UNITED STATES AIR FORCE
SCHOOL OF AEROSPACE MEDICINE

Publications and Presentations
of the Ophthalmology Branch,
USAF School of Aerospace Medicine
1960-1970

Thomas J. Tredici

August 2002

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USAF School of Aerospace Medicine
Clinical Sciences Division
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14. **ABSTRACT**
   - Aerospace ophthalmology combines the practice of Clinical Ophthalmology and Aerospace Medicine in attempting to solve the visual and ophthalmological problems of the aviator and astronaut. The Ophthalmology Branch of the USAF School of Aerospace Medicine has exclusively performed this task for nearly 85 years. The visual problems and solutions proposed are documented in the publications and invited presentations of Ophthalmology Branch personnel, listed for the years 1960 through 1970. They deal primarily with applied visual and clinical topics; such as, visual standards for flying, the use of contact lenses in aviation, visual illusions and aircraft accidents, air-to-air target acquisition, management of glaucoma in flying personnel, thermoneutral energy effects on the eye, flashblindness, visual protective devices, laser damage to ocular tissues, UV effects on the eye, protective ocular filters for space exploration, etc.

15. **SUBJECT TERMS**
   - Aerospace ophthalmology, visual standards, aviators vision, flashblindness, retinal burns, laser and UV effects on the eye, ocular protective filters.

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<tr>
<td></td>
<td>1</td>
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<tr>
<td>1960 Presentations</td>
<td>2</td>
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<tr>
<td>1961 Publications</td>
<td>3-4</td>
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<td>1961 Presentations</td>
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<td>11-12</td>
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<td>34-35</td>
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<td>1967 Special Reports</td>
<td>36</td>
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<td>1968 Publications</td>
<td>37-38</td>
</tr>
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<td>1968 Presentations</td>
<td>39</td>
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<td>1969 Publications</td>
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</tr>
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<td>43</td>
</tr>
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</table>
1. DIAGNOSTIC HEAD LIGHT FOR OCULAR MUSCLE TESTING
   Tredici, T. J.

2. THE INFLUENCE OF KINESTHESIS UPON NEAR HETEROPHORIA
   MEASUREMENTS
   Morris, F. M.
   American Journal of Optometry and Arch. of American Academy of Optometry
   Vol 37, No. 7, July 1960.

3. A METHOD OF PHOTOGRAPHING FLUORESCENCE IN CIRCULATING
   BLOOD OF THE HUMAN EYE
   Novatny, H. K., D. L. Alvis
   60-82 Sch of Aviation Medicine Brooks AFB, Tx, Sept 1960.

4. RETINAL VASCULAR REACTIVITY IN PATIENTS WITH DIABETES
   MELLITUS AND WITH ATHEROSCLEROSIS
   Hickam, J. B., H. O. Sieker
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1. VISUAL ASPECTS OF RADIATION EXPOSURE
   Culver, J. F.
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1. METHOD FOR PRODUCING WETTABLE SURFACES ON CONTACT LENSES
   BY CHEMICAL FORMATION OF INORGANIC FILMS
   Erb, Robert A. (The Franklin Institute)

2. DEVELOPMENT OF PHOTOREACTIVE MATERIALS FOR EYE-PROTECTIVE
   DEVICES
   Fox, Richard E. (The National Cash Register Company)

3. TRANSMITTANCE OF THE VISIBLE SPECTRUM THROUGH THE
   COMPONENTS OF THE BOVINE OCULAR MEDIA
   Pitts, D. G.

4. VISUAL ASPECTS OF RADIATION EXPOSURE
   Culver, J. F.
   Military Medicine, Vol 126, No. 9, Sep 61.

5. RECOVERY OF VISUAL DISCRIMINATION AFTER HIGH INTENSITY
   FLASHES OF LIGHT
   Severin, Sanford L., N. L. Newton, J. F. Culver

6. ALPHA-CHYMOTRYPSIN IN CATARACT SURGERY (ENZYMATIC
   ZONULOYSIS)
   Tredici, Thomas J.
   Military Medicine, Vol 126, No. 8, Aug 1961.

7. CONTACT LENSES FOR FLYING PERSONNEL (A RATIONALE FOR
   CURRENT POLICY)
   Culver, J. F.

8. PRIMARY DEGENERATION OF THE RETINA (CASE REPORT)
   Moore, J. F., J. F. Culver
   Aerospace Medicine, Vol 32, No. 9, Sep 61.

