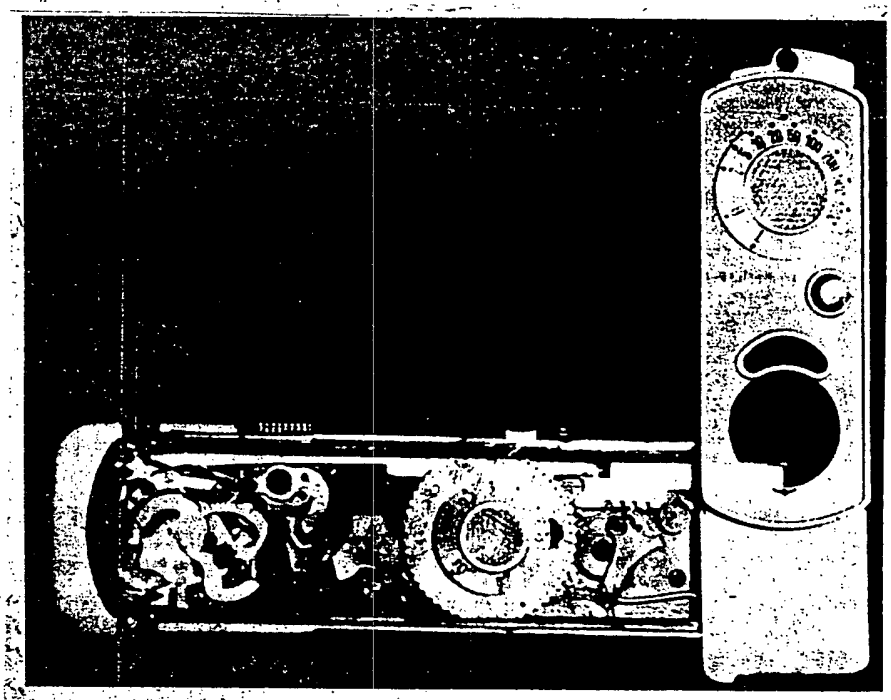
not overly enthusiastic about the subminiature camera ideas, pressing Zapp to pursue more conventional paths, including an improved Rolleiflex design. Obsessed in his innermost thoughts with the subminiature format, Zapp carved out his first wooden "mock-up" model of the camera of his dreams. This first block of wood, actually what we would call an ergonomic model today, measured 13 by 28 by 75mm and had rounded corners. From this static, lifeless block, Zapp commenced to begin an optical and mechanical design.

"There was a 'UR-Minox' prototype with even a smaller format."

The 8 by 11mm format of the Minox is usually thought of as the first and only pre-WWII format. However, Zapp's "UR-Minox" prototype as first designed in Estonia had a 6.5 by 9mm format! Toward the end of 1934, the styling and functional details, including film, lens, and shutter relationships were determined, and on January 19, 1935, the first set of detail drawings were completed. An ear-catching name for the yet-to-be completed camera was felt essential then, and Zapp drew up a list of "short, harmonic-sounding" names. At that time, there was a profusion of cameras whose names ended with the last syllables of "AX" and "OX." Zapp gave Nylander the list to read off, with little excitement shown by both men. Zapp recalls that just as he was leaving the hallway of Nylander's home, Zapp heard Nixi Nylander call out the name "Minox." Both of them agreed at that moment it was the unique name that conveyed both a technical aura and an impact on a future buyer's ear. Following the naming, Zapp sketched out the basic Minox graphic logo which was subsequently enhanced at the Valsts Electrotechniska Fabrika (VEF) in Riga, Latvia by Adolfs Irbitis.



The "Estonia Minox Team." From left, Eppner, precision mechanic; Indus, optician; Walter Zapp; Nikolai Nylander, Richard Jurgens, (Zapp's financial backer). c1936 (Courtesy of Peeter Tooming).



Innards of a Minox III-S, post World War II descendant of the prewar Minoxes. With the exception of materials and some improvements in lens and shutter details, the basic features, form, and relative components placement are still unaltered in comparison to the very earliest Minox camera.

Eight months later on August 16, 1935, the last of a series of colored transparent overlay drawings were completed. A precision mechanic, Eppner of Reval, was engaged to begin some of the mechanical fabrication. This proceeded very slowly, partially because of Eppner's commitments to others. A lens designer and optical man had to be found, and it was a stroke of luck, according to Zapp, that Eppner sent them to Indus, one of the finest opticians in the Baltic at that time. Several analyses of glass had been obtained from Schott in Jena, and contact was also made with a Professor Otto Schulz, a lens designer in Vienna. The majority of experts in optics who were consulted did not hold high hopes for success of a lens of such small dimensions. It was not until late Summer 1936 that all the mechanical and optical parts were ready for final assembly. The work was done under conditions which would be considered very crude by today's standards, Eppner having to turn parts of the lens housing on an old auto-wheel trueing lathe.

In the period up to 1936, Jurgens, still Zapps financial partner, was repeatedly warned by others to invest no further, but Jurgen's instincts must have dictated otherwise. Finally, on the heels of a rejection by Agfa in June 1936, Jurgens sought out the Estonian representative of VEF/Riga, Latvia. VEF was not a photographically-oriented enterprise and hopes were very dim. The representative reported back in August 1936, and announced that an invitation had been extended to Zapp and Jurgens to visit VEF. Armed with the Estonian UR-Minox working prototype and a set of drawings, Zapp and Jurgens left for VEF on September 7, 1936. The early beginnings for mass production of the Latvian Minox were just over the horizon.

Next: Minox and the Operations at VEF/Riga, Latvia.

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N.B. The author would like to acknowledge the contributions of Peeter Tooming and Dr. Enn Hendre, both of the Estonian SSR; Geoffrey Stein of the York State Museum; Marilyn Douglas, Alan Raney, and Melinda Yates, all from the New York State Library. Above all, the author will forever be indebted to Walter Zapp for nearly 8 years of patient correspondence and primary source documentation.

Minox—Small Wonder For 50 Years

1937 photo of Walter Zapp, inventor of the Minox camera taken with first (Estonian) Minox by Nikolai Nylander. Natural light at 3 meters, ½ second at f3.5, with film rated at DIN 10/10 (ASA 8!) (Courtesy of Peeter Tooming).

by Morris G. Moses

Part One—Baltic Beginnings

Editor's Note:

It is likely that Morris Moses knows more than almost anybody else about the Minox camera, its background, and its place in social history. Mr. Moses is writing a definitive book on Minox. A large portion of the planned book will be published in an eight part series of articles in Shutterbug. We are indeed pleased to be able to give our readers the essence of the book, starting with this column.

Morris G. Moses of Albany, NY is a professional engineer and an educator who has researched, studied and written about a number of small cameras including the famed Matchbox camera of World War II. His book, and the Shutterbug articles, will cover the beginning of the camera, operations at VEF/Riga, and will conclude with Minox Tales Not-So-Well-Known. You will enjoy the story of this tiny but important camera as told by one who knows the facts.

While many of those familiar with the world-famous 9.5mm format Minox subminiature camera would be prompt to name Riga, Latvia as its birthplace, the tortuous history of its conception also heavily involves the neighboring Baltic Republic of Estonia, now the Estonian S.S.R. and part of the Soviet Union. The full history of the Minox rivals any adventure movie in its multiple geographic settings and surrounding world events, and the central character and principal inventor, Walter Zapp, must be recorded in the annals of photographic technology as one of the key pioneers in high precision subminiature camera design.

"The tortuous history of the Minox rivals any adventure movie in its geographic settings and the surrounding world events."

Walter Zapp was born in Riga, Latvia, on September 1, 1905, the oldest son of Karl Zapp and Emilie Burchard. Karl Zapp, a German, had been educated in England and traveled widely throughout Europe as a merchant, settling in Riga at the turn of the century. In the early 1900s, the family was banished by the Russians to Ufa, a village in the Ural mountains. The mother was able to return to Riga in 1918 with Walter and the younger brother, Edgar, while the father, in an attempt to reach Sweden, was stranded in Reval (now Tallinn), Estonia. Finally, the family was reunited in 1921. Walter Zapp did not have the benefit of higher formal technical education and his early misfortunes were compounded by many sieges of ill health and bouts of depression. After two unsuccessful apprenticeships, Zapp's third apprenticeship was to the Reval art photographer Walter Lemberg in 1922. In 1924, Zapp registered his first patent in Estonia for a "special photographic paper cutter with automatic margin adjusting." Zapp's curiosity and self-teaching talents led him to very early fascination with the potentials for a high-quality, extremely compact, very small film format camera system.

This fascination was to occupy most of his thoughts over nearly two decades until commercial fruition of the Minox.

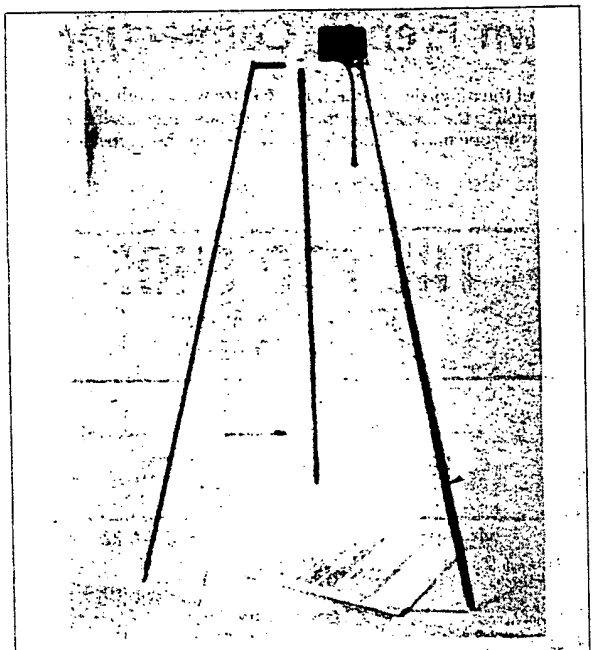
"The fascination with the potential for a high-quality, very small camera system was to occupy the thoughts of Walter Zapp over two decades until the Minox camera became a commercial reality."

Early in his life, Zapp had been befriended by a boyhood chum, Nikolai ("Nixi") Nylander who later became one of Estonia's great photographers. In 1924, Zapp had entered the employ of Rambach, a photo apparatus dealer in Reval, and one of the first in the Baltic to have received a Leica from the factory in Wetzlar. Zapp studied the Leica in hopes of obtaining more ideas for his subminiature camera system. In 1928, Zapp took a job with the photofinishing firm of Akel, designing a semi-automatic multiple exposure identification camera while employed there as a laboratory technician. Lung disease incapacitated Zapp in the next year, and in 1930, full of naive youthful enthusiasm, Zapp wrote Oskar Barnack at Leitz, seeking an interview regarding Zapp's subminiature camera ideas. Barnack never replied. The economic depression of the early 1930s and Zapp's ill health at this time were a dark period in his life, and he was aided only by his strong friendship with Nixi Nylander.

