3rd
INTER. VISUAL FIELD SYMPOSIUM



programme

3-6 MAY 1978

Tokyo

INTERNATIONAL PERIMETRIC SOCIETY

視野

programme

3rd International Visual Field Symposium

3-6 May 1978

Concord Ballroom of the
KEIO PLAZA HOTEL
TOKYO, JAPAN

IPS COMMITTEE MEMBERS:

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		G. Verriest
		M. Zingirian

SECRETARIAT DURING THE SYMPOSIUM:

Symposium Bureau
Keio Plaza Hotel 42F Fuji room (3rd May)
5F Cattleya room (4-6th May)

(Tokyo Medical College Hospital
Dept. of Ophthalmology
6-7-1 Nishishinjuku, Shinjuku-ku
Tokyo, Japan 160
Telephone: 342-6111 ext.235)

SECRETARIAT AFTER THE SYMPOSIUM:

E. L. Greve
Eye Clinic, University of Amsterdam
Wilhelmina Gasthuis
Eerste Helmersstraat 104
Amsterdam 1013, The Netherlands
Telephone: 78 22 33

SYMPOSIUM ORGANIZING COMMITTEE:

President	: E. Aulhorn, Tübingen
Executive Chairman	: H. Matsuo, Tokyo
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	N. Endo, Tokyo
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LOCAL ORGANIZING COMMITTEE:

Chairman	: H. Matsuo
Executive Secretary	: S. Hamazaki
Secretary	: F. Furuno
General Affairs	: E. Shinzato
Treasurer	: M. Tomonaga

SYMPOSIUM BUREAU

During the symposium all information will be provided by the Symposium Bureau located in the Keio Plaza Hotel. The Symposium Bureau will provide the following services:

Registration Office (3rd May, 1978:	Collection of all symposium fees 08:00-12:00, 15:00-19:00)
Information Desk	Registration (4th-6th May, 1978) General inquiries Symposium folders Abstracts Receipts and badges
Proceedings Office	Complete manuscripts have to be presented to the Editorial Committee on the first day of the symposium.
Tourist Information Desk	Travel Agency (Nippon Express Co., Ltd.) will help you concerning accommodation, travel plan, etc.

SCIENTIFIC EXHIBITIONS

There will be a continuous exhibition of new perimetric apparatus in COSMOS room, 5F, Keio Plaza Hotel.

1. A new Instrument of Quantitative Maculometry	: Y. Isayama, Kobe
2. Infrared Television Fundus Perimeter	: K. Kani, Nishinomiya
3. Fundus Photo-Perimeter	: Y. Ohta, Tokyo
4. Semi-Automatic Campimeter	: S. Hamazaki, T. Yokota, Tokyo

LANGUAGE

The official language of the symposium will be ENGLISH. Simultaneous interpretation will not be possible. However, if requested, translation between English and Japanese will be provided.

PROCEEDINGS

All registered participants will be sent a copy of the proceedings free of charge.

NOTE TO AUTHORS OF NON-READ PAPERS

You are responsible for supplying copies of your paper to those who wish to read it. To make the discussions on non-read papers easier, it is desirable to give all participants the opportunity to read non-read papers beforehand. Therefore, kindly submit your two original manuscripts and copies at the time of registration.

GUIDANCE FOR SPEAKERS

- All communications and discussions will be in the English language.
- Your speaking time is limited; the length of your text must, therefore, also be limited. Allow one minute for 110 words at a minimum (which is about 10 lines of typescript).
- Speak into the microphone from a distance of about one foot (30 cm).
- Remember that all speeches and discussions will be taped. Speak clearly and do not hesitate to speak very slowly whenever you mention figures, names, formulae, enumerations of substances, etc.

  Discussion speakers: Mention your name clearly before starting your questions.

SLIDES

1. Please bring your slides to the Slide Desk at Foyer in front of the congress hall (CONCORD BALLROOM) half an hour before your session starts. Then, put your slides into slide holder by yourself and give a trial projection. Only after making sure of the order of your slides, hand them over to technicians in exchange for the slide ticket. For papers to be read in the morning sessions, please try to submit slides on the previous day.
2. Two projectors will be provided at the symposium. If you intend to use both, please indicate the right or left with your slide holders. During the double projection, both slides will be changed simultaneously. Therefore, the same number of slides for each projector must be prepared. (black slides, duplicate slides, etc.)
3. Your slides will be returned at the Slide Desk after the end of the discussions on your papers in exchange for your slide ticket.
4. Only slides measuring 5x5 cm (2x2 inches) can be projected.
5. It is suggested to project on slides the essential points of your paper in brief, clear-cut phrases in the English language. For easy legibility we recommend:
   a. minimum height of letters and figures 1.7 mm;
   b. not more than 7 words on one line; and,
   c. not more than 7 lines per slide.
6. To ensure a faultless projection of your slides, please observe the following instructions:
   a. Write your name and the numbers denoting the desired order of projection on self-adhesive labels; and,
   b. Stick the accordingly marked label on the top right hand corner of each slide on the side facing the light-source of the projector.

INFORMATION ON TIMES & PLACES
(KEIO PLAZA HOTEL)

Congress Hall ..... 5F, CONCORD BALLROOM

4th May ; 09:00-15:30
5th May ; 09:00-15:30
6th May ; 09:00-13:05

Registration Office ..... 42F, FUJI room

3rd May ; 08:00-12:00
15:00-19:00

Information Desk ..... 5F, FOYER
(Symposium Bureau) (5F, CATTLEYA room)

4th May ; 08:30-16:00
5th May ; 08:30-16:00
6th May ; 08:30-13:05

Exhibitions ..... 5F, COSMOS room

4th May ; 08:30-16:00
5th May ; 08:30-16:00
6th May ; 08:30-13:05

Welcome Party ..... 43F, STARLIGHT room

3rd May ; 19:00-21:00

Proceedings Office

3rd May ; 08:00-12:00 ..... 42F, SAGAMI room

4th May ; 09:00-12:00 ..... 5F, GARDENIA room
5th May ; 09:00-12:00 "
6th May ; 09:00-12:00 "

Lunch ..... 42F, FUJI room

4th May ; 13:00-14:00
5th May ; 13:00-14:00
6th May ; 13:05-14:00

*IPS Committee Members' Lunch ..... 42F, SAGAMI room
(Date & Time ; same as above.)

Meeting on "Perimetric Standards" ..... 43F, COMET room

3rd May ; 14:30-16:30

Pre-Symposium IPS Committee Meeting ..... 43F, COMET room

3rd May ; 16:30-18:30

Sightseeing of Tokyo

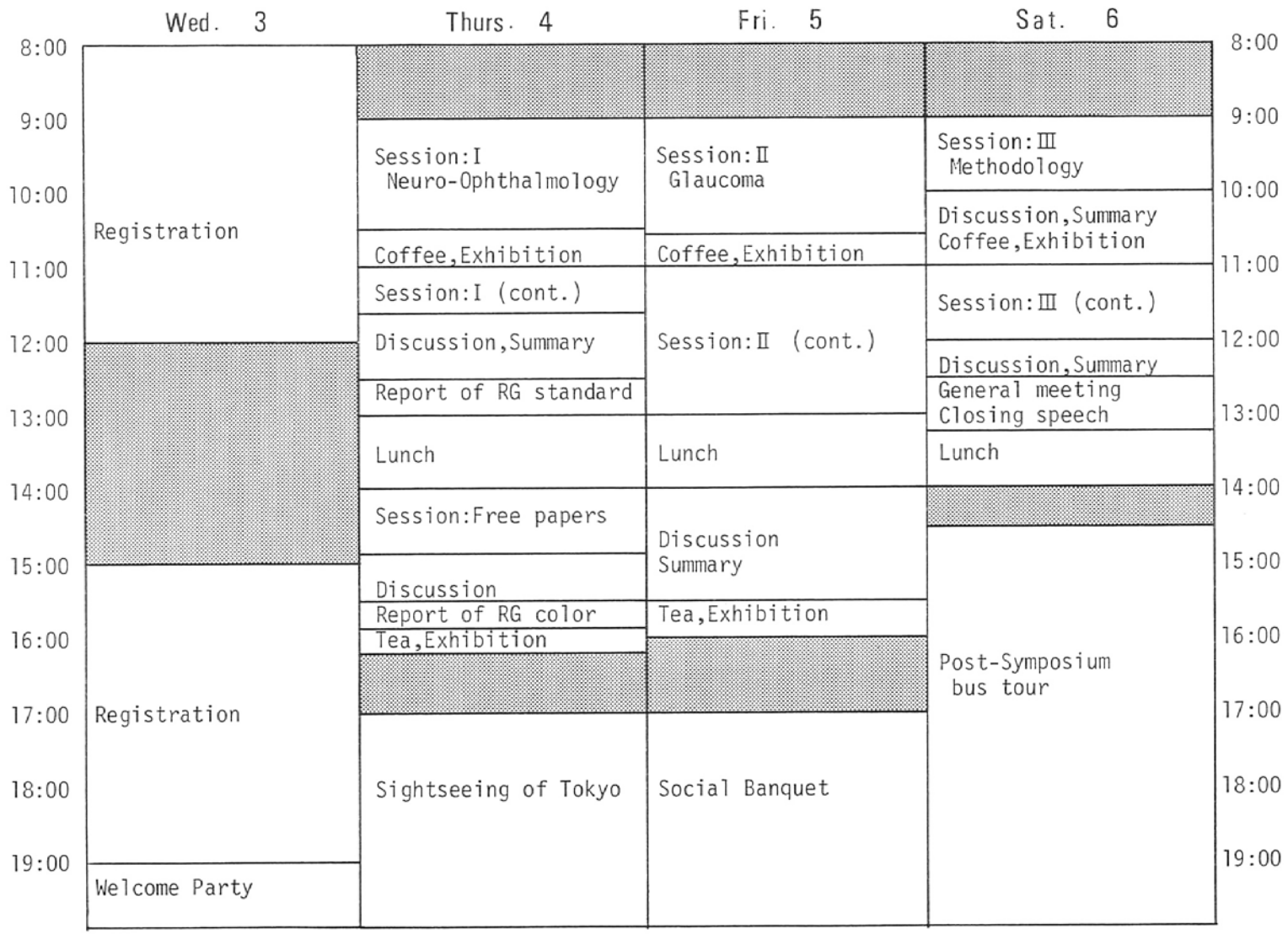
4th May ; 17:00- Start : 3F, Main Lobby

Social Banquet

5th May ; 17:00- Start : 3F, Main Lobby

Post-Symposium Tour to Mt. Fuji

6th May ; 14:30- Start : 3F, Main Lobby


Wed. 3
Thurs. 4
Fri. 5
Sat. 6
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
Registration
Registration
Welcome Party
Session:I
Neuro-Ophthalmology
Coffee,Exhibition
Session:I (cont.)
Discussion,Summary
Report of RG standard
Lunch
Session:Free papers
Discussion
Report of RG color
Tea,Exhibition
Sightseeing of Tokyo
Session:II
Glaucoma
Coffee,Exhibition
Session:II (cont.)
Lunch
Discussion
Summary
Tea,Exhibition
Social Banquet
Session:III
Methodology
Discussion,Summary
Coffee,Exhibition
Session:III (cont.)
Discussion,Summary
General meeting
Closing speech
Lunch
Post-Symposium
bus tour