9. COSMIC RADIATION
   Zellmer, R. W., R. G. Allen, J. F. Culver
1961 Publications (continued)

STUDENT THESES

(Submitted in Partial Fulfillment of the Requirements of the
Advanced Course in Aerospace Medicine – May 1961)

Experimental Work Performed Under the Direction of Lt Col J. F. Culver
And Capt N. L. Newton, Ophthalmology Department
Publications (10 thru 14)

10. THE EFFECTS OF SIMULATED ALTITUDE ON PENETRATING EYE
INJURIES
J. Robert Dille

11. RECOVERY OF VISUAL DISCRIMINATION AFTER HIGH INTENSITY
FLASHES OF LIGHT
Sanford L. Severin

12. RESULTS OF TONOGRAPHY AT A SIMULATED ALTITUDE OF 30,000 FT
James T. Moore

13. AN EVALUATION OF A METHOD FOR STUDYING CORNEAL
TOPOGRAPHY USING PHOTOGRAPHS OF OCULAR CASTS
Clifford L. Mayhew

14. THE EFFECT OF PILOCARPINE MIOSIS ON VISUAL ACUITY UNDER
CONDITIONS OF COCKPIT ILLUMINATION—A POSSIBLE PROTECTION
AGAINST FLASHBLINDNESS
Howard A. Minners

15. RESULTS OF PREFLIGHT AND POSTFLIGHT MEDICAL EXAMINATIONS
Jackson C. B., W. K. Douglas, J. F. Culver
Proceedings of Conference on Results of the First U.S. Manual Suborbital Space
OPHTHALMOLOGY BRANCH

1961 Presentations

1. PROTECTIVE GLASSES AGAINST ATOMIC FLASH
   Culver, James F. A. V. Alder
   Presented at the AGARD, NATO Meeting, Lisbon, Portugal, Apr 61.

2. VISUAL ASPECTS OF SPACE FLIGHT
   Morris, Floyd M.
   Presented at the Annual Meeting of the American Academy of Optometry,

3. EARLY OCULAR EFFECTS OF HIGH ENERGY PROTON AND ALPHA
   RADIATION
   Culver, J. F., N. L. Newton
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4. A NEW APPROACH TO THE STUDY OF FLASH BLINDNESS—USE OF THE
   ZEISS LIGHT COAGULATOR
   Severin, S. L., N. L. Newton, J. F. Culver
   Presented at the Mid-Southern Section Association for Research in
   Ophthalmology, 9-12 Nov 61, Oklahoma City, Okla.

5. COMPLICATIONS ASSOCIATED WITH THE WEARING OF CONTACT LENSES
   Morris, Floyd M.
   Presented at the South Central Texas Dispensing Opticians Society Meeting, 23 Jul
   61, San Antonio, Texas.
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USAF SCHOOL OF AEROSPACE MEDICINE

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1. THE EFFECTS OF SIMULATED ALTITUDE ON PENETRATING EYE INJURIES
   Dille, J. R., N. L. Newton, J. F. Culver

2. GLAUCOMA SCREENING IN AEROMEDICAL EXAMINATION
   Clark, W. B., J. F. Culver

3. HIGH SPEED PHOTOGRAPHIC STUDY OF PERFORATING OCULAR INJURY
   BY THE BB.
   Tillet, C. W., H. W. Rose, C. Herget

4. VISUAL ASPECTS OF SPACE FLIGHT
   Morris, F. M.

5. A NEW APPROACH TO THE STUDY OF FLASHBLINDNESS
   Severin, S. L., N. L. Newton, J. F. Culver

6. A STUDY OF PHOTOSTRESS AND FLASHBLINDNESS
   Severin, S. L., N. L. Newton, J. F. Culver

7. AN EXPERIMENTAL APPROACH TO FLASHBLINDNESS
   Severin, S. L., N. L. Newton, J. F. Culver

8. ACUTE NARROW-ANGLE GLAUCOMA-A CASE REPORT
   Mayhew, C. L., J. F. Culver

9. RECOVERY OF VISUAL DISCRIMINATION AFTER HIGH INTENSITY
   FLASHES OF LIGHT
   Severin, S. L.
1962 Publications (continued)

10. SPACE OPHTHALMOLOGY
   Culver, J. F.

11. VISUAL ASPECTS OF RADIATION EXPOSURE
   Culver, J. F.

12. PRODUCTION OF CHORIORETINAL BURNS BY NUCLEAR DETONATIONS AND TESTS OF PROTECTIVE DEVICES AND PHOTOTROPIC MATERIALS

13. PROTECTIVE GLASSES AGAINST ATOMIC FLASH
   Culver, J. F., A. V. Alder
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   Dille, J. Robert, N. L. Newton, J. F. Culver
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5. A SIMPLE METHOD OF CHORIORETINAL BURN PROTECTION
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6. PROTON RADIATION EFFECTS IN PRIMATES
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   Aerospace Medicine Vol 34, No. 11, Nov 1963.