At Nylander's request, Richard Jurgens, a financier, visited Zapp at the Zapp family home on Waldeck Street in Nomme, a suburb of Reval. An informal financial agreement resulted with Jurgens as the investor against 50% of any return from Zapp's experiments, the partnership of

Walter Zapp at his home in Switzerland, c1979. Note prints of original conceptual drawings in foreground. Small cigar-shaped, black object in lower right foreground is Zapp's original wood block model of Minox.

Matchbox camera continued from page 5



MATCH BOX TRIPOD

Height: 24"
Length of legs: 25"
Spread of legs: 13¾" x 14½"
Weight: 1¾ lbs.
Length of lighting equipment (not shown) 7½" from end of lamp socket to supporting top.
Tripod is supplied with: top containing a supplementary lens and camera support, three legs of three sections each, cable release, and light fixtures that fit into tripod top.
The tripod enables Match Box camera to do documentary photography
Special O. S. S. item

A page from an OSS notebook issued in 1944 showing the accessory tripod set-up and its description. The top of the tripod contained a close-up lens to convert the matchbox lens for use in copying documents. Each leg was composed of several "screw-together" sections, which broke down for compact carrying in canvas G.I. issue cases, along with copy lights made of brass shell light sockets.

the original direct costs of the cameras figure out to about $110 each.

Many today still question the use of the matchbox design in light of the Minox camera's earlier appearance in 1937. However, the small number of Minoxes available in the U.S. and Britain during 1939 thru 1942 were largely grabbed up by the FBI and other intelligence agencies-sometimes

N.Y.C. repairman, Adam Archinal made the matchbox camera prototype.

at premiums up to 300% of the Minox's orginal selling price. Limited availability of Minox 9.5mm format film as compared to the more abundant 16mm "cine" film weighed against an American design for "under-16mm" format. Fixed-focusing of the matchbox (approximately 4 feet to infinity) was also a compromise in the hopes of saving the agent time, and perhaps his own life, in a critical picture-taking situation.

One of the mysteries of the past which inevitably come back to haunt the historical researcher was the existence of other German matchbox cameras in the 1930s. One was remarkably similar in design to that described in German Patent No. 510.006 granted on October 12, 1928 to a Hans Shuster. Using a format of just under 10mm, this German matchbox had a variable-focusing f.2.9 lens, and an elaborately articulated shutter capable of speeds from 1/25 to 1/500 second. While conjecture persists that Kodak had access to specimens of the German Shuster matchbox design in the late 1930's, the reference patents cited in Stoiber's patent #2420628 mention only one foreign patent, British #6932, by Crocker. Assuming Kodak was aware of the earlier German SHUSTER patent, it is a bit of a mystery as to why Kodak did not disclose it as a reference in the Stoiber patent. Interestingly, among the other patents cited in Stoiber's patent application were #2169548 (the Minox) and #2208797 (relating to the universal Camera Company's Iris "00" size camera).

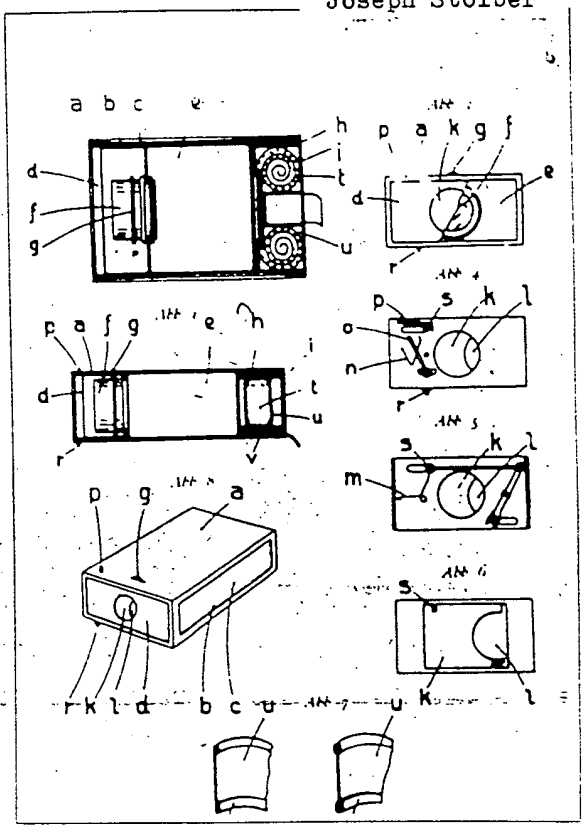
Although the Kodak matchbox camera patent was filed on February 6, 1945, it did not issue as a final patent until May 13, 1947-well after World War II had ended. Under terms of the Patent Secrecy Acts of 1917 onward, the Stoiber patent was initially classified secret. Even more ominous is a citation on the secrecy order that France was to be excluded from knowledge of the application, possibly on the basis that the camera's existence might be discovered by French collaborators of the German Abwehr Intelligence Services.

The OSS/Kodak matchbox camera is a unique example of a well-kept secret American wartime photographic endeavor between private American enterprise and the armed forces. Most of the surviving examples that the author has personally tracked down are in tight private hands of collectors. However, if you ever yearn for an unhurried glance, and opportunity to study the OSS/Kodak matchbox camera more closely, specimens exist at both the Smithsonian and George Eastman House. Should you also be privileged to hold one of these cameras in your hands, and further imagine yourself as a World War II spy, you can decide if the Matchbox or the Minox would have been your choice in waging photographic espionage over four decades ago.

N.B. In addition to those named in Part I of this article, the author would like to thank Dr. Walter Clark, Douglass C. Harvey, and David Gibson for their many kindnesses and encouragements. ●

Joseph Stoiber

Part of the field kit issued for use with the matchbox camera. On left is box of prespooled film and film processing clips. Chemicals shown include developing and fixing powders. A whiskey glass and a spoon round out this 1944-version "minilab."



Hans Shuster's German Patent #510.006 issued on October 12, 1928. Note that the light path runs parallel to the long dimension of the box, whereas in the OSS/Kodak version the light path runs parallel to the short dimension.

Minox—Small Wonder For 50 Years

by Morris G. Moses

Part Six—The Minox Processing Laboratories (This series up to now has told the story of the conception of the camera in 1934, its first production in Lativa, its post World War II production in Germany, and its marketing in the U.S. from 1950-1970.)

Part of a series of advertisements run in *Photo Merchandising* magazine in the 1954-1960 period, soliciting dealer participation in Minox Processing Laboratories business.

Several times in the history of the very small format camera, a good camera design fell by the wayside because of inadequate backup processing. In 1933, the 16mm Minifex still camera, invented by Fritz Kaftanski in Berlin, and ahead of its time, failed to achieve success because of 16mm motion picture processing's dominance over 16mm still processing. In 1936, the English Coronet 16mm still Midget camera did not take hold because of the skimpy film processing support. In stark contrast, the earlier U.S.-made 39* plastic Univex of 1933 enjoyed vast success and made a fortune for its owners who did foresee the need for large scale processing facilities.

The Minox with its very unorthodox 9.5mm (3/8") still format was certainly going to require specialized processing networks if it was going to succeed. The individual who was fated to fill this niche in the U.S. would be Donald O. Thayer, Sr. Thayer was born in 1918, in Kansas City, Kansas, the son of Rupert Thayer, a switchman on the Atchison, Topeka, and Santa Fe Railroad. Don Thayer worked as a specialty salesman throughout the Mid-West building up contacts in the jewelry and finer men's novelty stores. During 1946, news of the Minox GmbH Wetzlar operation had reached Thayer, who was a buyer for the Army PX Services at that time. Thayer arranged to meet Zapp and Zapp's partner, Jurgens, in 1947. Thayer eventually returned to New York in 1950, agreeing to work for Janis Vitols, owner of Minox, U.S.A. on a commissioned sales basis. Thayer continually realized that the key to the success of Minox would be in a well-executed film processing operation. In 1953, at a Photo Dealers/Manufacturers Trade Show, Thayer's booth happened to be next to the Kling Photo Company booth. A deal was struck whereby Kling became the exclusive U.S. Minox distributor in 1954. Thayer remained the sole importer of the Minox camera thru prior arrangements with Vitols whose operations were conducted from a brownstone-fronted apartment house at 140 East 30th Street in New York City.

Thayer obtained enough capital in late 1953 to begin operations of the Minox Processing Laboratories, then located at 107-14 71st Road in Forest Hills, Queens, New York. Hardly more than bathroom-sized, the very early lab consisted of crude semi-automatic loop processors. The exposed films were hand spliced with adhesive-numbered identification labels before being run thru developers furnished by Edwal of Chicago and Tetenal of Germany. Business was solicited thru trade journals, and later, thru direct consumer advertising. Except for Christmas holidays, the turn-around times were usually three days. If delayed much longer, there was a small note of apology in the returned order with an explanation.

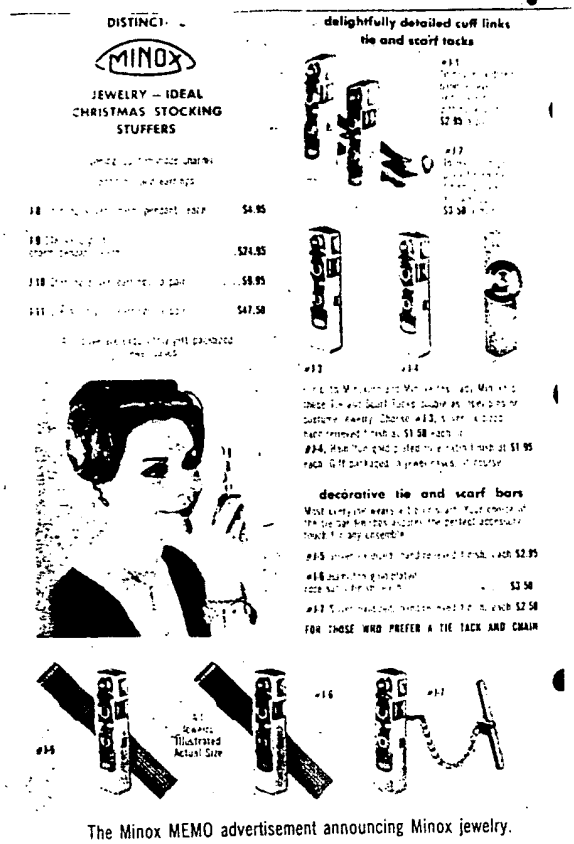
In Spring 1956, Volume 1, Number 1 of the Minox Memo, the Laboratories' house organ, came off the press. Always alert to a publicity tie-in, this issue featured Alfred Hitchcock, the suspense movie producer, taking Minox photos of Vermont's governor Joe Johnson, and Shirley McLaine, then on location filming *The Trouble with Harry*. The same issue announced *Small Minox-Big Pictures*, the classic manual on Minox by Rolf Kasemeier, currently the marketing manager at Minox, Giessen. Successive issues of the Memo featured super-salesman Elmer Wheeler (Summer 1958) and Jayne Mansfield (Winter 1963). Thayer often spotlighted unusual owners such as J. Edgar Hoover of the F.B.I. (Summer 1957). Hoover really took Minox photos, several rolls of which this writer discovered at the National Archives. Provenances for these showed many were taken by Hoover in California as early as 1942.