PROGRAMME

WEDNESDAY, 3rd MAY

08:00-19:00 REGISTRATION AT THE SYMPOSIUM BUREAU.
(Keio Plaza Hotel, 42F FUJI room)

*12:00-15:00 Closed.

14:30-16:30 MEETING OF THE IPS RESEARCH GROUP ON STANDARDIZATION OF PERIMETRY.
(Keio Plaza Hotel, 43F COMET room)
The first hour open to all IPS members who wish to comment on the draft of the IPS document "Perimetric Standards, 1978".

16:30-18:30 PRE-SYMPOSIUM IPS COMMITTEE MEETING.
(Keio Plaza Hotel, 43F COMET room)

19:00-21:00 WELCOME PARTY.
(Keio Plaza Hotel, 43F STARLIGHT room)

THURSDAY, 4th MAY

09:00-10:30 SESSION I: NEURO-OPHTHALMOLOGY
TOPIC 1 : FUNDUSCOPIC CORRELATES OF VISUAL FIELD DEFECTS.
TOPIC 2 : VISUAL FIELD DEFECTS DUE TO TUMORS OF THE SELLAR REGION.
CHAIRMAN : H. BYNKE, Lund

(09:00-09:20)
L. Frisen, Göteborg
Introductory Speaker / Topic 1
"Funduscopic correlates of visual field defects in lesions of the anterior visual pathway."

(09:20-09:40)
Y. Isayama, Kobe
Introductory Speaker / Topic 2
"Visual field defects due to chiasmal tumors."

(09:40-09:50)
Y. Tagami, Y. Isayama, Kobe
"Correlations between atrophy of maculopapillar bundles and visual functions in cases of optic neuropahthies."

(09:50-10:00)
S. S. Hayreh, P. Podhajsky, Iowa City
"Visual field defects in anterior ischemic optic neuropathy."

(10:00-10:10)
L. Frisen, Göteborg
"Visual field defects due to hypoplasia of the optic nerve."

(10:10-10:20)
L. Vestergren-Brenner, H. Bynke, Lund
"VF defects in congenital hydrocephalus."

10:30-11:00 COFFEE, EXHIBITIONS

11:00-11:35 SESSION I: NEURO-OPHTHALMOLOGY (cont.)

(11:00-11:15)
F. Dannheim, D. Luedecke, D. Kuehne, Hamburg
"Visual fields before and after transnasal removal of a pituitary tumor."

(11:15-11:25)
E. Aulhorn, M. Tanzil, Tübingen
"Comparison of visual field defects in ischemic optic neuropathy and glaucoma chronicum simplex."

(11:25-11:35)
T. Otori, T. Hohki, Y. Nakao, Osaka
"Central critical fusion frequency in neuro-ophthalmological practice."

11:35-12:25 DISCUSSIONS / SESSION I: NEURO-OPHTHALMOLOGY / TOPIC 1 + 2

12:25-12:30 SUMMARY / SESSION I: NEURO-OPHTHALMOLOGY
CHAIRMAN: H. BYNKE, Lund

THURSDAY, 4th MAY

12:30-13:00 SUMMARY OF THE MEETING OF THE IPS RESEARCH GROUP ON STANDARDS CONCERNING THE FINAL DRAFT OF THE IPS DOCUMENT ENTITLED "PERIMETRIC STANDARDS, 1978."
CHAIRMAN: J. M. ENOCH, Gainesville

13:00-14:00 LUNCH, EXHIBITIONS

14:00-14:50 SESSION : FREE PAPERS
CHAIRMAN : J. M. ENOCH, Gainesville

(14:00-14:10)
F. Furuno, H. Matsuo, Tokyo
"Early stage progression in glaucomatous visual field changes."

(14:10-14:20)
H. Kosaki, Osaka
"The earliest visual field defect (IIa stage) in glaucoma by the kinetic perimetry."

(14:20-14:30)
S. Yamazi, K. Yamasowa, I. Azuma, Osaka
"Relationship between I.O.P. level and visual field in open angle glaucoma."

(14:30-14:40)
J. Vola, Marseille
"Kinetic and static thresholds at different background luminances."

(14:40-14:50)
A. I. Friedmann, London
"The relationship of visual field changes and intra-ocular pressure."

Non-Read Free Papers:

A. Dubois-Poulsen, Paris
"The enlargement of the blind spot in binocular vision."

M. Frisen, Göteborg
"Evaluation of perimetric procedures. A statistical approach."

Y. Honda, A. Negi. M. Miki, Kyoto
"Eye movements during peripheral field tests, monitored by electro-oculogram."

H. Kitahara, K. Kitahara, H. Matsuzaki, Tokyo
"Trial of a color perimeter."

S. Kubota, Tokyo
"Video-pupillographic perimetry. Report 4, on the technique how to operate the reformed device and perimetric findings on the rabbit eyes."

E. Shinzato, H. Matsuo, Tokyo
"Clinical experiences tried with a new meridian dots target."

T. Maruo, Kobe
"Electroencephalographic perimetry."

THURSDAY, 4th MAY

Non-Read Free Papers (cont.)

T. Ogawa, R. Suzuki, Tokyo
"Relation between central and peripheral visual field changes with kinetic perimetry."

L. Frisen, Göteborg
"Relationship between perimetric eccentricity and retinal locus in a human eye."

14:50-15:20 DISCUSSIONS / FREE PAPER SESSION
All the above free papers (read and non-read) will be available for the discussions with the exception of the papers of Furuno, Kosaki, Yamazi and Friedmann. These last four papers will be included (if requested) in the discussions of SESSION II : GLAUCOMA.

15:20-15:30 REPORT OF THE IPS RESEARCH GROUP ON COLOR PERIMETRY.
CHAIRMAN: G. VERRIEST, Gent

15:30-16:00 TEA, EXHIBITIONS

17:00- SOCIAL PROGRAMME : Sightseeing of Tokyo.

FRIDAY, 5th MAY

09:00-10:35 SESSION II : GLAUCOMA
TOPIC 1 : THE EARLIEST VISUAL FIELD DEFECTS IN GLAUCOMA.
CHAIRMAN : S. M. DRANCE, Vancouver

- Invited Speakers:

(09:00-09:15)
P. R. Lichter, C. L. Standardi, Ann Arbor
"Early glaucomatous visual field defects and their significance to clinical ophthalmology."

(09:15-09:30)
S. M. Drance, M. Fairclough, B. Thomas, M. Schulzer, Vancouver
"The early visual field defect in chronic open angle glaucoma."

(09:30-09:45)
E. L. Greve, F. Furuno, W. M. Verduin, Amsterdam
"A critical phase in the development of glaucomatous visual field defects."

(09:45-10:00)
J. M. Enoch, E. C. Campos, Gainesville
"Analysis of patients with open-angle glaucoma using perimetric techniques reflecting receptive field-like properties."

(10:00-10:10)
F. Dannheim, Hamburg
"Liminal and supraliminal stimuli in the perimetry of chronic simple glaucoma."

(10:10-10:20)
R. Lakowski, Vancouver
"Acquired colour vision losses - The earliest functional losses in glaucoma."

(10:20-10:35)
N. Endo, Tokyo
"The relation between depression in the Bjerrum's area and Roenne's nasal step in early glaucomatous visual field defects."

10:35-11:00 COFFEE, EXHIBITIONS

11:00-12:10 SESSION II : GLAUCOMA
TOPIC 2 : THE REVERSIBILITY OF GLAUCOMATOUS VISUAL FIELD DEFECTS.
CHAIRMAN : S. M. DRANCE, Vancouver

- Invited Speakers:

(11:00-11:20)
M. F. Armaly, Washington, D.C.
"Reversibility of glaucomatous defects of the visual field."

(11:20-11:40)
C. D. Phelps, Iowa City
"Visual field defects in open-angle glaucoma: Progression and regression."

FRIDAY, 5th MAY

- Invited Speakers (cont.)

(11:40-11:55)
E. L. Greve, F. Furuno, W. M. Verduin, Amsterdam
"The clinical significance of reversibility of glaucomatous visual field defects."

(11:55-12:10)
J. T. Ernest, Madison
"Recovery of visual function following elevation of the intraocular pressure."

12:10-12:30 SESSION II : GLAUCOMA / TOPIC 1

- Guest Speakers:

(12:10-12:20)
Y. Kitazawa, O. Takahashi, Y. Ohiwa, Tokyo & Chiba
"Studies on the mode of development and progression of field defects in early glaucoma."

(12:20-12:30)
E. B. Werner, Montreal
"Peripheral nasal field defects in glaucoma."

12:30-13:00 SESSION II : GLAUCOMA / TOPIC 2

- Guest Speakers:

(12:30-12:40)
I. Iinuma, Wakayama
"Reversibility of visual field defects in simple glaucoma."

