From the small informal research meetings which were held in New York in the late 1920's, the Association for Research in Vision and Ophthalmology (ARVO) has grown into the predominant scientific eye research organization of this country with more than two thousand members. Early in its development, the association began to honor distinguished contributions to vision and ophthalmology. It may be of some interest to briefly describe the present ARVO awards program and its origins since the organization has significantly changed in character and membership in the past decade.

In 1947, Mrs. Francis I. Proctor presented a gift to the association for the endowment of a research medal in memory of her husband. As a result of this generous gesture, the Proctor Research Medal and lectureship was created and has, with one exception, been awarded annually since 1949 for notable achievement in the basic fields of vision and ophthalmology. It is one of the first national awards which specifically recognizes the contributions of basic research to the improvement of ophthalmological practice.

Dr. Proctor was an eminent Boston ophthalmologist who, after retiring to Santa Fe, New Mexico, became highly interested in experimental ophthalmology and actively investigated trachoma and other diseases prevalent among the American Indians. As a consultant in ophthalmology to the Office of Indian Affairs, he drew attention to trachoma and stimulated scientists both in the United States and elsewhere to initiate investigation of this disease process which finally led to the isolation of the viral agent.

The first recipient of the Proctor medal was Jonas S. Friedenwald, a remarkable leader in both clinical ophthalmology and basic research of the eye tissues. Although he maintained an active practice during his career he made fundamental contributions in the fields of ophthalmic pathology and intraocular secretion and pressure. He developed the slit-lamp ophthalmoscope, constructed theories on intraocular pressure, standardized tonometric methodology, and still found time to conceive and elucidate some of the fundamental relationships of enzyme kinetics. One of his most remarkable accomplishments was his success as a teacher drawing talented young people into the field of ophthalmic research and making many others aware of the importance of basic investigation.
Table I. Award recipients

<table>
<thead>
<tr>
<th>Year</th>
<th>Proctor Medal Awards</th>
<th>Friedenwald Memorial Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1949</td>
<td>Jonas S. Friedenwald</td>
<td></td>
</tr>
<tr>
<td>1950</td>
<td>Phillips Thygeson</td>
<td></td>
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<tr>
<td>1951</td>
<td>Ludwig J. K. von Sallmann</td>
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<tr>
<td>1952</td>
<td>V. Everett Kinsey</td>
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<tr>
<td>1953</td>
<td>Kenneth C. Swan</td>
<td></td>
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<tr>
<td>1954</td>
<td>David G. Cogan</td>
<td></td>
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<tr>
<td>1955</td>
<td>George Wald</td>
<td></td>
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<tr>
<td>1956</td>
<td>W. Morton Grant</td>
<td>John E. Harris</td>
</tr>
<tr>
<td>1957</td>
<td>Norman Ashton</td>
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<tr>
<td>1958</td>
<td>Algernon B. Reese</td>
<td>Bernard Becker</td>
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<tr>
<td>1959</td>
<td>Hans Goldmann</td>
<td>Werner K. Noell</td>
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<tr>
<td>1961</td>
<td>George K. Smelser</td>
<td>Albert M. Potts</td>
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<tr>
<td>1962</td>
<td>Kenneth N. Ogle</td>
<td>Ernst Bárány</td>
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<tr>
<td>1963</td>
<td>Michael J. Hogan</td>
<td>Endre A. Balazs</td>
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<tr>
<td>1964</td>
<td>Peter C. Kronfeld</td>
<td>Lorenz E. Zimmerman</td>
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<tr>
<td>1965</td>
<td>Zacharias Dische</td>
<td>Jin H. Kinoshita</td>
</tr>
<tr>
<td>1966</td>
<td>Frank B. Walsh</td>
<td>Lorin A. Riggs</td>
</tr>
<tr>
<td>1967</td>
<td>Francis H. Adler</td>
<td>David Maurice</td>
</tr>
<tr>
<td>1968</td>
<td>Antoinette Pirie</td>
<td>Toichi Kowabara</td>
</tr>
<tr>
<td>1969</td>
<td>Herman Burian</td>
<td>Alfred J. Coulombre</td>
</tr>
<tr>
<td>1970</td>
<td>No award given</td>
<td>John E. Dowling</td>
</tr>
<tr>
<td>1971</td>
<td>William A. H. Rushton</td>
<td>Claes H. Dohlman</td>
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<tr>
<td>1972</td>
<td>A. Edward Maumenee</td>
<td>Alan Laites</td>
</tr>
<tr>
<td>1973</td>
<td>Stephen Kuffler</td>
<td>Arthur Silverstein</td>
</tr>
<tr>
<td>1974</td>
<td>Jin H. Kinoshita</td>
<td>Matthew Alpern</td>
</tr>
<tr>
<td>1975</td>
<td>Tsuneo Tomita</td>
<td>David Hubel and Torsten Wiesel</td>
</tr>
</tbody>
</table>