Thayer's fertile mind conceived many elegant touches for the Minox owner, including special binders for the Minox Memos and You've Been Minox'ed picture mounts. These mounts were folders and matching envelopes. The folder bore a cartoon of a man carrying a Minox on a chain and the finished Minox print could be easily mounted in the folder for mailing. A standard package of 25 was $1 and a gift box of 50, complete with gold-striping went for $2.95 in 1958. Perhaps the most unusual momentos of the Minox Processing Laboratories were left by Thayer in the form of the Minox jewelry introduced in the winter 1963 Minox Memo. These included tie-clasps, cufflinks, and charms—in a variety of precious metals including sterling silver and 14-karat gold.

Don Thayer, Sr. was stricken with pneumonia late in 1968, and died on December 23, 1968, at the age of 50. Among his three children, he left Don, Jr., who carries on the business today in the traditions of his father. The equipment is kept fully up to the state of the art, with many improvements few other's laboratories have even dreamt of. Introduction of new color emulsions has meant extra attention to high-speed, computer controlled color analyzers. Each finished Minox processing order carries a 22-point check list advising the customer on any exposure and focusing errors made with any model camera.

Beyond the children, grandchildren, and parents who survived Don Thayer, Sr., however, was left the legacy of the Minox Processing Laboratories. With all due credit to Walter Zapp and the many others who brought the design of the Minox camera to production reality and sale, the full potential of the camera could never have been achieved without the foresight of Don Thayer, Sr., and his realization of the need for high-quality, prompt, and fair cost processing. Without such processing, the bulk of Minox owners would never have enjoyed the tremendous imagery of the unique Minox camera.

The author would like to thank the entire Thayer family, especially Don Thayer, Jr., for their generous courtesies in preparation of this part of the series.



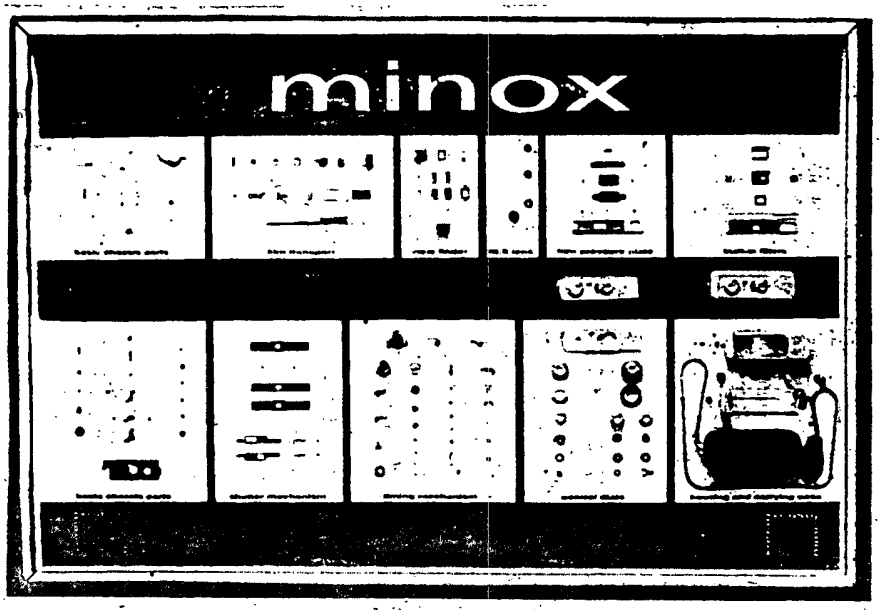
The Minox MEMO advertisement announcing Minox jewelry.

Minox—Small Wonder for 30 Years

SHUTTERBUG, FEBRUARY 1987

by Morris G. Moses

Part Five—The 1950-1970 Era Plus a Golden Touch. (The story up to now has dealt with the conception of the Minox in 1934 by Walter Zapp, his travels thru the Baltic to VEF who manufactured the first production models in Riga, Latvia, and the eventual post World War II German factory beginnings in Giessen, Germany.)



Minox III-s "Assembly Demonstration Case" showing the camera in various stages of sub-assembly and final assembly. The board was approximately 2½ by 4 feet and was an eye-catcher wherever it was set up.

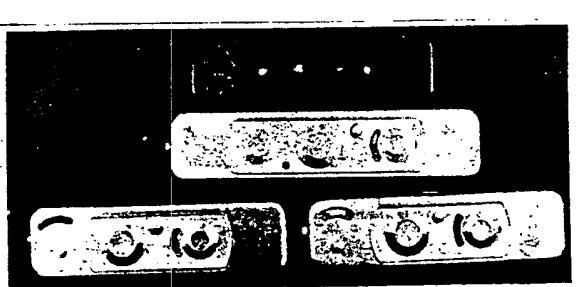
By 1953, German production of the Minox Model III had reached 15,000 a year, and in 1954, the first flash-synchronized model, the III-s, was introduced. In 1954, also, Janis Vitols, nephew of Teodors Vitols of VEF, sold the remaining American sales rights of Minox, Inc. (U.S.A.) to Minox GmbH, Giessen. Under terms of a prior agreement, Donald O. Thayer, Sr. would be the sole importer of Minox goods until 1964. Thayer would also set up the very unique and successful Minox Processing Laboratories in 1953.

Earlier in 1952, the Kling Photo Corporation approached Donald Thayer concerning U.S. distribution rights for Minox equipment. An agreement was concluded in 1953 which gave Kling full U.S. distributor/dealer control. Kling, an already successful distributor of Linhof and Balda, proceeded to do an excellent job of publicizing and marketing the Minox. The success of this drive was due in large measure to the skills and talents of Kurt Luhn, Vice-President of Kling Photo, and one of the outstanding photo-marketing geniuses in the history of the industry. Luhn, one of four gifted sons of a famous German lithographer, was also brother of H. "Pete" Luhn, an IBM engineer who had revolutionized information science in the mid-1950s.

Kurt Luhn engaged the Herbert Baker advertising agency of Chicago to begin several ad campaigns for the Minox. One campaign was the "Successful Man" series which ran in 1954 in the *New Yorker* magazine and featured photos of Howard Sams, Chairman of Howard Sams Publishing Company; V.M. Hanks, Jr., professional photographer; and Sam Posen, President of Beltone Hearing Aid Company -all prominent businessmen and users of Minox. A Minox film packaging campaign, featured in the August 1955 issue of *Modern Packaging* magazine, won the Advertising Package of the Year Award. The mid-1950s Minox marketing programs went into high gear.

At the request of Donald O. Thayer, Sr., who had just set up the Minox Processing Laboratories, and who had sales contacts in such prestigious firms as Abercrombie and Fitch, and Cartier's, a gold-plated model III-s was introduced briefly in 1953. A distinguishing feature of this model was the diamond-like pattern engraved into the top and bottom ends of the body shell. On July 29, 1953, a specially engraved "gold" Minox III-s was presented to President "Ike" Eisenhower by five members of the Washington, D.C. photo trade as a golf match momento. For the historical record, it is questionable as to whether "Ike" ever found time to use the camera, but it was a publicity coup to rival "Ike's" photo holding a Stereo-Realist, taken at another time for similar purposes. This author was told by Kurt Luhn that dealers were wary of the ostentatious appearance of the "gold" Minox and rarely ordered one unless they had concluded the sale in advance. The "gold" models, retailing at nearly $200 over the regular aluminum-body ones, were made up in lots of 6 or 12 at the factory after a reasonable number of back orders had come in to justify the added expenses of special short-run tooling and plating. In 1964, in recognition of his book *Birds from Brittania*, Prince Philip of England was presented with a special "gold" Minox model "B." Altogether, the total number of "gold" Minox cameras produced did not exceed a few hundred.

"Gold" Minox presented to President Eisenhower in 1953 by golfing buddies who also happened to be photographic dealers in the Washington, D.C. area. (Courtesy of Paul Klingenstein.)



Minox cameras of the 1950-early 1970 era. Bottom left, Minox "B;" Bottom Right, Minox "BL;" Center, Minox "C." Look carefully again at the top—it's a Minox "B" black "Private Eye" model produced in an extra effort to woo the detective and espionage callings.

Kurt Luhn's marketing acumen also produced the "Minox Assembly Demonstration Case" which showed various stages in the manufacture of a model III-s, and was loaned to key Minox dealers on a rotating basis. A skilled retail salesman could guide the prospective buyer thru the innards of the case, emphasizing the precision with which the nearly 300 parts were put together to produce "the smallest high-precision camera in the world." These demonstration cases were definitely a sales stimulant and dealers vied heavily for the six dozen or so cases that Luhn had made up.

In 1958, Minox introduced the model "B" which incorporated a built-in selenium exposure meter manufactured by Gossen. The metering range was extended by a 4X neutral density filter to accommodate ASA 400 speed emulsions. For the sacrifice of an additional ½ inch in length over the unmetered III-s, the owner now had extra exposure metering protection as an integral part of the camera. The "B" was a great success and held in popularity until the introduction of the first fully automated model "C" in late 1969. The "C" boasted a CdS photoelectrically controlled, magnetically-actuated shutter having speeds from 1/1000 to 7 seconds. The "C" also included a warning light feature for both low-speed hand shake and battery voltage warning conditions.

In addition to the "Private Eye" black versions of the IIIs and "B" which were marketed in the 1950s, a late variant of the "B" appeared in 1972 as the model "BL." This was a match-needle exposure meter version which incorporated semi-automatic metering, a shade over ¾ inch less inlength than the "C."