(12:40-12:50)
K. Iwata, Niigata
"Reversible cupping and reversible field defect in glaucoma."

(12:50-13:00)
K. Mizokami, Y. Tagami, Y. Isayama, Kobe
"The reversibility of visual field defects in the juvenile glaucoma cases."

13:00-14:00 LUNCH, EXHIBITIONS

14:00-15:25 DISCUSSIONS / SESSION II : GLAUCOMA / TOPIC 1 + 2
In addition to the papers of the invited speakers of SESSION II, the following papers will be discussed (if requested) as well:

Guest Speakers: Y. Kitazawa
E. B. Werner
I. Iinuma
K. Iwata
K. Mizokami

Free Papers Read Thursday Afternoon, 4th May:
F. Furuno
H. Kosaki
S. Yamazi
A. I. Friedmann

FRIDAY, 5th MAY

DISCUSSIONS (cont.)

Non-Read Glaucoma Papers:

T. Aoyama, Nishinomiya
"Visual field change examined by pupillography in glaucoma."

A. H. Israel, Buenos Aires
"Early visual field defects in glaucoma: Investigations in the oblique meridians."

M. Zingirian, G. Calabria, E. Gandolfo, Genova
"The nasal step: An early glaucomatous defect ?"

15:25-15:30 SUMMARY / SESSION II : GLAUCOMA / TOPIC 1 + 2
CHAIRMAN: S. M. DRANCE, Vancouver

15:30-16:00 TEA, EXHIBITIONS

17:00- SOCIAL BANQUET.

SATURDAY, 6th MAY

09:00-10:00 SESSION III : METHODOLOGY
TOPIC 1 : AUTOMATION
CHAIRMAN : H. MATSUO, Tokyo
CO-CHAIRMAN : F. FANKHAUSER, Bern

(09:00-09:20)
F. Fankhauser, Bern
Introductory Speaker
"Threshold fluctuations, interpolations and spatial resolution in perimetry."

(09:20-09:30)
S. Hamazaki, T. Yokota, H, Mieno, S. Koike, M. Taga, J. Hamazaki, G. Kikuchi, H. Matsuo, Tokyo
"Semi-automatic campimetry with graphic display."

(09:30-09:40)
C. Holmin, A. Heijil, H. Bynke, Lund
"Automatic perimetry in neuro-ophthalmology."

(09:40-09:50)
E. Aulhorn, H. Harms, H. Karmeyer, Tübingen
"The influence of spontaneous eye-rotation on the perimetric determination of small scotomata."

(09:50-10:00)
M. Zingirian, V. Tagliasco, E. Gandolfo, Genova
"Automated perimetry: Minicomputer or microprocessor ?"

10:00-10:25 DISCUSSIONS / SESSION III: METHODOLOGY / TOPIC 1

10:25-10:30 SUMMARY / SESSION III: METHODOLOGY / TOPIC 1
CHAIRMAN: H. MATUSO, Tokyo

10:30-11:00 COFFEE, EXHIBITIONS

11:00-12:00 SESSION III : METHODOLOGY
TOPIC 2 : THE RELATION BETWEEN THE POSITION OF A LESION IN THE FUNDUS AND IN THE VISUAL FIELD.
CHAIRMAN : H. MATSUO, Tokyo
CO-CHAIRMAN: E. AULHORN, Tübingen

(11:00-11:20)
K. Kani, Nishinomiya
Introductory Speaker
"The relation between the position of a lesion in the fundus and in the visual field."

(11:20-11:28)
R. Suzuki, M. Tomonaga, Tokyo
"Analysis of angioscotoma testing with Friedmann visual field analyzer and Tübinger perimeter."

(11:28-11:36)
K. Matsudaira, R. Suzuki, Tokyo
"Visual field changes after photocoagulation in retinal branch vein occlusion."

SATURDAY, 6th MAY

SESSION III: METHODOLOGY / TOPIC 2 (cont.)

(11:36-11:44)
E. L. Greve, H. M. Breetvelt, D. Bakker, P. T. V. M. de Jong, P. J. M. Bos, Amsterdam
"Mesopic and photopic static perimetry and fluorescein fundus angiography in senile disciform macular degeneration."

(11:44-11:52)
A. Inatomi, Ohtsu
"A simple fundus perimetry with fundus camera."

(11:52-12:00)
J. M. Enoch, C. R. Fitzgerald, E. C. Campos, Gainesville
"Considerations of the relationship between fundus lesions and areas of functional changes."

Non-Read Methodology (Topic 2) Papers:

R. Lakowski, P. Dunn, Vancouver
"A new interpretation of the relative central scotoma for blue stimuli under photopic conditions."

T. Hara, Tokyo
"Visual field changes in mesopic and scotopic condition using Friedmann visual field analyser."

Y. Ohta, T. Miyamoto, K. Harasawa, Tokyo
"Fundus photo-perimetry and application."

12:00-12:25 DISCUSSIONS / SESSION III: METHODOLOGY / TOPIC 2
In addition to the introductory paper of K. Kani, all the above papers (read and non-read) will be discussed if requested.

12:25-12:30 SUMMARY / SESSION III: METHODOLOGY / TOPIC 2
CHAIRMAN: H. MATSUO, Tokyo

12:30-13:00 GENERAL MEETING OF THE MEMBERS OF THE INTERNATIONAL PERIMETRIC SOCIETY.
CHAIRMAN: E. AULHORN, Tübingen

13:00-13:05 CLOSING SPEECH.
A. DUBOIS-POULSEN, Paris

13:05-14:00 LUNCH

POST-SYMPOSIUM IPS COMMITTEE MEETING.
(during lunchtime; 42F SAGAMI room)

14:30- POST-SYMPOSIUM BUS TOUR TO MT. FUJI.

SOCIAL PROGRAMME

WELCOME PARTY

Buffet supper and wine with a panoramic night view of Shinjuku from STARLIGHT room (43F), Keio Plaza Hotel ; 19:00-21:00 Wed., 3rd May.

SIGHTSEEING OF TOKYO

Visit to Harajuku, Imperial Palace, Asakusa and Ginza; TEMPURA dinner at Asakusa.
Start: Main Lobby (3F), Keio Plaza Hotel ; 17:00 Thurs., 4th May.

SOCIAL BANQUET

Typical Japanese dinner following Japanese customs at Happo-en Garden.
Start: Main Lobby (3F), Keio Plaza Hotel ; 17:00 Fri., 5th May.

POST-SYMPOSIUM BUS TOUR TO MT. FUJI

Visit to Lake Yamanaka and dinner at the Hotel Mt. Fuji. You will enjoy the graceful figure of Mt. Fuji, weather permitting.
Start: Main Lobby (3F), Keio Plaza Hotel ; 14:30 Sat., 6th May.

TOUR OF JAPANESE CULTURE (Ladies' Programme)

Visit to the Tenso shrine and demonstrations of Flower Arrangement, Tea Ceremony and Japanese bridal costume. Lunch and shopping at Shinjuku.
Start: Main Lobby (3F), Keio Plaza Hotel ; 10:00 Thurs., 4th May.
Return to the hotel: 14:30 - 16:00.

VISIT TO JAPANESE HISTORIC HOUSES (Ladies' Programme)

Open-air Museum of Japanese Historic Houses (Nihon Minka-en) is composed of several farm-houses, inns, shops, etc. collected from various parts of Japan. After lunch, visit to the grand festival of ancient Ohkunitama Shrine.
Start: Main Lobby (3F), Keio Plaza Hotel ; 09:00 Fri., 5th May.
Return to the hotel: 16:00.

Ueno

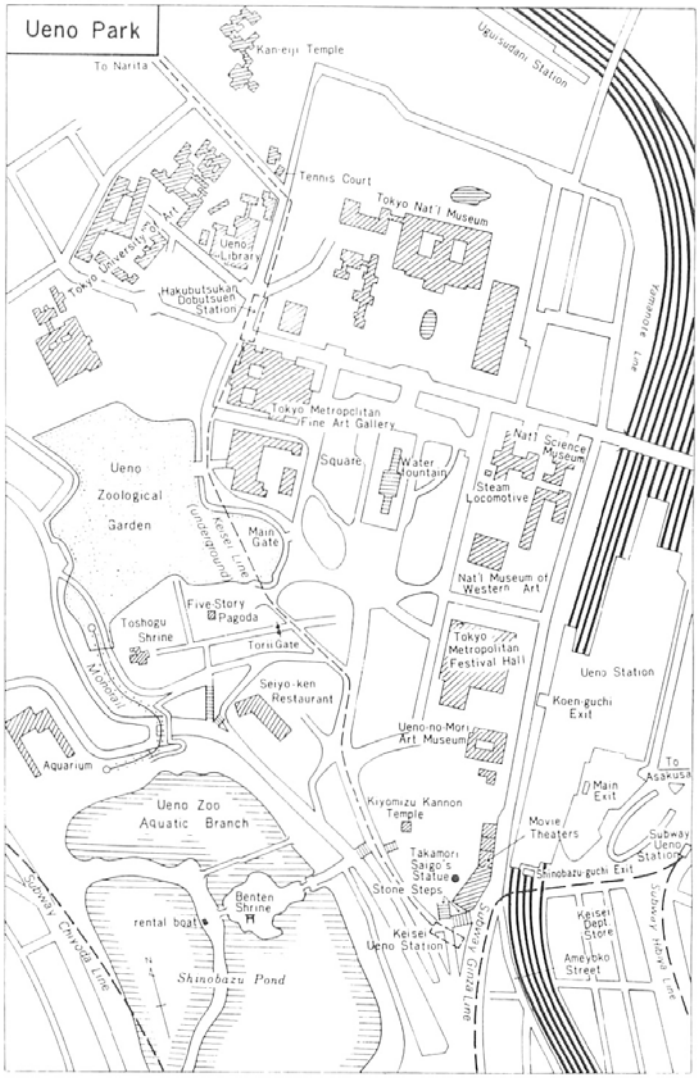
Ueno Park is one of the large parks in Tokyo, with an area of 84 ha. Abundant in green woods, it is located on a flat hill in the immediate neighbourhood of JNR's Ueno Station. Containing three art galleries, two museums and a concert hall, the park is often called "woods of culture." Then there are the Kan-ei-ji Temple, Toshogu Shrine and Ueno Zoological Gardens in and around the park.