Upon the untimely death of Jonas Friedenwald in 1956, the association established the Friedenwald Memorial Award consisting of a plaque, lectureship, and travel expenses to the annual meeting. Because of Friedenwald's unusual success in attracting and stimulating young scientists, the Friedenwald award was initially intended to recognize the outstanding contributions to ophthalmic research of young scientists. In practice, however, there has been considerable variation in the age of the recipients ranging from 35 to 54 years with an average of approximately 46 years. In contrast, the average age of the Proctor medal awardee is approximately 57 years. Those who have received the Proctor and Friedenwald awards are listed in Table I. It is apparent that while in most cases, the Proctor medal recognizes the more mature scientist, the caliber of achievement appears to be similar for both awards.

Although the award winners have been of a high level, the large increase in the number of outstanding candidates for these awards has induced the board of trustees to revise the selection procedure so as to provide greater assurance that the most worthy candidates will be selected and to minimize nonscientific considerations. The following is a summary of the guidelines that define the selection process:

1. The awards committee will be composed of eight individuals, three former Friedenwald awardees, three former Proctor awardees, the chairman of the board of trustees, and one additional trustee. All committee members must be members of the Association.
2. The committee will be chosen by the Chairman of the Board of Trustees with the advice and consent of the board of trustees at the annual spring meeting. This committee will select the candidates for awards two years later. The committee should represent different scientific disciplines in both clinical and basic research areas.
3. All members of the selection committee will serve for one year with the
exception of two members, one from the former Friedenwald awardees and one from the former Proctor awardees, who shall serve for two years. One of the members serving a two-year term will act as chairman. Prior committee members may be reappointed two years after completion of their previous service.

(4) The committee will provide two or more choices for each award. A curriculum vitae, summary of the candidates accomplishments, and reasons for selection should be included in a written report to be submitted to the trustees at least two weeks before the subsequent autumn trustee's meeting.

(5) The committee will maintain a file of worthy candidates containing their curriculum vitae and summaries of their accomplishments. The committee chairman will be responsible for maintaining the records and submitting the committee's report to the trustees.

(6) Each new member of the awards committee shall be made aware of the history of the awards and previous awardees by the secretary-treasurer of the trustees.

(7) The committee should be encouraged to maintain the practice of choosing more mature scientists for the Proctor award and younger scientists for the Friedenwald award. However, no age limitation should be placed on the selection of candidates in either group. There is considerable age overlap between the members of the two groups and the creation of a rigid age requirement would be artificial and conceivably lead to unjust exclusion.

(8) The board of trustees will select the award winners from the selections of the nominating committee by a majority vote. In rare situations where the nominees of the committee are not acceptable to the board, the awards committee will be instructed to review their selections and within three months, offer new candidates and/or further support for their initial selections. If majority approval of the trustees is not forthcoming, no award would be made for that year.

(9) In rare cases where a significant development has clearly been the result of more than one outstanding scientist, the awards committee may recommend more than one individual for a specific award.

(10) No trustee shall be considered for either the Friedenwald or Proctor awards.

(11) The chairman of the board of trustees will inform the awardees of their selection. The award addresses as well as photographs and biographies of the awardees will be published in Investigative Ophthalmology.

(12) Previous recipients of either the Friedenwald or Proctor awards are eligible for an additional award. However, such candidates must have made a scientific contribution of unusual importance independent of work previously honored by these awards.

The awards committee for 1977 consists of the following members:

Alan Laites, Chairman
James Elliot
Morton Grant
Herbert Kaufman
Everett Kinsey
Jin Kinoshita
Lorrin Riggs
Arthur Silverstein

The membership is encouraged to submit written, documented recommendations to the committee for their consideration.

Fight For Sight, Inc., has for many years encouraged and supported eye research through a program of grants and fellowships to investigators and students in ophthalmology. In 1961, the executive director, Mildred Weisenfeld, and the board of directors of Fight For Sight, Inc. indicated to ARVO their desire to honor outstanding contributions to basic and clinical research directly related to sight. Preference was to be given to younger investigators. This generous gesture resulted in the creation of the Fight For Sight citation to honor a significant paper presented at the ARVO meetings. Among the recipients
Table II. Honorary members

Dr. Francis H. Adler  
Dr. Silas Adelsheim  
Dr. Cesario de Andrade  
Lady Phyllis Duke-Elder  
Sir Steward Duke-Elder  
Helenor Campbell Foerster  
Elizabeth C. Hartman  
Dr. Marie Jakus  
Dr. Lorand V. Johnson  
Mary Lasker  
Dr. Edward F. MacNicol, Jr.  
Dr. Richard L. Masland  
Dr. Walter Parker  
Bruce A. Reid  
Congressman Paul G. Rogers  
Congressman Fred B. Rooney  
Dr. Jules Stein  
Dr. G. D. Theobald  
Dr. Ludwig von Sallmann  
David F. Weeks  
Mildred Weisenfeld  
George Werntz, Jr.  
Congressman John Young


With the large increase in the number of papers presented at ARVO national meetings it has become difficult to select a single presentation for this award. Therefore, after an intensive review of the problem the guidelines summarized below were approved by ARVO and Fight For Sight, Inc.