The 1950s—early 1970s era was the richest in growth and diversity of the 9.5mm format Minox. This format would later reach its peak in the ultimate "LX" and subside in the final 9.5mm design of the "EC", after the advent of the 35mm Minox in 1975.

Next—The Minox Processing Laboratories and the Thayer Influence.

The author would like to thank Herbert Baker, Rolf Kasemeier, and Paul Klingenstein for their generous help, and to dedicate this part of the series to the memory of the late Kurt Luhn. ●

The Spy Camera Story Continues

Minox— Small Wonder for 50 Years

by Morris G. Moses

Part Four—The Post World War II Years (Previous parts of this series told of Walter Zapp's early conception of the camera, his dealings with VEF, and his relationship with Otto Rüsche, the VEF wartime "Swiss Connection.")

In July 1945, one month after the tides of war had their final turn against Nazi Germany, Walter Zapp found himself among the thousands of war displaced persons and refugees of Europe. Somehow, during the course of the entire war, Zapp had managed to carry two Minox cameras with him all over the Continent. These were the Estonian UR-Minox prototype and an early Riga Latvian model Minox. That they were not permanently confiscated is one of the small miracles of WWII. In the few instances in which they were temporarily taken away from Zapp, the cameras were soon returned out of curiosity as to their origins and in deference to Walter Zapp's totally sincere personality.

In August 1945, Zapp was interviewed in Berlin, Germany by Lt. Thomas D. Sharples of the Fine Mechanics/Optics Division of OMGUS (Office of the Military Governor of the United States Occupation Forces). Sharples recalls the wan, delicate presence of Zapp whose sole possessions at the time were just the two cameras and a small bag of personal possessions. Zapp described his ambitions to produce the Minox again, in the postwar period, in such persuasive terms that Sharples was motivated to send out a "reconstruction" team on a Sunday morning which "liberated" a Lorch mechanic's lathe, a Deckel milling machine, and some drafting supplies. These were given to Zapp. Jurgens, Zapp's former partner, had made previous contacts with the U.S. Army in the Wetzlar area, and on September 1945, Zapp and Jurgens were reunited to incorporate as Minox GmbH. This first small Minox German operation was set up in an abandoned spinning mill in Wetzlar on Bahnhofstrasse (Railroad Station Street). Berzins, the former VEF Minox production foreman, found his way to this shop and the new postwar German beginnings of Minox were in place. One of the major German heavy machine tool manufacturers since 1847 was Heyligenstat AG, headquartered in Giessen and founded by members of the Rinn family. In 1895, Ludwig Rinn became partners with Wilhelm Cloos in the Rinn & Cloos Tobacco Works of Heuchelheim. When word of Zapp's unique tiny camera began to spread throughout the Wetzlar optical community, Ludwig Rinn was advised that this might be a good prospect for post war recovery of Rinn's war-torn factories. Zapp and Jurgens moved from their cramped quarters on Bahnhofstrasse in 1947 to one corner of a tobacco factory loft in Heuchelheim offered them by Ludwig Rinn. This was the move that would later expand into the present Minox "Heuchelheim bei (near) Giessen" camera factory complex on Ludwig Rinn Strasse employing over 600 people by the mid-1950s. In 1948, Zapp entered the U.S. briefly in hopes of finding an American manufacturing connection also, but this effort met with quick failure and Zapp returned to Germany.

Zapp had also realized, even during the war, that the original 3-element anastigmat lens design of the Minox left much room for improvements. In his search for a better lens, he discovered Arthur Seibert, who had been employed by Leitz since 1920. Leitz was not interested in any part of the Minox at that time, and the idea of Seibert's "moonlighting" as a lens designer was uncomfortable for both Zapp and Seibert. Finally, in 1949, Seibert agreed to a full-time contract with Zapp for the design of the postwar Minox lens.

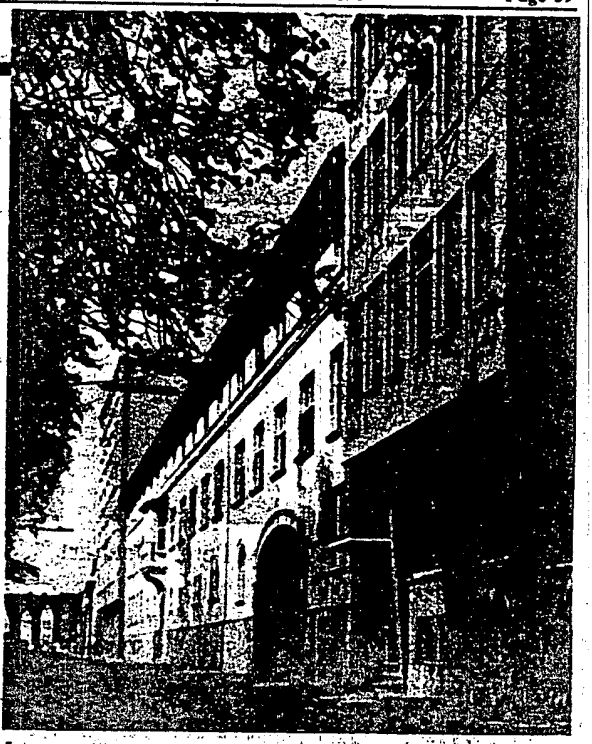
The first of two postwar Minox lens designs was a 5-element lens (appropriately named a "Pentar") and the rear element of which was called the film-lens. This element actually contacted the film and pressed it into a curved path during exposure. While the concept was valid for compensating for many distortions and aberrations, the design was impractical insofar as trapping dirt and producing scratching of the negative. In the hopes of reducing the problem, cork and chamois swabs were even furnished with some of the postwar Minoxes (so-called Model II's from 1948-1950) to clean up the film-lens surfaces. Zapp was not pleased and Seibert redesigned the lens to one having only 4 elements, the rear element being recessed away from the film and film-plane. The film was still clamped in a curved configuration during exposure, but released completely during transport, eliminating any dirt carryover and scratching problems. The 4-element design, named the COMPLAN (COMpensating PLANe) became a hallmark in successive models of the Minox.

Seibert and Zapp, neither of whom were ever salaried employees of Minox GmbH Giessen, were to break their formal association as contractors to that firm in 1950. Earlier, Zapp had worked with Dr. Ing. Joseph Stüper, author of the definitive work on camera design "Die Photographische Kamera"—and an authority on special and subminiature format cameras. Dr. Stüper was one of the early production managers of Minox GmbH Giessen and was replaced in 1951 by Fritz Baumgarten who held the position of production chief until 1970.

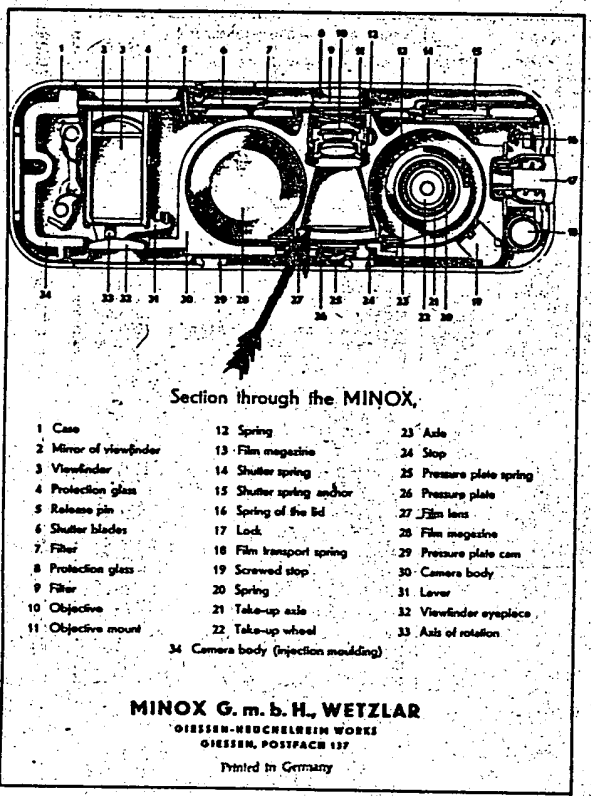
Sixteen years after the Minox's original conception, Walter Zapp returned to his role as an independent inventor in late 1950. In 1961, he took up residence in Saint Gallen, Switzerland. Born in Latvia, filing the original Minox patent as a German citizen, and living in Switzerland has certainly qualified Zapp as a world class camera designer. Arthur Seibert went on in 1951 to found the firm EMO-OPTIK (EMO = Electronic, Mechanic, Optic) in Wetzlar. The firm is world renowned to this day for producing the finest magnifiers, microscope-telescope combinations, and specialized instruments.

Next: Part Five-The 1950s-1970s era, and going for the Gold.

The author would like to thank Rolf Kasemeier, Werner Michaeli, Liane Seibert and the Seibert Family, and Thomas Sharples for their many kindnesses in connection with Part Four of this series. ●



Entrance to Minox GmbH. Giessen on Ludwig Rinn Strasse. The factory complex occupies over one square mile and the peak employment was over 1100 people in the period 1953-1960. (Courtesy Rolf Kasemeier)



Section through the MINOX.

1 Case	12 Spring	23 Axle
2 Mirror of viewfinder	13 Film magazine	24 Stop
3 Viewfinder	14 Shutter spring	25 Pressure plate spring
4 Protection glass	15 Shutter spring anchor	26 Pressure plate
5 Release pin	16 Spring of the lid	27 Film lens
6 Shutter blades	17 Lock	28 Film magazine
7 Filter	18 Film transport spring	29 Pressure plate cam
8 Protection glass	19 Screwed stop	30 Camera body
9 Filter	20 Spring	31 Lever
10 Objective	21 Take-up axle	32 Viewfinder eyepiece
11 Objective mount	22 Take-up wheel	33 Axis of rotation

34 Camera body (injection moulding)

MINOX G. m. b. H., WETZLAR
GIESSEN-HEUCHELHEIM WORKS
GIESSEN, POSTFACH 137
Printed in Germany

Cross-section of Minox model 2, circa 1948. Heavy arrow points to part #27, the film-lens (and fifth element). This lens element contacted the film during exposure but the design created all sorts of dust pick-up and scratching problems.

Minox—Small Wonder for 50 Years

by Morris G. Moses

Part Three-The World War II-Years

(Previous parts of this story dealt with the conception of the Minox in 1934 by Walter Zapp; the first Estonian prototype; and the developments that led to Zapp's association with the VEF in Riga, Latvia in 1936-1940.)

Manufacture of the Minox had begun at VEF in late 1937, and Janis Vitols had already made his contacts in London for the establishment of Minox, Ltd. there in 1938. While trade between Latvia and Europe had existed since the 1800s, the new 20th century marketing vistas in the minds of VEF management were in the United States.