The Tokyo Metropolitan Festival Hall is one of the few halls in Tokyo designed exclusively for musical performances, with many top-ranking orchestras from Tokyo and abroad giving concerts here. In front of the Festival Hall is the National Museum of Western Art. From outside, you can see the bronze sculptures of Auguste Rodin titled "Les Bourgeois de Calais" and "Le Penseur" displayed in the front grounds. The collection includes many paintings by the French Impressionists, including Pierre-Auguste Renoir and Claude Monet, besides the sculptures of Rodin, Emile-Antoine Bourdelle, etc.

The old stone edifice with a dome standing alongside the National Museum of Western Art is the National Science Museum.

As you cross the road in front of the museum and walk through a grove of trees, you will enter a large square with a big fountain in the center and surrounded by thick woods. This is the central section of the park. Many benches are arranged around the fountain. Facing one side of the square across a road is a massive, Oriental-looking building --- the Tokyo National Museum. It contains exhibits associated with the ancient, Oriental fine arts and handicrafts, including antique objects d'art from Japan, China and India. This museum is a "must" for all visitors to the park.

If you walk in the opposite direction from the National Science Museum, pass in front of the Tokyo National Museum, turn to the right at the corner then turn to the left at Ueno Library, you will arrive at Kan-ei-ji Temple on the right side of the road. A visit to this quiet, authentic Buddhist temple is highly recommended if you can afford the time and the energy, though it takes about 5 min. to reach from the park.



Tokyo National Museum

This Tokyo National Museum is the largest and oldest museum in Japan.

The collection covers the fields of Japanese painting (including print), sculpture, calligraphy, architecture (scale models, etc.), metal work, swords, ceramics, lacquer art, textiles, archaeology, ethnography, Eastern (excluding Japanese) art & archaeology, and Treasures from Hohryu-ji Temple, number up to about 84,000 items. One item often cosists of more than one and often hundreds of articles like a group of objects from a proto-historic tomb). They currently include 70 items registered by the Government as National Treasures (Kokuhoo) and 398 Important Cultural Properties (Juuyoo Bunkazai) in recognition of their specially high artistic or historic importance.

The displays cover permanent displays and occasional thematic displays. Special exhibitions and temporary exhibitions are organized several times annually. In addition, there are some open-air exhibits here and there in the garden.

Periods of Japanese History

Primeval (Pre-Buddhistic) Age	
Pre-historic Age	
Jomon Period	? - 3rd ~ 2nd c. B.C.
Yayoi Period	3rd ~ 2nd c. B.C. - 3rd c. A.D.
Proto-historic Age	
Kofun Period	3rd c. A.D. - mid-6th c. A.D.
Early Historic Age[1]	
Asuka Period	538 - 645
Nara Period	645 - 794
Early Nara Period	645 - 710
Late Nara Period	710 - 794
Heian Period	794 - 1185
Early Heian Period	794 - 894
Late Heian Period	894 - 1185
Medieval Age[2]	
Kamakura Period	1185 - 1334
Muromachi Period	1334 - 1573
(Nambokucho Period	1334 - 1393)
Pre-modern Age[3]	
Momoyama Period	1573 - 1615
Edo Period	1615 - 1868
Modern Age[4]	
Meiji Period	1868 - 1912
Taisho Period	1912 - 1926
Showa Period	1926 -

1) Early Historic Age
This age was under the control of the Ten-no (the Emperor) system. Culture flourished in Nara and Kyoto where the Emperor and his court nobles resided.

2) Medieval Age
This age started with the emergence of the Samurai (the warriors) class. Having gained power, they took over the politics. The growth of culture was seen in Kamakura where the Shogunate government began and Kyoto where the Emperor lived.

3) Pre-modern Age
Still Ten-no was present, but the real power of administration was in the hands of the Shogun and the Shogunate age began. Especially the Edo period was peaceful and stable under the Tokugawa regime succeeded by fifteen Shoguns of the clan. Since the national isolation policy was taken during this period, the cultural exchange with foreign countries was strictly limited. Trading was allowed only with Portugal and Holland. With the removal of the capital from Kyoto to Edo (the present Tokyo) the cultural prosperity was seen both in Kyoto and Edo (Tokyo). In the Edo Period Ukiyoe made its appearance and grew very popular.

4) Modern Age
In 1868 the Tokugawa Shogunate collapsed, which told the end of the traditional feudal system. Japan awoke from her peaceful years of seclusion and took a Parliament system having Ten-no as the main. Since then Japan has rapidly modernized herself.

Harajuku

The main road is called Champs-Elysees Avenue now, both sides of which are lined with colorful boutiques, coffee shops, restaurants and other stylish, Western-style shops. There is a building called "Palais Français" selling many French goods such as Lanvin, Cartier etc.

Imperial Palace

Nijubashi(Double Bridge) is a classically-shaped iron/stone bridge with somewhat old-fashioned lighting ornaments atop the ends of its handrails. Since it serves as the gateway into the palace enclosure, the bridge is not usually opened to the public. But twice a year, on Jan. 2nd (greeting of the New Year) and April 29th, the Emperor's birthday, a host of people cross this bridge to offer their congratulations to His Majesty the Emperor and the Imperial family. The castle turret on the right as you face the bridge is called Fushimi-Yagura. It is said to have been moved from the Fushimi Castle in Kyoto and relocated here when the Edo Castle, the predecessor of the present palace, was being enlarged.

Asakusa

The Senso-ji Temple, or more popularly known as the Asakusa Kannon Temple, and the large number of shops and stores centered around it form the Asakusa district. The area can be characterized as a unique town that preserves better than any other area in Tokyo the customs and traditions of the old days when the city was known as Edo.

The Kaminarimon gate is the most popular starting point for making a sightseeing tour of Asakusa, since all the major sights can be seen along a beeline from the gate via Nakamise to the Main Hall of the temple.

Kaminarimon gate is remarkable for its huge, red paper lantern hanging under the eaves in the center of the gate and the images of the two Buddhist deities, Fujin (Wind God) and Raijin (Thunder God) standing guard on either side. It was believed that these two gods rule over the peace of the world and the fertility of the grains. As you go through the gate under lantern, directly ahead you will see the bustling shopping street, Nakamise Street --- the main approach to the temple. On both sides of the street, which is paved with large, square stones, are many old established stores, some dating back to the 18th century. Especially, at the end of Nakamise Street, you will find a small toy shop called "Sukeroku" where you can buy traditional Japanese toys as a souvenir.

After walking through the grounds, frequented by many pigeons, you will come to the Main Hall. The singular contrast of the grandeur of this hall and the minuteness of its main object of worship enshrined inside --- a 6-cm tall image of Kannon (Goddess of Mercy) --- is often mentioned by visitors. To the right as you face the Main Hall is a small building where people customarily buy amulets believed to bring the bearer peace at home, success in business, safe delivery of children, good fortune in life, etc. It might be interesting to buy one as a charm, since at least it will be something to show and talk about later. In the Main Hall, you can receive a sacred prayer for a small donation.

Ginza

The Ginza is the most celebrated shopping and entertainment area in all Japan, corresponding to the Champs-Elysees Avenue in Paris or to Fifth Avenue and Madison Square in N. Y. Of the many streets in Ginza, the busiest area extends along Chu-o-dori Avenue. It is lined with Tokyo's finest stores and shops, offering expensive items to the rich and dreams to the poor.

Shinjuku

Shinjuku is located in the west of Tokyo, where it is now growing into one of the most crowded areas with many aims such as business, shopping and amusement.

Shinjuku is served by six railway systems, both national and private, from every direction. Undoubtedly one of the busiest districts in the entire metropolis, Shinjuku is lively day and night.

Nishiguchi area which is the west part of Shinjuku Station has just started to develop into a mini Manhattan. The Keio Plaza Hotel and four other new skyscrapers stand only 5-min. walk from the West Exit of Shinjuku Station. You can enjoy a bird's eye view of Tokyo, weather permitting, from an observation platform on the top floor of both the Keio Plaza Hotel and the Sumitomo Building. A romantic, sky-lounge bar is also available on one of the upper floors of the Keio Plaza Hotel. In this area, there are two big department stores within the station building --- the Odakyu and Keio. Right near the Keio Plaza Hotel, where the IPS symposium is held, Tokyo Medical College Hospital can also be seen.

Now let's explore the east side. The main shopping avenue extends from an open-station plaza for several blocks eastward. Both sides of this avenue are lined with banks, department stores and specialty shops of all kinds in seemingly endless array.

Two of the most remarkable landmarks on this side are the Isetan and Mitsukoshi Department Stores.

The main shopping avenue, from the East Exit of Shinjuku Station to the Isetan Department Store, is opened as a "pedestrians' paradise," or car-free mall, on weekends and holidays. The same distance can also be covered by walking along an underground passage.

The Kabukicho section forms a crowded amusement center. Located near to Seibu-Shinjuku Station and connected by a new underground shopping promenade called "Subnade," this section features theaters, movie houses, game centers, turkish baths, discotheques, coffee shops, restaurants, bars and cabarets.

For more precise information see the attached "Your Guide to Shinjuku."

Happo-en Garden

This Garden --- where our social banquet will be given --- is famous for its lovely Japanese-style garden laid out in the Edo period. It is so designed that you can stroll around the pond, enjoying many different sceneries, small but artistic reproductions of natural scenes in Japan. It used to belong to one of the Tokugawa Shogunate's followers.

Mt. Fuji

Mt. Fuji has been so often referred to as the symbol of Japan that the name is familiar to the people world over. It is the highest and most beautiful mountain in Japan, rising from the plains in a long gentle conical shape to a height of 12,397 ft. (3,776 m.). As it stands by itself, it looks much higher than it actually is. Since ancient times, majestic Mt. Fuji with its graceful spread has been regarded as sacred by the Japanese. In spring the Fuji district's cherry-trees and azaleas display their lovely blossoms.