2. NUCLEAR EXPOSURE EFFECTS
   Culver, J. F.

3. AEROMEDICAL EVALUATION FOR SPACE PILOTS - OPHTHALMOLOGY
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4. INTRAOCULAR PRESSURE AQUEOUS OUTFLOW AND GLAUCOMA AT
   ALTITUDE
   Newton, N. L., W. B. Clark, J. F. Culver, J. T. Moore

5. THE AEROMEDICAL PROBLEM OF GLAUCOMA
   Culver, J. F., W. B. Clark
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6. PHOTOSTRESS AND FLASHBLINDNESS IN AEROSPACE OPERATIONS
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8. EARLY OCULAR EFFECTS OF HIGH ENERGY PROTON AND ALPHA
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   Culver, J. F., N. L. Newton

9. THE PHOTOSTRESS TEST FOR THE EVALUATION OF MACULAR FUNCTION
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10. PHOTOSTRESS TEST FOR THE EVALUATION OF MACULAR FUNCTION
   *Severin, S. L., J. Y. Harper Jr., J. F. Culver*

11. THE PROBLEM OF HETEROTROPIA IN TRAINED PILOTS
   *Clark, W. B., J. F. Culver*
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    AND TESTS OF PROTECTIVE DEVICES
   *Allen, R. G., E. O. Richey, J. F. Culver, N. L. Newton, A. V. Alder*
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2. OCULAR EFFECTS OF NUCLEAR DETONATIONS
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3. THE PROBLEM OF HETEROTROPIA IN TRAINED PILOTS
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4. PHOTOS AND FLASH BLINDNESS IN AEROSPACE OPERATIONS
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7. CONTACT LENSES IN AVIATION AND SPACE
   Morris, Floyd M.
   Presented at the AOA Contact Lens Symposium, at Ohio State University, Columbus, Ohio, 3 Feb 1963.

8. THE OPTOMETRIST AS A MEMBER OF THE AIR FORCE MEDICAL SERVICE TEAM
   Morris, Floyd M.
9. CONTACT LENSES FOR FLYING PERSONNEL—A CLINICAL INVESTIGATION
   Morris, Floyd M.
   Presented at the Second World Contact Lens Congress, Chicago, Illinois, 4-7 Aug 1963.

10. VISUAL ASPECTS OF THE PHYSICAL EXAMINATION FOR FLYING (VISUAL REQUIREMENTS FOR FLYING)
    Morris, Floyd M.
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11. RETINAL DETACHMENT IN ANIMALS RESULTING FROM OXYGEN TOXICITY
    Beehler, Cecil C.; N. L. Newton, J. F. Culver, T. J. Tredici
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12. CHORIORETINAL BURN PROBLEM
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13. CHORIORETINAL BURNS AND PROTECTIVE DEVICES
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    Alder, Albert V.
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1. CONTACT LENSES FOR FLYING PERSONNEL-A CLINICAL INVESTIGATION
   
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2. SPACE OPHTHALMOLOGY PROBLEMS
   
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   Proceedings of the 3rd International Symposium on Bioastronautics and the
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3. VISUAL RECOVERY FROM BRIEF EXPOSURE TO VERY HIGH LUMINANCE
   LEVELS
   
   Fry, G. A., N. D. Miller
   

4. RETINAL DETACHMENT IN ADULT DOGS RESULTING FROM OXYGEN
   TOXICITY
   
   Beehler, C. C., N. L. Newton, J. F. Culver, T. J. Tredici
   

5. HUMAN CHORIORETINAL BURNS FOLLOWING HIGH ALTITUDE NUCLEAR
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   Aerospace Medicine, Vol 35, No. 12, Dec 1964.

6. THE VANISHING DISQUALIFICATION (CORNEAL ENDOThELIAL
   DYSTROPHY)
   
   Howard, J. L., J. F. Culver
   
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7. A SIMPLE METHOD OF CHORIORETINAL BURN PROTECTION
   
   Minners, H. A., N. L. Newton
   

8. HEMATOMA BENEATH THE RETINAL PIGMENT EPITHELIUM
   
   Tredici, T. J., R. H. Fenton
   

9. HEMATOMA BENEATH THE RETINAL PIGMENT EPITHELIUM
   
   Tredici, T. J.
   
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10. MILITARY ASPECTS OF SATELLITE-TO-EARTH VISIBILITY
   Clark, W. B., F. M. Morris, J. F. Culver
   Lectures in Aerospace Medicine, USAFSAM, Brooks AFB, TX, Feb 1964.