The American base on which Minox, Inc. was established began with the incorporation in 1935 of the firm AD.-Auriema, founded by Adolph Auriema, an exporter of radio, electronic, and motion picture equipment. Shortly after Janis Vitols had arrived in the U.S. in 1939, he approached Auriema for financial support in marketing the Minox in America. On June 3, 1940, Janis Vitols, Auriema, and John J. Mahoney, a lawyer, incorporated as Minox, Inc. with offices at 116 Broad Street (Auriema's address) N.Y.C. Janis Vitols held 18 of the 20 outstanding shares; Auriema and Mahoney held one share each. The business address changed to 92 Liberty Street, N.Y.C. in late 1940, indirectly as a result of Vitols' meeting with members of the Latvian-American Relief Committee who had vacant office space there. Heavy American advertising for the Minox had already begun in the photographic consumer magazines in early 1940.

Although Pearl Harbor was still over a year away for America, the Russians had entered Riga on June 17, 1940. This would be the first of two Russian occupations of Riga. With the Russian takeover of VEF, the production of Minox cameras became a second priority to manufacture of more ordnance, radio, and radar. Historical photographic remnants of the spasmodic Russian occupations of Riga are embodied in the so-called "Russian Minoxes." Variants of these included effacing or omitting the word "Riga" under "VEF" and also the engraving of "Made in USSR" where the normal "Made in Latvia" would have been. According to The State Plan for Development of the USSR National Economy for 1941, the Russians had actually set a goal that year for production of 5000 Minoxes. Based on the author's study of fragmented records from the CVVA (Central State Archives of Riga), the production fell far short of the 5000 and was closer to the 100-200 range. (Readers with "Russian Minoxes" and other Minox cameras are urged to contact Mr. Richard Conrad, P.O. Box 156, Mason, MI 48854. Mr. Conrad is doing an exhaustive research study on serial numbering of all Minoxes and their variants, and would be pleased to exchange information.)

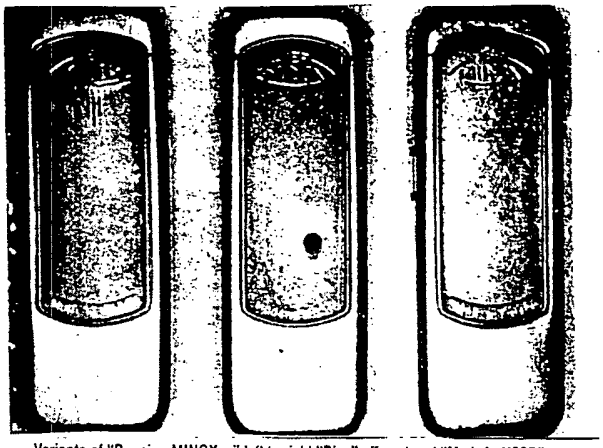
While the Russians were de facto owners of VEF during parts of WW II, the manufacturing rights and title to Minox in the U.S. at that time were another complex matter. Zapp and Jurgens had made their deal with VEF before the war had commenced, and export to England and Switzerland had started in 1938. With escalation of the war in 1940, Janis Vitols lost contact and legal control of his source of merchandise. On April 1, 1941, Dr. Alfreds Bilmanis, Latvian Envoy Extraordinary, Minister Plenipotentiary, and exiled Counsel General of Latvia in the U.S., sold all rights to U.S. Patents numbers 2,161,941; 2,169,548; and 2,218,966 to Minox, Inc. Janis Vitols' firm in the U.S. It was a legal victory, but one which did little to assure any continued American Supplies of Minox cameras. Earlier, on February 11, 1941, an even more visionary agreement had been drawn up between Vitols and Bilmanis, the latter acting for the free government of Latvia in exile. The terms of this earlier agreement gave Vitols Latvian assets of $44,912.60. From this was deducted $10,392.66 (due the Latvian Government) as a 33⅓% sales commission for underwriting publicity and advertising for the Minox in the U.S. Of further interest were allowances of "$3.00/camera guarantee fee" for 996 cameras (a form of warranty set-aside); $4.00/camera for "rebuilding" of 150 cameras (some apparently arrived in need of final assembly or rebuilding) and an allowance of $823.40 for "faulty mechanisms" (presumably repair work and replacement parts). The most historically significant aspect of this agreement was the inclusion of a $10,000 allowance from the Free Latvian Government "for work involving continued production of the Minox camera in the United States." It was the intention of Free Latvia to assure continued supplies of the Minox in the U.S. and accept a 5% royalty on sales of such cameras. Regretfully, a Minox engraved "Made in U.S.A." has never been authenticated, and the only piece of work done under the $10,000 allotment appears to be the Castelli enlarging column lock patent #2,339,615 filed on May 21, 1942.

In the summer of 1941, German troops occupied Riga and the VEF was taken over by the Allgemeine Elektricitats Gesellschaft ("AEG"), an international electrical trust, headquartered in Berlin. AEG had cross-licensing agreements with General Electric Company among others, and also had representatives in over 40 countries on all five continents. AEG also had a financial interest in VEF from WWI. On January 21, 1942, Otto Rusche, a director of AEG, was authorized by a "Vollmacht" (power of attorney) to transact VEF business between Riga, Switzerland, and Berlin. It was later in the war and through Rusche that the Swiss Minox operation, VEF-Etablissement, was set up to handle postwar Minox distribution in Switzerland. During Rusche's tenure as German interim connection to VEF-Riga, he managed to meet Walter Zapp who was traveling between Riga, Munich and Berlin in the hopes of selling the camera rights to the Berlin offices of Agfa-Kamerawerk. Through the influence of Rusche, who could see some commercial potential in the post-war exploitation of the camera, Zapp was given a job in 1943 working in the AEG-Berlin research laboratories under Drs. Bruche and Ramsauer, who were world experts on the early development of the electron microscope.

In late 1943, the Allies began their intensified night-time bombings of Berlin. Although the work on electron microscopes was a challenge to Zapp's many skills, the dream of a Minox reborn after World War II was gaining more strength in the fertile imagination of a determined Walter Zapp.

Next-Part Four-The Post World War II Years.

N.B. In addition to those named in previous parts, the author would like to acknowledge the help of Oscar Fricke; Tim Mulligan, National Archives; Professor Akira Inomata, State University of New York; Eleanor Quadri, VEF-Establissement; Dora Weinstein and Barry Balthrop, both with the U.S. Patent Office Scientific Library.



Variants of "Russian MINOXes" left to right-"Riga" effaced and "Made in USSR" engraved in sunken background; no "Riga" and "made in USSR" engraved on flat background; on extreme right, regular Riga MINOX.

Advertisement for MINOX in England, November 1939. *Photographic Journal* (London). 25 English pounds were $125.00 American at the beginning of WWII.

embodied in the contract.....The men, Walter Zapp and Richard Jurgens, confirm here in writing that the camera is the invention of Walter Zapp, and the joint property of Walter Zapp and Richard Jurgens." The formal contract occupied three pages and became the basis for the familiar 8 x 11mm format Riga Minox and 49 patents in 20 countries. The first patent was Finland's #7481, December 21, 1936. A second Finnish patent #7486 was issued simultaneously with British Patent #495,149 on December 22, 1936.

Zapp moved from Nomme, Estonia to Riga and VEF in late November 1936, and the Minox tooling began at VEF under Edvards Berzins in early 1937. It was an effort involving nearly 70 people among whom were the optical team including Indus from Estonia, Francis Fersts, Blatnek and Mueller, two Austrian refugees. A man named Petters became the liason between Zapp and Teodors Vitols, and a designer, Oskars Grinbergs, was assigned for Zapp's use. Roberts Erdmanis, a mechanical engineer and member of the faculty of the Latvian University, helped develop much of the automated tooling, very advanced at that time for technology anywhere in the world. Peters Butulis, a technician, worked on designs for autofocusing mechanisms of early models of 20 x 30cm enlargers. Space precludes a complete listing here of all Minox personnel, their educational backgrounds, and their language skills, but to the author's amazement, over 42 names given to him by Walter Zapp and Alberts Jekste were confirmed in immigration, embassy, and intelligence records at the U.S. National Archives. Jekste was an administrative executive under VEF's Vice-Director Juris Liepins and radio-electronics division department head, Edvards Feldmanis. Alberts Jekste was also an early pre-WW II pioneer in development of xenon short-arc high-intensity lighting sources for motion pictures. It was partially thru Jekste's intercessions with Dr. Alfred Bilmanis, Latvia's Foreign Minister, that seed monies were found for the Minox project.

The early Estonian Minox logo as originally conceived by Zapp was disputed by Zeiss-Ikon shortly after its registration. As a result, Zapp's logo was modified by VEF's graphics designer, Adolfs Irbitis (brother of Karlis, the aircraft designer) from "Minox" to "VEF-Minox-Riga." Born on December 6, 1910 in Riga, Adolfs Irbitis had been in charge of the VEF photo-lab, and contributed suggestions towards the styling of the VEF Minox. His industrial designs also figured heavily in many early Minox publications, and VEF radio cabinetry.

"The early Estonian Minox logo as originally conceived by Zapp was disputed by Zeiss-Ikon, after which Zapp's logo was modified."

Facilities for casting were in short supply in 1937, and the unusual deep-drawn camera body-shells, made of stainless steel, presented many die-making problems and frustrations in finish-cleaning. Sub-assemblies for shutter and body mechanisms required hand-soldering of brass and steel in some places. It was not until February 1938 that serious production began to yield over 100 cameras per month. Zapp was also asked to consider a 16mm format in 1939, a project in which Orestes Berlings (later, a designer for the Omicron, prototype for the Japanese Atoron Minox-copy) participated, but the scale-up would have magnified weaknesses in the existing triplet lens design, and also inhibited sales and processing revenues from the unique 9.5mm wide Minox double-spool film packaging.

According to Walter Zapp, the first Minox sold outside of Riga was purchased by a French diplomat who later remarked on "its usefullness for office purposes." This might have been a euphemism for espionage usage, an application which Zapp has always denied as being the primary design goal for the camera. Whether or not it was intended for spying, it is one of very, very few rigid-bodied cameras which focus down to 8 inches without use of supplementary lenses leaving much to conjecture.

Time had now come around to mid-1939, thoughts of setting up for export to England and the U.S. were underway, and no one at VEF was yet aware of the three successive foreign occupations of Riga that would begin in 1940.

Next: Part Three-The World War II Years.