This perfect-cone-shaped volcano with its symmetrical view looks very much like "the visual island"; it has even "the blind spot", that is, the dormant crater which was made by an explosion 300 years ago.

Fuji Five Lakes

The five lakes of Fuji situated at the northern base of Mt. Fuji were made by the volcano's lava after its many explosions. Lake Yamanaka, the largest of the five lakes, is 1,000 meters above sea level and located at the far end of east side.

Tea Ceremony

Tea ceremony is an aesthetic cult originating from the Zen sect of Buddhism in the 15th century. This tea cult was designed to create peace of mind in the performer and beholder and has developed into a "religion of the art of life." It was most popular in the 15-16th century. In those days there was a strict distincition of the classes and only at this tea ceremony people could enjoy the opportunity to be equal.

There are various elaborate rules for the preparing, serving and drinking of the tea, not to mention the observance of many other ritualistic regulations. There are rules not only for the way of arranging the room itself, but also for the way of each article is used. The articles mean tea-things --- which are somber in color and plain in shape --- , arranged flowers and hanging pictures and are changed according to the season and guests. They are never showy, because the beauty in being simple and plain is valued most in the tea ceremony.

The ultimate aim of the rules and the formality is to cultivate mental composure and graceful poise. Proper etiquette requires the participant to admire flower arrangements, the room itself, but never the kimono of the tea master or mistress. It is all tremendously artificial, and therefore impressive, or eccentric, depending on how you see it. If you regard it strictly as a matter of discipline, however, you will see that it has its points.

Flower Arrangement

The aesthetic art of flower arrangement is a purely native cult of Japan. The word "flower" in this case is used in a broad sense. It covers even flowerless trees and shrubs, to say nothing of seed pods and fruit of plants, the blossoms of fruit and other trees, and the leaves of the bamboo, pine, willow and other plants. Moreover, recently, the leaves and twigs are painted in various attractive colors, if necessary.

There are two main styles of flower arranging --- the formal and the natural. The three fundamental principles followed in the formal style are --- the leading principle (heaven), the subordinate principle (earth) and the reconciling principle (man). Every formal flower arrangement embodies these principles, regardless of the school to which the arranger belongs.

In a Japanese room, the flower arrangement is one of the most important factors in the decoration of the interior.

Climate

The climate in Japan in May is fine and mild. The mean air temperature in Tokyo in May is 18°C (65°F).

Dress

Informal dress for all occasions.

Traditional Japanese Cuisine

Traditional Japanese cuisine is an art. Its two conspicuous features are: how to look beautiful and how to give the sense of the seasons, since Japan has all seasons. Paying special attention to the color scheme and arrangement on plate, the Japanese cook tries to decorate his dishes with season's recipe. For instance, in spring you may see cherry blossoms (preserved with salt) or bits of flower-shaped vegetables in the soup; in autumn, dishes decorated with maple leaves cut out of carrots or with fresh seasonal food as reminder of a seasonal attraction.

The tableware used is also pleasing to the eye and different with every season. For example, the pattern of a plate may symbolize the month of the year. In May it may have a picture of young sprouting green leaves. Thus, so to speak, the nature of the season can be seen on the lacquered tray.

The quantity of food for each dish is not large, yet the dishes are so many and full of variety. One after another you will be served dishes cooked in different ways: raw, boiled, steamed or cooked with lightly seasoned soup, etc. So you will enjoy looking and having Japanese meals; the delicacy and the taste of the Japanese cuisine, because it is very carefully prepared.

These Japanese dishes will be tasted best with Japanese rice wine, "Sake".

Have an enjoyable time with "Sake" at the I.P.S. Banquet !!!

Popular Japanese A La Carte

1) Sukiyaki
   Sukiyaki is a kind of stew cooked in a cast-iron pan in front of the guests. The ingredients of sukiyaki consist of sliced fillet of beef, green leek, sliced vegetables, chunks of bean curd, shirataki (gelatine-like food made from a plant rich in starch) and mushrooms. They are simmered in a pan containing warishita (light mixture of rice wine, "sake" and soy sauce with a dash of sugar).

2) Shabu-shabu
   Shabu-shabu is a way of cooking tender, thinly sliced beef and vegetables by the guests themselves at the table by dipping them in boiling soup stock and eating after they are cooked in a few minutes.

3) Sushi
   A half-handful of boiled rice seasoned with venegar, salt and a bit of sugar, gripped by trained hands and molded into an oval-shaped ball, on top of which is placed a thin slice of fish, shellfish, shrimp, squid or egg omelet. A sheet of seaweed called "nori" is used to wrap sushi made with a slice of cucumber, seasoned gourd peels or chunks of tuna. This is called nori-maki (seaweed roll).

4) Tempura
   Prawns, shellfish, fish , eggplant, and other vegetables are fried in deep fat, usually vegetable oil, after being dipped in a batter of eggs, water and wheat flour. Tempura is eaten hot with chopsticks and dipped in specially prepared soy sauce with grated radish.

Eating Cheap in Japan

Rice Dishes

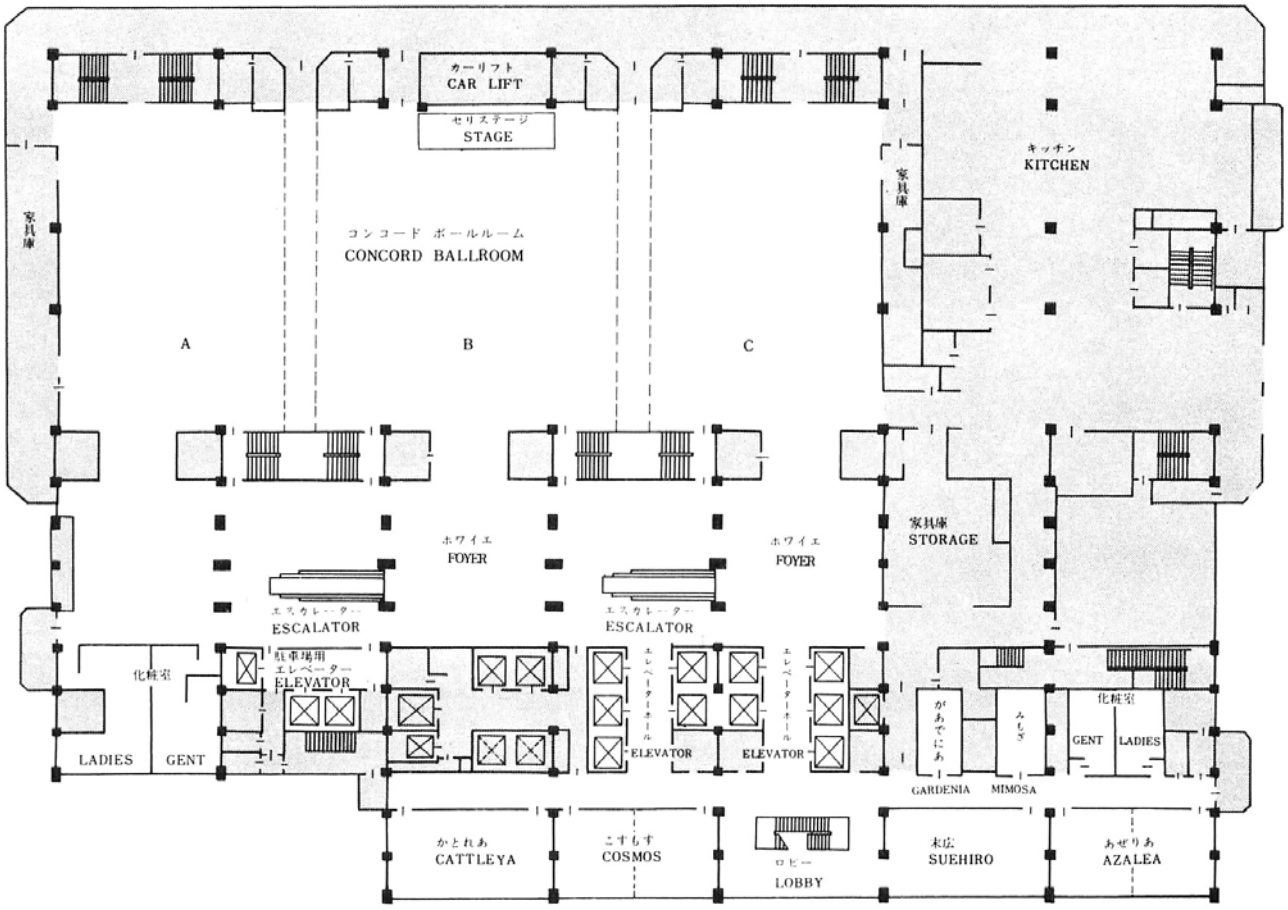
Chah Han	Fried rice mixed with small pieces of pork (sometimes shrimp or crab, too), onions, cooked egg, fish cake and peas.
Katsu Don	A bowl of rice topped with one deep-fried, breaded and sliced pork cutlet cooked in egg with a few peas and onions.
Gyu Don	A bowl of rice with a few slices of beef, onions, Tofu (bean curd) and gelatine noodles cooked in sweetened soy sauce. It is a kind of individual ready-made Sukiyaki.
Ten Don	A bowl of rice with one or two deep-fried shrimp tempura on top.

Noodle Dishes

Tempura Soba	A bowl of noodles in fish bouillon seasoned with soy sauce. One or two deep-fried shrimp tempura are on the top. It is typical Japanese noodles.
Chah-shu Men	Chinese noodles in pork bouillon seasoned with soy sauce. Four or five slices of pork are arranged on top. This is the most popular and inexpensive Japanese-style Chinese food.
Yaki Soba	There are two kinds of Yaki Soba; Yawarakai and Katai. Yawarakai Yaki Soba is soft Chinese noodles fried on a griddle with small pieces of cabbage, carrots, pork, bean sprouts. Katai Yaki Soba is crispy dried Chinese noodles covered with a thick sauce containing small pieces of pork, Chinese cabbage, carrots, onions, bamboo shoots, pea pods.