(1) There will be two annual Fight For Sight citations: one for achievement in clinical research and another for achievement in basic research. The awards will be based upon papers presented at the Spring National Meeting of ARVO. Preference will be given to younger investigators.

(2) The awardees will receive a hand-lettered scroll designating the specific field of research in which the work was done and a four hundred dollar honorarium.

(3) Fight For Sight or the trustees of ARVO may designate the area of research for which the citations shall be awarded. The area of research selected by Fight For Sight for consideration in 1976 is diabetic retinopathy.

(4) A third citation may be awarded in recognition of an extraordinary breakthrough in vision research. The awardee will receive a hand-lettered scroll and a five hundred dollar honorarium.

(5) Recommendations for the citations will be submitted by the ARVO program section committees to the trustees of ARVO. After further review, selected nominations will be submitted to Fight For Sight for final selection by a subcommittee of their scientific advisory board.

(6) Awards will be presented at the annual spring meeting of ARVO for papers presented at the prior year’s meeting.

(7) Nominees are required to submit a five hundred word summary of their work, emphasizing its significance and a preliminary draft of a paper based on the presentation with title, author(s), and intended journal in which the paper will appear. The papers must be published or scheduled for publication prior to the meeting following presentation.

(8) Nominations should be received by Fight For Sight, Inc. from the ARVO trustees no later than Nov. 15 of each year.

Recognizing the difficulty that young investigators have encountered in obtaining travel funds to attend the ARVO National Meeting, in 1973 the National Eye Institute (NEI) suggested to the trustees that ARVO apply to the NEI for travel stipends to be awarded young scientists. Such a request was made and approved and since 1974 ARVO travel awards have been granted. The program will be funded for four more years before requiring a competitive renewal request. In both 1974 and 1975, 27 travel awards were distributed ranging from $350 to $450 depending on the geographic location of the awardee. The candidates are selected by the pro-
gram section committees based upon abstracts and supporting documentation. Each section is assigned a number of travel awards dependent upon the membership of the section and the size of the section program. No section has received less than two or more than five awards per year.

Other criteria guiding the granting of travel awards are described below:

1. Since the awards are to be made to young investigators, no investigator shall have completed his research or residency training more than four years prior to the award.

2. Applicants must not hold research grant(s) (other than a Special Visual Sciences Research Grant) or contract support in their own name.

3. Applicants must submit an abstract for the ARVO national meeting.

4. A letter must be submitted by the candidate’s institution verifying that no travel funds are available to the candidate.

5. No more than one applicant from a particular department will be selected by any one ARVO program section committee. An attempt will be made to obtain as wide a geographic distribution as possible.

6. An individual is not eligible to receive more than one travel award.

A number of dedicated individuals in the area of public affairs and financial support have worked unselfishly and effectively to assure the viability of eye research. ARVO has recognized these highly important activities by bestowing honorary membership upon such individuals. Distinguished senior scientists and ophthalmologists have also been considered for such honor. The recipients of this recognition are listed in Table II.

Abraham Spector
Trustee, ARVO
College of Physicians and Surgeons
Columbia University
New York, N. Y.

The remapping of visual space

Descartes, in his Traité de l’Homme, proposed that the retinal image was remapped in the pineal gland, building upon Kepler’s idea that an inverted geometric image of the external world existed in the eye. Although no one has yet confirmed Descartes’ original prediction about the pineal gland, the basic suggestion that the retina projects in a point-to-point way on to structures deeper in the brain has become a fundamental fact in our understanding of vision. Although one might presume that somewhere in the brain this simple somatotopic representation would break down as more universal visual abstractions are constructed, recent findings in monkey visual cortex indicate that instead of vanishing, this geometric map of visual space is concatenated over and over again. In visual cortex anterior to the primary receiving area in striate cortex (area 17 or V1), the visual field is remapped at least five and possibly more times in areas traditionally regarded as prestriate cortex. This does not even include other visual areas in the cerebral cortex beyond the prestriate zone. Understanding the functional significance of this multiplication of visual space is not