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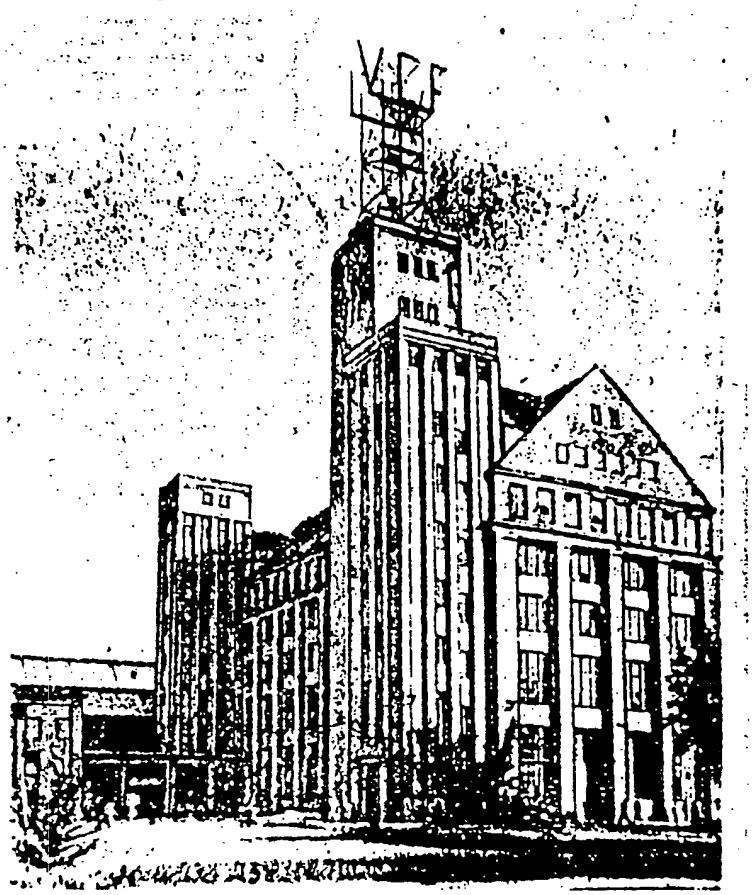
N.B. In addition to those previously named in Part One, the author would like to acknowledge the contributions of Orestes Berlings; Richard Conrad; Professor David Crowe; Alfreds Gerbers; Karlis Irbitis; P. Korsaks, Latvian SSR; Heldor Sepman; Miewaldis Sipins; A. Spurmanis and J.V. Svanks, Association of Latvian Engineers; and Nick Upenieks.



The main building of the VEF (Valsts Elektrotechniska Fabrika or State Electrotechnical Factory) in 1939. Note antenna on top with letters "VEF." Minox production shops were on parts of second and third floors and some lower rear floor areas.

Minox—Small Wonder for 50 Years

SHUTTERBUG, OCTOBER 1986

Dr. Teodors Vitols (1888-1948) Director of VEF. His emigration to the United States was sponsored in 1946 by his nephew, Janis Vitols. Barely in the states for two years Vitols died in New York City on January 15, 1948.

by Morris G. Moses

Part Two—Operations at the Valsts Electrotechniska Fabrika (VEF) 1937-1939

Editor's Note:

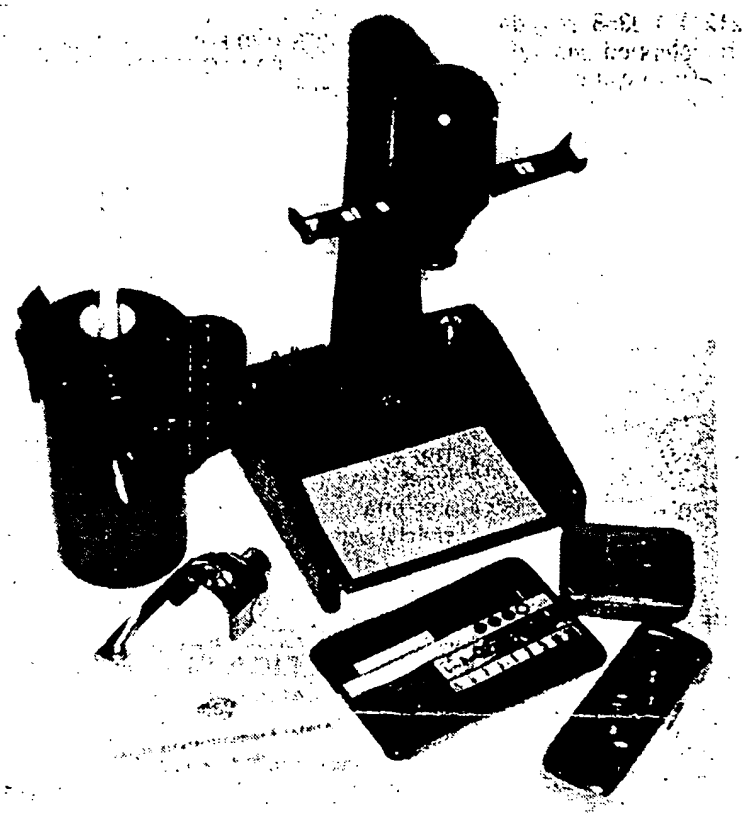
A portion of the planned book on Minox by Mr. Moses is appearing in Shutterbug in an eight-part series. This is the second installment.

(Part One described the early life of Walter Zapp and his conception of the first Minox in Estonia in the mid-1930s. Failing in his attempts to secure a manufacturing set-up there, his fortunes led him to VEF in Riga, Latvia in 1936.)

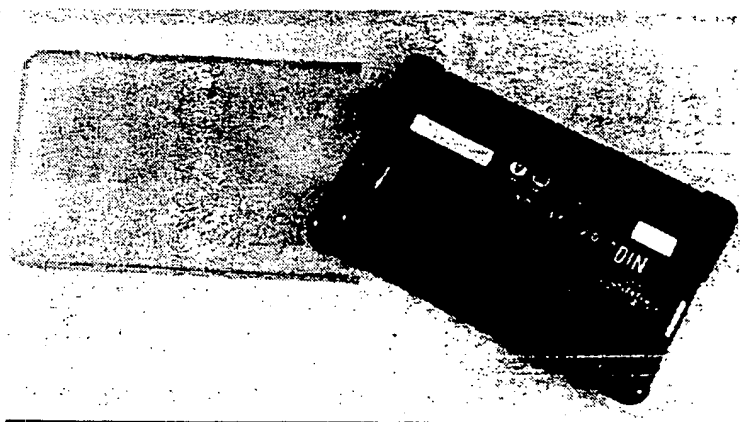
Walter Zapp and his financial partner, Richard Jurgens, were received at the VEF on September 7, 1936 by Teodors Vitols, the General Director. Vitols, born in 1888 in Taurkaln, Latvia, 30 miles southeast of Riga, had commenced studies at the St. Petersburg (now Leningrad) Polytechnic Institute in 1907, but was dismissed soon after enrollment upon discovery that he had participated in the 1905 Revolution. He was later employed by Siemens-Schuckert in St. Petersburg in 1909 and returned to Latvia in 1920. Graduated from the University of Latvia in 1929, he joined VEF in 1932.

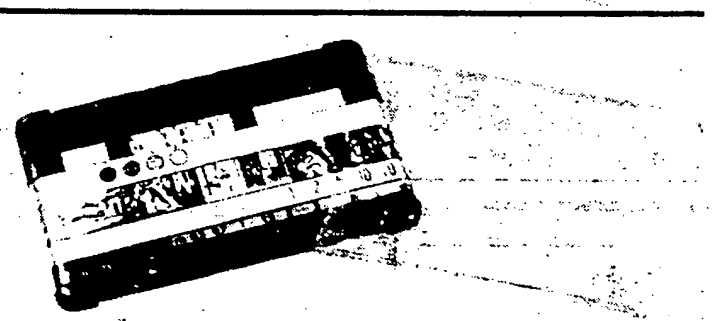
VEF had been established in that year as an independent state enterprise, having developed out of the Pasta and Telegrafa Galvenas-the Latvian State Postal Telegraph and Telephone complex. Employment at VEF rose from 400 to nearly 3500 in 1939, with corresponding sales from 2 to 15 million Lats (at 1 Lat = 19 cents, roughly $400,000 to $3,000,000). Among the varied departments were the plywood and aircraft divisions with such prize-winning world-recognized aircraft designers as Karlis Irbitis, father of the VEF J-11 and J-12 monoplanes. Coincidentally, Janis Vitols, nephew of Teodors, was VEF's London sales agent for these planes in 1936. VEF radios from the radio-electronics divisions were sold all over Europe, some models having features copied from such well-known American firms as National Radio in Malden, Massachusetts and Hallicrafters in Chicago.

What Zapp and Jurgens first presented to Teodors Vitols was the Estonian Ur-Minox, a 6.5 x 9mm prototype, silver-plated brass and steel working model, capable of enlargements up to 13 x 18mm. Vitols' initial reaction was both apathetic and skeptical, and his first question was whether or not the enlargements had been "doctored" or retouched. When Zapp replied that only dust spots and scratches had been removed, Vitols then asked Zapp to take test photos in Vitols' presence. These were sent out for processing and when the negatives and enlarged prints came back, Vitols exclaimed his delight at the results. The initial contract between VEF and the Zapp-Jurgens partnership was drawn up on October 6, 1936 and the opening paragraph is quoted: "This contract has to do with a miniature photo camera and respective accessory apparatus discovered, invented, and built by Mr. Walter Zapp. The camera is called "Minox" and *hereby the camera is designated as the central object* and its technical description is



A VEF-Riga Minox outfit. From left to right: Developing tank with thermometer, tripod/cable release clamp, instruction book, enlarger, extinction-type exposure meter, film tin containing cassettes, and the Minox camera itself. Note size of exposure meter as compared to camera.



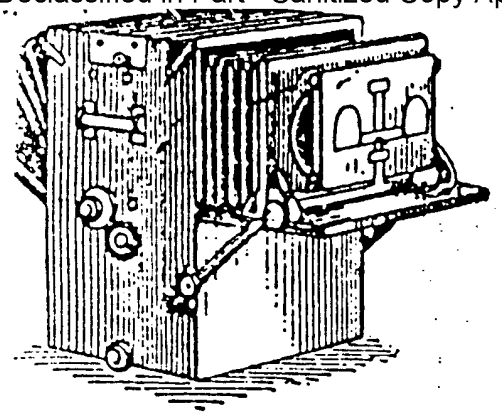


Close-up of VEF-Riga Minox exposure meter. Note delineation of lighting condition by graphics just above shutter speed band in lower photo and overall resemblance of meter to the more familiar "Leudi."