京王プラザホテル5階宴会場平面図

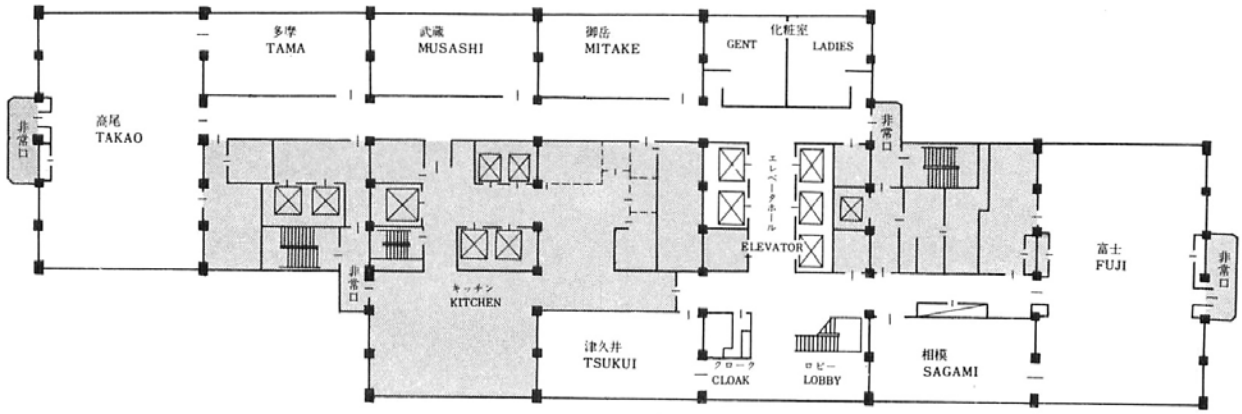
KEIO PLAZA HOTEL　5F BANQUET FLOOR



階	部屋名	M²	坪	WIDE	DEEP	HEIGHT
5	コンコード A B C	1320	400	57	23	5.95
	A B	835	253	36	23	5.95
	B C	835	253	36	23	5.95
	A	355	108	15.4	23	5.95
	B	436	132	19	23	5.95
	C	355	108	15.4	23	5.95

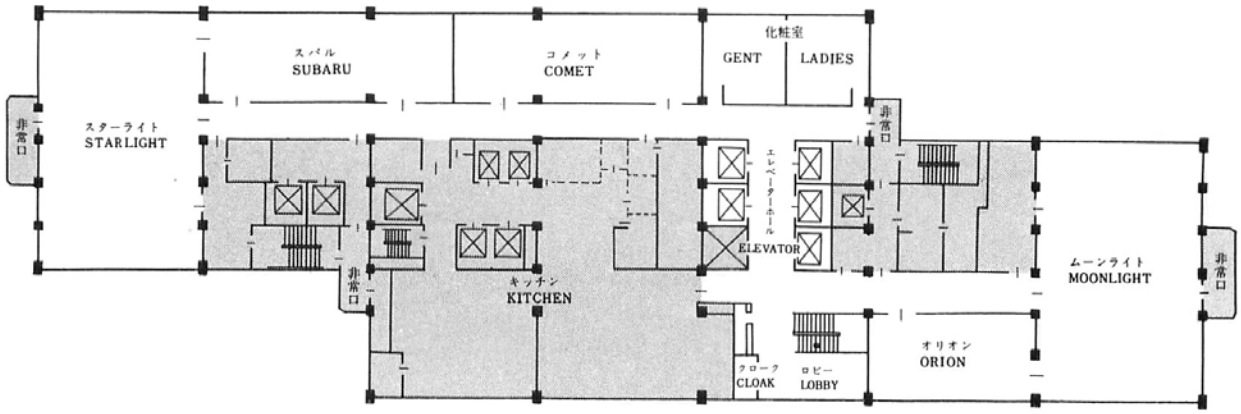
階	部屋名		M²	坪	WIDE	DEEP	HEIGHT
5	かとれあ	CATTLEYA	67	20	11	6.1	2.7
	こすもす	COSMOS	67	20	11	6.1	2.7
	あぜりあ	AZALEA	67	20	11	6.1	2.7
	末広	SUEHIRO	51	15	10	5.1	2.7
	があでにあ	GARDENIA	20	6	3.3	6	2.7
	みもざ	MIMOSA	20	6	3.3	6	2.7

京王プラザホテル42階宴会場
KEIO PLAZA HOTEL 42F BANQUET FLOOR



階	部屋名		M²	坪	WIDE	DEEP	HEIGHT
42	高尾	TAKAO	188	57	17	11	2.7
	多摩	TAMA	58	18	9.4	6.2	2.7
	富士	FUJI	188	57	17	11	2.7
	相模	SAGAMI	65	20	10.5	6.2	2.7
	津久井	TSUKUI	65	20	10.5	6.2	2.7
	御岳	MITAKE	65	20	10.5	6.2	2.7
	武蔵	MUSASHI	65	20	10.5	6.2	2.7

京王プラザホテル 43階宴会場
KEIO PLAZA HOTEL 43F BANQUET FLOOR



階	部屋名		M²	坪	WIDE	DEEP	HEIGHT
43	スターライト	STARLIGHT	190	58	17	11.2	2.7
	スバル	SUBARU	98	30	16.5	6	2.7
	コメット	COMET	98	30	16.5	6	2.7
	ムーンライト	MOONLIGHT	190	58	17	6.2	2.7
	オリオン	ORION	65	20	10.5	11.2	2.7

abstracts

3rd International Visual Field Symposium

3-6 May 1978

Concord Ballroom of the

KEIO PLAZA HOTEL

TOKYO, JAPAN

CONTENTS

	Page
SESSION I : NEURO-OPHTHALMOLOGY	1
FREE PAPER SESSION	9
SESSION II : GLAUCOMA	21
SESSION III : METHODOLOGY	39

SESSION I: NEURO-OPHTHALMOLOGY

FUNDUSCOPIC CORRELATES OF VISUAL FIELD DEFECTS IN LESIONS OF THE ANTERIOR VISUAL PATHWAY.

Lars Frisén

Department of Ophthalmology, University of Göteborg, Sweden

Ophthalmoscopic evaluation of the state of the retinal nerve fiber layer in disease of the anterior visual pathway offers more than mere corroboration of visual field defects: it assists importantly in the development of individually appropriate perimetric strategies, it affords an objective means of identifying anatomical lesions that for various reasons may be difficult to detect by perimetry, and it allows successful prognostication of the possibilities of recovery. Under certain circumstances, it may even allow a rough timing of destructive events. Funduscopic evaluation of the peripapillary retinal nerve fiber layer is therefore an extraordinarily useful complement to perimetry.

VISUAL FIELD DEFECTS DUE TO CHIASMAL TUMORS

Yoshimasa Isayama

Department of Ophthalmology, Kobe University School of Medicine, Kobe, Japan.

This report is based on a review of pre-operative visual field changes in 135 patients with sellar and parasellar tumors, all of them having operated either at the ophthalmological or the neurosurgical clinics of Kobe University, all in the years from 1968 to 1977.

1) Classification of 66 cases of pituitary adenoma, 31 cases of craniopharyngioma, 24 cases of meningioma and 14 cases of miscellaneous tumors.
2) Division of visual field defects into three groups: a) the symmetric type, b) the asymmetric type and c) the atypical type with detailed discussion.
3) Evaluation of various perimetric measurement methods for chiasmal tumors.
4) Discussion of central field observations including sparing macula.

CORRELATIONS BETWEEN ATROPHY OF MACULOPAPILLAR BUNDLES AND VISUAL FUNCTIONS IN CASES OF OPTIC NEUROPATHIES

Yusaku Tagami and Yoshimasa Isayama
Department of Ophthalmology, School of Medicine, Kobe University, Japan

The degrees of the atrophy of maculopapillar bundles have been examined by red-free fundus photography in 55cases (88eyes) of steady state optic neuropathies with central scotomas.
A close relationship was found to exist between the central field depressions in Tubinger's static perimetry and the degrees of the atrophy. The visual acuity decreased with developing atrophy in a large number of cases. However excellent visual acuity despite a marked reduction of the bundles was observed in some case, which showed a sieve-like depressions in Tubinger's static perimetry. Using our newly developed Quantitative Maculometry with direct fundus examination, an increasing sensitivity at the fovea was found in these cases.
Accurate examinations of the central visual fields as well as examinations of the nerve fiber bundles are recommended for the prognosis of the visual functions in optic neuropathies with central scotomas.

VISUAL FIELD DEFECTS IN ANTERIOR ISCHEMIC OPTIC NEUROPATHY.

Sohan Singh Hayreh, Patricia Podhajsky
Department of Ophthalmology, University of Iowa Hospital, Iowa City, Iowa.

Visual field defects (as plotted on a Goldmann perimeter) in anterior ischemic optic neuropathy (AION) have been examined in more than a hundred patients seen in our Ocular Vascular Clinic. The visual acuity in these eyes varied from no perception of light to perfectly normal. The optic disc showed edema during the first 4-8 weeks and later on atrophy. The disease tends to become bilateral in the vast majority of patients, if they are followed long enough. The visual field defects varied from no recordable visual fields to perfectly normal fields in spite of definite AION. A detailed analysis of the various types of visual field defects seen in this condition will be presented. On follow-up a significant improvement in the visual fields was recorded in an appreciable number of eyes, usually after treatment. The functional recovery may take weeks and sometimes even months. The relationship of the recovery to the various factors will be discussed. Also pathogenesis of the visual field defects in AION, their behavior, differential diagnosis and correlation with etiology of AION and other factors will be discussed, in addition to the extremely important role of perimetery in the diagnosis and management of this visually crippling disease.

VISUAL FIELD DEFECTS DUE TO HYPOPLASIA OF THE OPTIC NERVE

Lars Frisén

Department of Ophthalmology, University of Göteborg, Sweden.