11. OXYGEN AND THE EYE
    Bechle, C. C.
    Review 3-64, USAFSAM, Brooks AFB, TX, Feb 1964.

12. VISUAL REQUIREMENTS FOR FLYING
    Jampolsky A, A. Morris, W. L. Erdbrink, R. Feinberg, D. G. Pitts

13. NUCLEAR WEAPONS OPTICAL INFRA-RED PHENOMENA AND THEIR
    EFFECTS ON AIR FORCE SYSTEMS
    Richey, E. O.

14. HYPERTROPHIC CORNEAL SCARS (KELOIDS)
    Tredici, T. J.

15. THE POSITIVE AFTER-IMAGE AND MEASUREMENTS OF LIGHT AND
    DARK ADAPTATION
    Fry, Glenn A.
    Final Report on Contract AF33 (657)-9615, Ohio State Univ. Columbus, Ohio, 31
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16. RESEARCH ON TRIPLET STATES AND PHOTOCHROMISM
    Windsor, M. W., D. Weber
    Final Report on Contract AF41 (609)-1457 Space Technology Lab, Redondo
    Beach, CA, Jan 1964.

17. INTRAOCULAR PRESSURE, AQUEOUS OUTFLOW, AND GLAUCOMA AT
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1. NUCLEAR WEAPONS EFFECTS RESEARCH PROGRAM FOR FY 1966 OF THE OCULO-THERMAL SECTION, OPHTHALMOLOGY BRANCH
   Loper, L. R.
   Presentation at the Air Force Weapons Laboratory, Kirtland AFB, New Mexico, March 1964 – Task 630103.

2. OCCUPATIONAL VISION IN THE AIR FORCE AND THE ROLE OF THE OPTOMETRIST IN THE AIR FORCE
   Kislin, Benjamin
   Presented at the annual convention of the Oklahoma Optometric Association, 2-5 May 1964 – Task 775505.

3. VISUAL PROBLEMS ASSOCIATED WITH AEROSPACE FLIGHT
   Morris, Floyd M.
   Presented at the annual convention of the Oklahoma Optometric Association, 2-5 May 1964 – Task 775505.

4. HUMAN CHORIORETINAL BURNS FOLLOWING HIGH ALTITUDE NUCLEAR DETONATIONS
   Culver, James F., N. L. Newton, Robert Penner, R. W. Neidlinger
   Presented at the 35th annual scientific meeting of the Aerospace Medical Association, 14 May 1964, Bal Harbour, Florida – Task 630103.

5. EYE PROTECTION IN THE AIR FORCE
   Kislin, Benjamin
   Presented at the American Optometric Association Congress, New York, New York, 28 June-3 July 1964, Task 630103.

6. OPERATION DOMINIC (DOCUMENTARY FILM)
   Richey, Everett O. (Co-Editor on script for technical accuracy)

7. SPACE OPHTHALMOLOGICAL PROBLEMS
   Clark, William B., J. F. Culver
   Presented at the Third International Symposium on Bioastronautics and the Exploration of Space, 16-18 Nov 64, San Antonio, Texas – Task 775505.

8. THE "SCOTIC RESPONSE" IN THE CAT
   Pitts, Donald G.
   Presented at the annual meeting of the American Academy of Optometry, 12-15 Dec 64, Columbus, Ohio – Task 775505.
9. A HISTORICAL REVIEW OF THE OCULOMOTOR COMPLEX
    *Pitts, D. G.*
    Presented at the annual meeting of the American Academy of Optometry, 12-15 Dec 64, Columbus, Ohio – Task 775505.

10. EFFECT OF OBSERVER ELEVATION ON THE MOON ILLUSION
    *Hamilton, James F.*
    Presented at the annual meeting of the American Academy of Optometry, 12-15 Dec 64, Columbus, Ohio.

11. FLASH BLINDNESS PROTECTION (CLOSED CIRCUIT TELEVISION)
    *Richey, Everett O.*
    Formal comments on closed circuit television, Wright-Patterson AFB, Ohio, December 1964.
1. CURRENT UNITED STATES AIR FORCE POLICY ON GLAUCOMA
   
   Howard, J. L., W. B. Clark, J. F. Culver, T. J. Tredici
   
   Aerospace Medicine, Vol 36, No. 9, Sept 1965.

2. THE EFFECT OF EXERCISE ON INTRAOCULAR TENSION AND ITS
   RELATIONSHIP TO OPEN ANGLE GLAUCOMA
   
   Cooper, R. H., Lempert P, J. F. Culver
   
   Aerospace Medicine, Vol 36, No. 1, Jan 1965.

3. FLASHBLINDNESS
   
   Richey, E. O.
   
   Chapter 7 AFSCM 500-5, Feb 1965.

4. VISUAL RECOVERY FROM HIGH INTENSITY FLASHES
   
   Miller, R. D.
   

5. VISUAL ASPECTS
   
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