In Photo Technology

Part I: Developments up to 1940

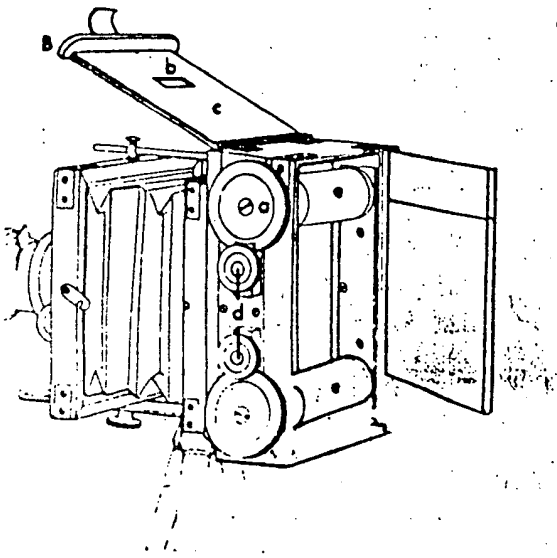
by Morris G. Moses



Ezuchevskii's Stereoscopic Camera (Paris Exhibition 1878)

One of the earliest accounts of technical photography in Russia is about the work done in 1840 by A.F. Grekov. This was an attempt to eliminate the mirrorlike quality of a daguerreotype and obtain a more lasting image by chemically plating a thin gold layer over the image. Grekov's work was reported by the French physicist Arago to the French Academy of Sciences in Paris in late 1840. Grekov was one of the first Russian workers to construct a daguerreotype apparatus.

Another Russian daguerreotypist was S.L. Levitskii who exhibited his work at the Paris Exhibitions of 1843 and 1851, winning a gold medal at the latter. Levitskii is further credited with a focusing bellows camera in 1847 and the earliest use of the arc light in Russia, in 1879. One of the earliest Russian stereo cameras, constructed by D.P. Ezuchevskii in 1878, brought this designer a bronze medal in the 1878 Paris Exhibition.

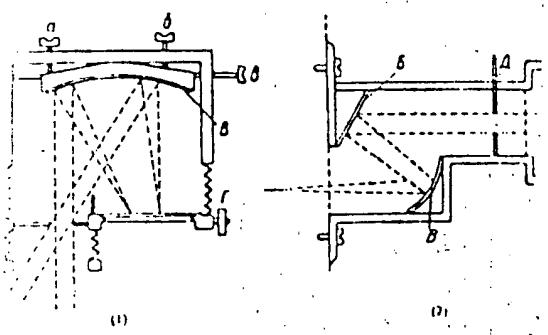


Varnerke's Roll Holder (Courtesy Brian Coe-Kodak Harrow)

Rollfilm Origin

Some claim that the legacy of the rollfilm is due in large part to the work of Leon Warnerke (Varnerke), a Russian who lived in England in 1875. Warnerke's rollholder used a special paper rollcoated with collodion emulsion. This was a "strippable" film, made up in a 100-exposure length and wound between two rollers.

The roll was marked ahead of time with numbers and lines for positioning in the focal plane. The lines and numbers were read through a red window in the camera. Many Russian workers argue to this day that George Eastman's rollholder was inspired mainly by Warnerke's work and that William H. Walker, the Rochester manufacturer who designed the Eastman-Walker rollholder of 1884, had been corresponding with Warnerke. The 1888 Kodak had a 100-exposure capacity another interesting coincidence with Warnerke's concept.



Levitskii's catadioptric objectives and camera: 1) camera and mirror (B) com- 2) Mirror objective with combined plane mirror (b) and spherical mirror (B)

A Three-Color Camera

An early three-color color camera designed by E. Kozlovskii appeared in 1889 and is somewhat reminiscent of the 1938 American design by Devin. Three filtered images were obtained with one exposure and then registered to produce the final full-color image. The Kozlovskii apparatus was exhibited in Kiev in 1901. Early work by I. Yanovskii in 1894 on chronophotograpy was a pioneering effort in Russian high-speed and time-sequenced photography.

Many of today's catadioptric lens designs have come down from the early work of A.A. Popovitskii in 1902. A patent granted him in 1904 describes a unique lens design with mirror objective and bellows, one of the earliest patents in spherical mirror lens design that laid the groundwork for later designs by Maksutov.

A crude photo-electric shutter design was patented by I. Polyakov in 1899, but design work never progressed beyond a prototype at the Moscow Technical College in 1908. Aerial photography was used by the Russian army in World War I, and multi-objective aerial survey cameras were the subjects of design patents filed by V.F. Potte and R. Tile in 1910.

Burinskii's Work

One of the more unusual areas of pre-revolutionary Russian photography was the work done by Evgenii Fedorovich Burinskii, who was born Feb. 6, 1849. His early work in criminology techniques and forensic photography was adopted by many Western countries. Burinskii was the founder of the St. Petersburg State Forensic Photographic Laboratory in 1889. In 1898 he was awarded the M.V. Lomonosov prize for work done on deciphering 13th Century documents found during an 1843 excavation of the Kremlin.

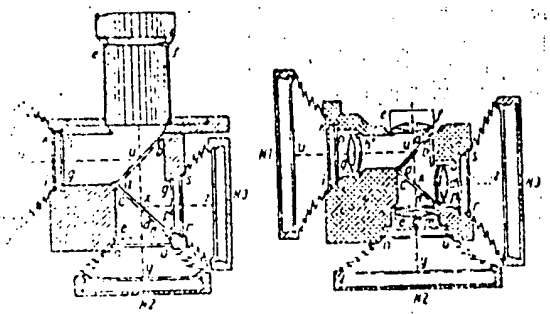
Using the techniques of repeated exposures and negative superimposition to increase contrast, he was able to bring up the writing on the original 13th Century material. This material, amazingly enough, was rawhided A copy of a Burinskii work, *Forensic Examination of Documents* (1903), is in the F.B.I. Library in Washington, D.C.

The turn of the century brought the appearance of the Iris sensitized plate factory in Libau and the Victory and All Russian Factories in Moscow. Production rates for sensitized goods and cameras in the early 1900s were still low since mass photography as we know it in the West had not yet arrived for the Russian man on the street.

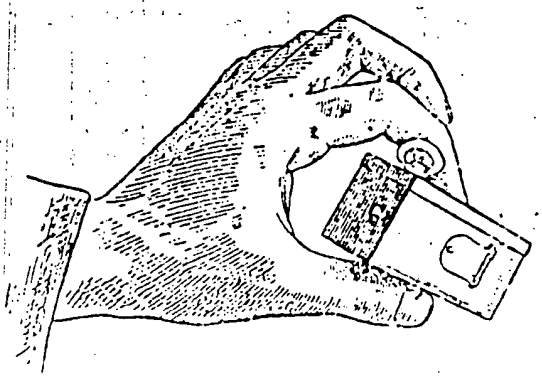
Effects of Revolution

The revolution of October, 1917 opened up many developments in Soviet photography. Among the key events was the establishment of the Higher Institute of Photography in 1918, later reorganized as the Leningrad Institute of Kinematographic Engineering. In the same year, the S.I. Vavilov State Optics Institute was founded in Leningrad.

The Institute (GOI) owed a great deal to its founder, D.S Rozhdestvenskii, and has been a key institution in the rise of the Soviet photographic in



Kozlovskii's triple-exposure, one-shot color camera



An early Russian subminiature camera (Russian patent #10550.1929)

dustry. The Leningrad Institute of Precision Mechanics and Optics was to come later in 1930. With the advent of the COI, much research began in practical camera design and production.

Efte Plate Camera

The 1920s had seen the beginnings of Stalin's series of five-year plans. One of the first production cameras of this era was the Efte plate camera, *not* unlike the German Ica and Certo plate cameras. These were 9 by 12cm designs that borrowed heavily from the Dresden influence and eventually led to another series of folding plate cameras called Fotokors. Other related designs included the 6 by 9cm Turist and 6.5 by 9cm Reporter.

The most famous of the 1930s vintage Soviet cameras were the Feds, named after Felix Dzerzhinsky, first chief of Soviet secret police. The Fed is regarded by many as a Leica copy. Its history is told very elegantly by Oscar Fricke in the April, 1979 issue of *History of Photography*. Suffice it to say, that with the arrival of the Fed, 35mm photography had been put into the hands of thousands of Soviets and Soviet consumer photography moved a notch closer to Western activity and consumption levels.

Photo Developments in Russia Since 1940

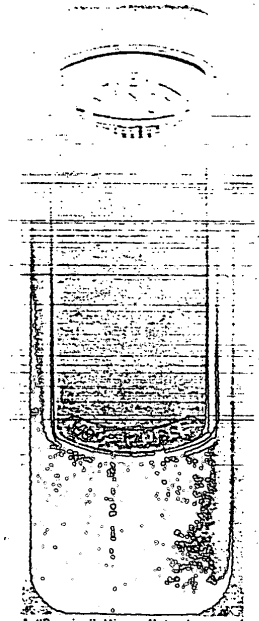
PART II

by Morris G. Moses

When the bombs fell over Pearl Harbor in December 1941, the Japanese had already sent back dozens of rolls of film taken by their agents in San Francisco and Honolulu. In Europe, Hitler had invaded Poland and was marching on Europe.

In June 1940, Russia occupied the Baltic and left today's collectors souvenirs in the form of several dozen very unusual Minox cameras. Normally, these cameras that were a product of the VEF State Electrotechnical Factory in Riga, Latvia, would have been engraved to that effect. However, VEF records for July thru September 1940 show 107 of the cameras had the word "RIGA" effaced and the words "Made in U.S.S.R." inscribed on the back cover.

Under the U.S. Lend-Lease programs, which began in late 1941, the Russians were also recipients of tremendous amounts of foreign aid. Among the entries in U.S. Lend-Lease administration records for 1943 under "Photographic Supplies" were the following mouth-watering goodies: film, 35mm negative, 2,811,545 feet billed at $59,007; 752,750 pounds of photographic paper costing the U.S. just over $550,000; motion picture sound recording apparatus $112,443 scientific cameras $35,527, camera parts at $149,476; X-ray film costing $200,000.