Any visual field defect associated with hypoplasia of the optic nerve is a reflection of the distribution and severity of axonal deficit. Patients with a low-degree, uniformly distributed loss of nerve fibers cannot be expected to produce clearcut perimetric defects. Patients with advanced, diffuse loss of neurons have more or less concentric contractions of the visual field, and subnormal visual acuity. Finally, patients with focal loss of nerve fibers may produce any type of focal visual field defect. Visual acuity is often normal in these latter cases. Diagnostic hallmarks are a stationary visual deficit, and ophthalmoscopic signs of adaptation of the optic disc to the remaining mass of nerve fibers. A subnormal diameter of the optic disc is not obligatory in minor hypoplasia.

VF DEFECTS IN CONGENITAL HYDROCEPHALUS

L. Brenner & H. Bynke
University Eye Clinic, Lund, Sweden.

The visual fields of 16 patients, aged 9 - 43 years (ave. 18), with congenital hydrocephalus and optic atrophy have been examined. In 8 cases, the defects were situated in the paracentral and central field, indicating that the primary lesion was in the optic nerve. This hypothesis was supported by certain neuro-radiological findings. In the other patients, the optic atrophy could be explained by previous papilloedema (2 cases), retinal (3 cases) or retrochiasmatic changes (3 cases).

VISUAL FIELDS BEFORE AND AFTER TRANSNASAL REMOVAL OF A PITUITARY TUMOR
CORRELATION OF TOPOGRAPHICAL FEATURES WITH SENSORIAL DISTURBANCE FOR LIMINAL AND SUPRALIMINAL STIMULI.

F. Dannheim
Ophthal.Dept. University Hamburg.
D. Luedecke
Neurosurgical Dept. University Hamburg
D. Kuehne
Neuroradiological Dept. University Hamburg.

The position and extent of a pituitary tumor has been evaluated by preoperative radiological examination including CT and PEG and by intraoperative exploration in about 100 patients. These findings are compared with the visual fields taken preoperatively, in many cases postoperatively as well, applying both kinetic perimetry and supraliminal stimuli. Discrete deformities in the paracentral isopters near the vertical meridian were found even in some cases of a group with merely intrasellar tumors. Disturbance of sensation of supraliminal stimuli, however, was even more frequent in this group. Those changes of sensation without alterations in conventional perimetry seem to represent the very first sensorial damage produced by pituitary tumors and the last to disappear after removal of the tumor.

COMPARISON OF VISUAL FIELD DEFECTS IN ISCHEMIC OPTIC NEUROPATHY AND GLAUCOMA CHRONICUM SIMPLEX.

E. Aulhorn and M. Tanzil
Universitäts-Augenklinik Tübingen, West Germany

The location, size and shape of field defects in over 60 cases of anterior ischemic optic neuropathy are described. The frequency distribution of the location of these defects in the visual field is determined and compared with the frequency distribution of early defects in glaucoma.

CENTRAL CRITICAL FUSION FREQUENCY IN NEURO-OPHTHALMOLOGICAL PRACTICE

Toshifumi Otori, Takashi Hohki and Yuzo Nakao
Department of Ophthalmology, Kinki University School of Medicine, Sayama Town, Osaka 589, Japan

Studies were made of clinical significance of testing central critical fusion frequency and flicker fields in optic nerve diseases and chiasmal syndrome. Critical fusion frequency of the central field was measured using the apparatus developed by the authors and flicker fields were tested using the Bausch-Lomb autoplot tangent screen and the flicker attachment developed by Dr. Nakabayashi. Testing of the central critical fusion frequency was found to be most useful in the diagnosis and follow-up studies of optic nerve diseases and flicker fields more valuable in optic nerve diseases than classical campimetry.

FREE PAPER SESSION

EARLY STAGE PROGRESSION IN GLAUCOMATOUS VISUAL FIELD CHANGES.

Fumio Furuno and Harutake Matsuo
Department of Ophthalmology, Tokyo Medical College, Japan.

Before discussing about the method of screening of the glaucomatous visual field changes (Gl.VFC), we have to know the answer of following two questions: What is the significance of the earliest Gl.VFC ? Where will the earliest Gl.VFC appear ?

Last I.P.S. in Tübingen, we have reported the frequency distribusion of early Gl.VFC on Friedmann's visual field analyser, and the result was quite different from Professor Aulhorn's one.
The difference between two results may have occured because of a different expression for the stage of glaucomatous visual field progression. Hence, the frequency distribution of the Gl.VFC in different early stages was analysed.
The result of the frequency distribution of the two different stages in early Gl.VFC will be reported. In addition, a rule of progression of the visual field changes in early stage will be discussed.

THE EARLIEST VISUAL FIELD DEFECT (IIa STAGE) IN GLAUCOMA BY THE KINETIC PERIMETRY

Hiroshi KOSAKI
Osaka University, Japan.

The earliest (IIa stage) visual field defects in glaucoma by the kinetic perimetry were one depression or one scotoma in the inside isopters.

About this first scotoma, the distribution was studied in 56 eyes which were glaucomatous or opposite of glaucoma. As the result the most location was found at supra- blind spot (45° direction and 15° distance).

The another way 54 eyes in which this supra-blind spot scotoma were found in the routine examination were tested for glaucoma. As the result 39 eyes (75%) of them were diagnosed as glaucoma.

It was concluded that the supra-blind spot scotoma was the first scotoma in the earliest glaucoma by the kinetic perimetry.

RELATIONSHIP BETWEEN I.O.P. LEVEL AND VISUAL FIELD IN OPEN ANGLE GLAUCOMA.

Shinzaburo Yamazi, Kazushige Yamasowa and Ikuo Azuma
Department of Ophthalmology, Osaka Medical College, Japan.

Various field changes according to the I.O.P. levels were measured in individual of open angle glaucoma.
The visual field was measured by Tübinger Perimeter, especially at the selected five points including fixation point. Applanation tonometry was carried out soon after the field examination.
The relationship between I.O.P. and visual field was studied and the limitting pressure was presumed from the results.
The significance of the limitting pressure are discussed.

KINETIC AND STATIC THRESHOLDS AT DIFFERENT BACKGROUND LUMINANCES.

J. Vola
Marseille, France

THE RELATIONSHIP OF VISUAL FIELD CHANGES AND INTRA-OCULAR PRESSURE.

A. I. Friedmann
Courage Laboratory, Royal Eye Hospital, St. George's Circus, London S.E.1. England

A number of cases of open angle glaucoma are reported in which when the applanation intra-ocular pressure was raised, the visual field defects became worse. Some typical cases are shown. Other conditions affecting the glaucomatous field are discussed.

THE ENLARGMENT OF THE BLIND SPOT IN BINOCULAR VISION

A.DUBOIS-POULSEN
PARIS-FRANCE

With a polarising system it is demonstrated that the size of the blind spot is considerably larger in dichoptic than in monoptic vision.The temporal and photometric modalities of the phenomenon are studied and discussed.

EVALUATION OF PERIMETRIC PROCEDURES.

A STATISTICAL APPROACH.

Marianne Frisén

Department of Statistics, University of Göteborg, Sweden.

A very precise formulation of the purposes of the visual field examination and proper handling of the time factor are important for any evaluation and comparison of perimetric procedures. If information about the predictive value of a procedure is desired, it is also necessary to involve the incidence of abnormal cases in a well-defined population. A probabilistic approach to measurement of performance is recommended. Some common measures, e.g. sensitivity and predictive value, are described as they apply to clinical perimetry. Some new measures are proposed for the evaluation of follow-up examinations.

EYE MOVEMENTS DURING PERIPHERAL FIELD TESTS, MONITORED BY ELECTRO-OCULOGRAM.

Yoshihito Honda, Akira Negi and Masaki Miki, Kyoto, Japan.

Eye movements of patients were monitored by electro-oculogram (EOG) through AC- and DC-amplifiers during peripheral field tests. A Goldman perimeter was used under a room light. By this method, fine movements of the eye were difficult to be followed, but it was possible to document gross eye movements and estimate reliability of measured fields. EOG recordings of well-cooperated patients indicated only blinking waves and artifacts from electrode-polarization, and were silent throughout measurements. Travelling of gaze seemed to have no relation with the size of isoptors and visual fields. The grade of gaze travelling depended on characteristics of patients. Prominent deviation of the eye position was frequently found among patients of old ages with senile dementia, patients with large central scotomas and non-cooperated children.

TRIAL OF A COLOR PERIMETER.

Hiroshi Kitahara, Kenji Kitahara and Hiroshi Matsuzaki
Jikei University School of Medicine, Japan.

A color perimeter was prepared for the measurement of the sensitivity curves after the method based on static perimetry. With this perimeter particularly using the two-color threshold technique, the sensitivity curves could be measured for determining the characteristics of wavelength on the fovea and on the extrafovea. This trial perimeter had a 500-watt xenon lamp as the light source and the test light was guided by the glass fiber, so that the test light can move freely along with a longitudal line. The colored test lights were obtained by sixteen interference filters. Their dominant wavelengths were limited within 400 nm to 700 nm, at 20nm intervals, and the maximum brightness was 22,000 cd/m^2 without any filters. The background light was round and with 50° visual angle at its maximum, and its maximum brightness was 2,000 cd/m^2 with no filters at 10° visual angle. For the adjustment of the amount of the test light and of the background light, five ND filters, from 1 to 5 of density, and a wedge were installed. Duration of the test light irradiation was controlled between 10 msec. to 9,999 msec. by a time regulator. The testing method and the results obtained by this color perimeter will be mentioned.

VIDEO-PUPILLOGRAPHIC PERIMETRY
REPORT 4, ON THE TECHNIQUE HOW TO OPERATE THE REFORMED DEVICE AND PERIMETRIC FINDINGS ON THE RABBIT EYES.

Satoru Kubota
Jikei University School of Medicine, Japan.