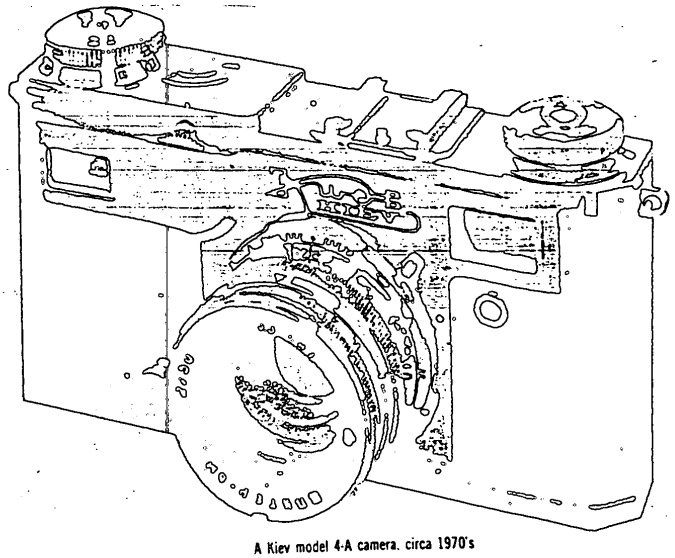
A "Russian" Minox. Note absence of word "RIGA" under the MINOX logo on top, and "Made in U.S.S.R." near bottom.

A very interesting item of Russian photographic connection in WW II was the gesture made by our Office of Strategic Services (the predecessor of the CIA) to the Russian N.K.V.D. (their forerunner of the KGB). The glad tidings came in the form of a letter from General John Deane, U.S. Army, to Colonel P. Fitin of the Russian N.K.V.D. It was an offer to ship the KGB a portable 15mm microfilm outfit weighing 3½ pounds, with our compliments. It must be recalled that after the German invasion of Russia on June 21, 1941, the U.S. and Russia became much friendlier than they were at the start of WW II.

At the close of WW II, many of Germany's finest optical works were "up for grabs" by whomever got there first. A team of U.S. experts under the direction of Edward Kaprelian of the Signal Corps were able to reach many Zeiss personnel in Jena in May 1945, before these people might have been "liberated" by the Russians. It should be interesting to look back and speculate whether the Instamatic camera would be with us today had Kaprelian's teams arrived late.

One of those brought back to the U.S. under "Project Paperclip" by the Signal Corps was Hubert Nerwin, father of the Zeiss Tenax and the Kodak Instamatic cassette systems.

Post World War II years in Russia saw the beginnings of newer generations of the prewar-designed FED camera and a wide range of MOSKVA folding cameras, 60 by 90mm (roughly 2½ by 3½ inch) format, reminiscent of Voightlander Bessas and Zeiss Ikontas. The FED designs spawned others, including the ZORKI and the ZENIT. The earlier ZORKIS were primarily rangefinder 35s leading into the auto exposure models of the 1960s. The ZENITs were pentaprism SLRs, withZENITs of the 1960s incorporating semi-automatic exposure systems and motor drives. Perhaps the most unusual variations of the ZENITs were the Photo-snipers, introduced in the 1970s. These were gunstock, trigger cameras, with provisions for long-focal length telephoto lenses and ostensibly sold for close-up nature photographs. Up to 1980 over 150 designs had appeared in Russian camera manufacturing. A major number of these have been delineated in the booklet titled *"One Hundred Ten Russian Cameras"* written by Solomon Maizenberg, a Russian emigre, whose many excellent books on Russian camera repair are in the collections of the Library of Congress.



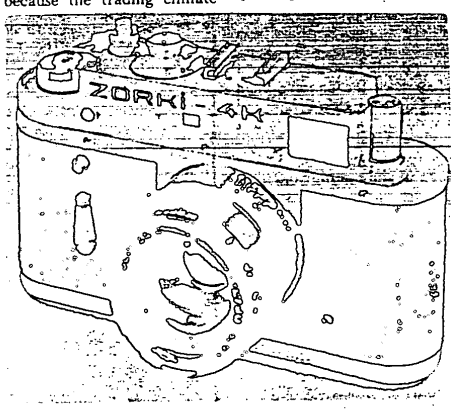
A Kiev model 4-A camera, circa 1970's

The Russians had sent back photos from the far side of the moon in the late 1950s, and the early 1960s brought the introduction of the Russian MOMENT - the USSR's answer to Polaroid. Styled in the tradition of the Polaroid 95 and 110, the MOMENT had an f.6.3 lens in a 1/10 to 1/200 shutter and was finished in black leather-like material. The arrangements for the attempted license for manufacturing from Polaroid are still partly shrouded in secrecy and obscurity, although the MOMENT can be adapted to use Polaroid roll films. Instant film and diffusion - transfer technology in the USSR is confined mainly to other than mass, consumer, amateur markets.

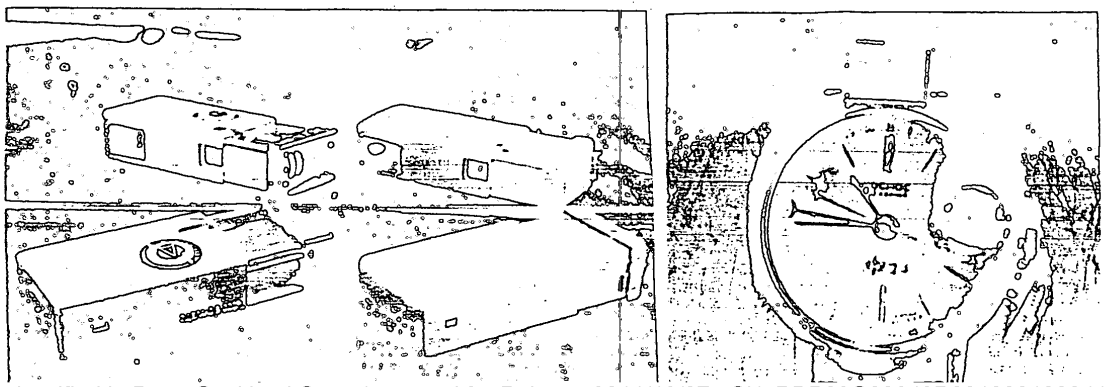
The KIEV-VEGA range of subminiature 16mm cameras that first appeared in the mid-1960s had their origins in the Minolta-16 designs that had been marketed in the early 1950s. On page 6 of the February 1960 issue of *Japan Camera Trade News* is an article telling the frustrations of Chiyoda Kogaku Seiko K.K. (Minolta) when they discovered the similarities in the Russian KIEV-BERAS and their own Minolta-16s and were unable to prosecute because of lack of patent recognition on the part of the U.S.S.R. However, the Japanese, in turn, are a bit silent about the origins of the Pentax 110 SLR system of 1978 whose appearance is somewhat a reminder of the NARCISS 16mm subminiature design introduced by the U.S.S.R. back in 1958.

For those who wish to "import" their own current design Russian cameras on a one or two-lot basics, there has been VNESHPOSLYTORG. This is an agency offering to export single lots of contemporary Russian cameras, binoculars, and other consumer goods in return for hard currencies such as the dollar and English pound. The company's address as of 1982 was 5, Marksistskaya ul. 109147 Moscow U.S.S.R. You would be wise to check with the American Embassy and Trade Consulates before sending any remittances, because the trading climate varies quite widely with the politics of the day.

Also, as of 1982, the familiar Kodak film in the friendly yellow box could be found in Russian "Beriozkas" (hard-currency stores) conveniently located in metropolitan Moscow near the Novodevichy Monastery and the famous Mezhdynarodnaya Hotel. Kodak film has commanded a hefty premium over stateside prices (the Russians know a good thing when they see it). Consumer photofinishing facilities in the U.S.S.R. today still leave much to be desired on quality, and the same-day and one-hour service we Americans take for granted is a luxury there available only to a limited number of very privileged citizens. ○



ZORKI-4K camera, produced in the 1970's



August 20, 1945

D.C.

Refer to Section 19.1
Div.19;hme

MEMORANDUM

TO: Dr. B. L. Clarke
Mr. S. K. Eaton, Jr.
Dr. R. D. Evans
Dr. E. H. Harvey
Dr. A. B. Lamb
Dr. L. C. Pauling

FROM: Harris M. Chadwell

SUBJECT: Office of Censorship Red Book and the Master Chart; Defense Committee Meeting of September 5

1. Colonel Shaw has requested the return of all copies of the Red Book which have been loaned to Section 19.1. It is my understanding that copies were distributed to members of the Defense Committee, and I would appreciate your returning to this office any copy of the Red Book that you may have. If you do not have a copy, please write me to that effect. Since all technical work in the Office of Censorship is to be closed out by September 15, would you be good enough to send these books to me not later than September 1.

2. Since the Office of Censorship is going out of business soon, Colonel Shaw feels that copies of the revised Red Book and of the Master Chart should not be distributed to Section 19.1 contractors. We hope to have one volume of each available in this office for loan, however. If you wish to borrow this one copy, please let me know.

3. The meeting of the Defense Committee scheduled for Wednesday, September 5, in Dr. Lamb's office will be held in accordance with previous arrangements. Because of the Office of Censorship's being abolished, this will be the final meeting of that group. At this meeting, it is hoped that there will be a discussion of long-range programs which should be undertaken by any organization created to replace OSRD and that each member of the Committee will be prepared to present his suggestions. In anticipation of this discussion, Miss Galbraith will be glad to circulate to the members of the group any ideas that you may wish to

Property at the New York Postal Station

Description	Quantity	
MIT Device, Electronic, complete in Par-metal case	1	Hambleton.
ADL Boiler, 3/4 H.P., Hoffmann, steam	1	PW Table
ADL Special table equipped with 6 valves, 16', 3/4" brass pipe & 1 pc 18 mesh copper screen 4' X 4'. (Built by A. D. Little, Inc.)	1	PW Table
" Oberdorfer 1/4" bronze gear pump	1	PW Table
" Motor, elec. 1/4 H.P. G.E.	1	PW Table
" Valves	4	PW Table
" Pressure cut-off switch, square D make	1	PW Table
MIT Norelco Diff Apparatus, Model #410, with modifications. 4 horns and automatic time switch device.	1	Argus.
Stainless steel racks 5" X 10" X 14"	33	Argus.
Stainless steel tanks 15" X 24" X 12"	4	Argus.
" Stainless steel circulators & valves	3	Argus.
Eastern Centifugal pumps, Model D-6	3	Argus.
BTL Instrument, optical, consisting of filters, & candle-light. (From Bell Telephone Labs.)	1	Kingsbury view

Property at the San Francisco Postal Station

Description	Quantity	
MIT Device, Electronic, complete in Par-metal case	1	Hambleton

Property at the San Juan Postal Station

MIT Device, Electronic, complete in Par-metal case	1	Hambleton

Property at TOD Laboratory

ADL Device, electric scorch striping	1	scorcher
GPI Reflector detector	1	
BTL Hand screed maker with ruling pens	1	

7/4/45

Ltr. to Evans, Eaton & Clarke & Johnson

7/9/45

RECORD