An improvement was made on the test target of Video-Pupillographic Perimeter originated by Narasaki et al., and with this set-up measuring of visual field to 5° could be obtained.
Using this reformed device, Mariottes blind spot of human being with his looking at the fixation point could be measured with accuracy.
Former study had revealed that the colored rabbit retina had the area very sensitive to the light stimulation.
With the new device again this area was studied and it was found to be located below the optic disc along medullated nerve fibers.
It was corresponded to the so-called "Visual Streak".

CLINICAL EXPERIENCES TRIED WITH A NEW MERIDIAN DOTS TARGET.

Etsuro Shinzato and Harutake Matsuo
Department of Ophthalmology, Tokyo Medical College, Japan.

We developed a new meridian dots target to detect the fine depression on the central field. The new front plates of both standard and meridian dots target are equipped in order to detect and analyse visual field changes.
The visual field changes including retinal diseases, disturbances of visual pathway and glaucoma detected by Goldmann perimeter are assessed using the meridian dots target. Moreover, some differences on the results of profile perimetry between the Tübinger perimeter and the new plate will be discussed.

ELECTROENCEPHALOGRAPHIC PERIMETRY

Tohru Maruo
Department of Ophthalmology, School of Medicine,
Kobe University, Japan

An application of Visual Evoked Responses (VER) for objective measurement of human visual field has been done by various investigators, but there was a lot of discrepancies among them. I would like to describe an objective measurement of visual field with the use of Vertex potential, which was basically introduced by Davis (1939). The apparatus consists of a modified Goldmann's perimeter to measure the visual field and electroencephalographic recorder with data processing computer to record the Vertex Potential. The EEG perimetry is almost equal to subjective perimetry under the same conditions. The author would discuss the condition of measurement of EEG perimetry and the results.

RELATION BETWEEN CENTRAL AND PERIPHERAL VISUAL FIELD CHANGES WITH KINETIC PERIMETRY.

Tetsuro Ogawa and Ryujiro Suzuki
Department of Ophthalmology, Tokyo Medical College, Japan.

From our experience, central visual field (CVF) examination plays the major role in the detection of diseases. Some authors have stressed the importance of CVF examination, especially in the early stage of glaucoma.
Other than glaucoma, only Blum's report (1959) appears to deal with a comparative study of CVF and peripheral visual field (PVF). According to him, PVF examination does not contribute much to the detection and follow up of diseases.
As a comparative study, the relation between CVF and PVF changes in 1296 eyes examined with kinetic perimetry using Goldmann perimeter was studied.
729 eyes had visual field changes. They were divided into following 4 groups, according to our criteria, mainly based on the extent and the shape of I/2 and V/4 isoptors. I. CVF negative, PVF positive. II. CVF positive, PVF negative. III. Both positive. IV. Both negative.
Only 6 eyes were classified in Group I. In Group III, if there were changes in PVF, some CVF changes were always present. Therefore, in order to detect the visual field changes in daily clinic, CVF examination is a meaningful method.

RELATIONSHIP BETWEEN PERIMETRIC ECCENTRICITY AND RETINAL LOCUS IN A HUMAN EYE.

Lars Frisén

Department of Ophthalmology, University of Göteborg, Sweden.

A blind but grossly normal eye was removed because of severe pain. With the patient's consent, photo-coagulation markers were placed along the horizontal meridian of the retina prior to surgery. The angular coordinates in visual space of the markers were determined by an ophthalmoscopic procedure. The loci of the markers were also determined in a flat preparation following enucleation. The relationship between retinal arc and perimetric eccentricity was found to be approximately linear up to at least 50 degrees.

SESSION II : GLAUCOMA

EARLY GLAUCOMATOUS VISUAL FIELD DEFECTS AND THEIR SIGNIFICANCE TO CLINICAL OPHTHALMOLOGY

Paul R. Lichter and Carol L. Standardi

University of Michigan, Ann Arbor, MI USA

Analysis of a consecutive series of visual fields was undertaken to determine the earliest field defects due to glaucoma. Each field was performed in the usual clinical setting in a manner which might be utilized by the practicing ophthalmologist.

The following questions were addressed:

1. What is the earliest visual field defect in glaucoma?
2. Does evidence of the earliest defect remain amidst an advanced defect? If so, can the advanced visual field defect be dissected to discover the earliest defect likely to have occurred in that field?
3. Given that the earliest defect be known, what is its meaning in the context of the everyday clinical practice of ophthalmology?
4. What should the practicing ophthalmologist look for as the earliest glaucoma visual field defect?

THE EARLY VISUAL FIELD DEFECT IN CHRONIC OPEN ANGLE GLAUCOMA

Stephen M. Drance, M. Fairclough, B. Thomas, . M. Schulzer.
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Current data of the early visual field defects in glaucoma stem from the analysis of visual fields of fairly large glaucoma populations which include late and early field defects. Assumption is usually made that the smallest field defects are the earliest ones. In order to study this in prospective fashion a large number of patients at risk have followed for a number of years with regular periodic visual field examinations including central and periphera visual fields. Thirty-five eyes have developed visual field defects which have been reproducible and which have been reliably not present on repeated visual field testing. The exact location of the visual field defects into peripheral nasal steps, central nasal steps, paracentral scotomata, and other sector field defects will be analysed. In addition to that the nasal, peripheral, midcentral and central areas of the visual field have been accurately examined kinetically and statically in normal people in order to find out what the norma variation of the nasal portions of the visual field is. Only when this informa tion is known can one then interpret the importance of a nasal finding and the chance of it being a nerve fibre bundle defect. The full details of the data will be presented.

A CRITICAL PHASE IN THE DEVELOPMENT OF GLAUCOMATOUS VISUAL FIELD DEFECTS

E.L. Greve; F. Furuno; W.M. Verduin.

Eye Clinic, University of Amsterdam.

The results of a retrospective and prospective investigation on the development of glaucomatous visual field defects (GVFD) are reported. A series of patients that had documented normal field developed GVFD.
A significant number of patients go through the stage of fluctuating wedge-shaped defect (WSD) before the stage of a fully developed GVFD. The fluctuating WSD and its theoretical and practical significance is described. The authors feel that a fluctuating WSD may indicate that the optic nerve fibers are in a critical stage of functioning.

ANALYSIS OF PATIENTS WITH OPEN-ANGLE GLAUCOMA USING PERIMETRIC TECHNIQUES REFLECTING RECEPTIVE FIELD-LIKE PROPERTIES

Jay M. Enoch and Emilio C. Campos. Department of Ophthalmology, University of Florida, Gainesville, Florida, U.S.A.

Several lines of research have been drawn together in this brief paper. Perimetric tests of receptive field-like functions localized in the inner retina are unequivocally altered in open angle glaucoma. In 49 out of 49 cases changes in the sustained-like function were shown to occur. These changes in measured function may or may not parallel alterations in the visual field. The visual field tends to vary substantially in time in the population sampled. The disease process may be amendable to treatment, if evidence for remissions in functional properties remains.

LIMINAL AND SUPRALIMINAL STIMULI IN THE PERIMETRY OF CHRONIC SIMPLE GLAUCOMA.

F. Dannheim
Ophthal.Dept. University Hamburg.

Supraliminal, evenly moving targets appear as altered in areas of absolute or relative glaucomatous visual field defects. Discrete changes of sensation of supraliminal stimuli may be found even in patients with practically normal fields according to conventional static and kinetic perimetry. Those minimal glaucomatous perimetric alterations are predominantly located in the nasal peripheral field adjacent to the horizontal meridian.

ACQUIRED COLOUR VISION LOSSES - THE EARLIEST FUNCTIONAL LOSSES IN GLAUCOMA

Romuald Lakowski

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The degree of acquired colour vision loss in various stages of glaucoma is related to the extent of field loss as obtained from a perimeter. However, losses in yellow-blue amounting to anomalous and dichromatic vision are found in about 20% of ocular hypertensives. There are no significant correlations between a number of clinical variables (e.g., IOP) and colour vision variables except for macular sensitivity. Correlations do exist, however, between the extent of colour vision deficiencies and the raised values of chromatic dark adaptation thresholds.

THE RELATION BETWEEN DEPRESSION IN THE BJERRUM'S AREA AND ROENNE'S NASAL STEP IN EARLY GLAUCOMATOUS VISUAL FIELD DEFECTS.

Nariyoshi Endo
Department of Ophthalmology, Tokyo Medical College, Japan.

In 1976 at Tübingen, we have introduced a new front plate for detecting glaucoma through the analysis of central visual field (VF) in glaucoma with Goldmann perimeter(GP) & Friedmann VF Analyser(FVFA). This time, we tried to examine the relation with peripheral VF defect, including nasal step(NS), in early glaucoma.

First, we have analysed 219 eyes (out of 765 glaucomatous VF) up to the stage of break through, already tested by GP. Then, we found that 25% was either only with NS and/or uncertain relation between depression in the Bjerrum's area and NS.

Next, in order to make this clear, following methods have been thought out : kinetic perimetry using GP (with Armaly & Drance's technique), partial profile perimetry; nasal arcuately at 40 degrees & on the 2 meridians (15 degrees upper & lower among horizontal) using Tübinger perimeter and testing by FVFA, also by adding our new plate.

From the results of over 100 eyes, we would like to report the thema in detail, especially regarding glaucomatous VF with glaucomatous optic disc of about 20 eyes.

REVERSIBILITY OF GLAUCOMATOUS DEFECTS OF THE VISUAL FIELD

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The demonstration of reversibility of glaucomatous defects is complicated by the multiple etiology of field defects; the fact that only ocular pressure level is modifiable by limited mechanisms of pressure reduction, age and technique of perimetry. Nasal step, paracentral scotoma, enlarged blind spot and contraction of the isopter were found to be pressure induced. These defects, when found spontaneously in the ocular hypertensive, were reversible by lowering ocular pressure level in some cases.

VISUAL FIELD DEFECTS IN OPEN-ANGLE GLAUCOMA: PROGRESSION AND REGRESSION

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How often do glaucomatous visual field defects improve or worsen? What factors predispose a glaucomatous eye to changes in the visual field? Attempting to answer these questions, I reviewed the charts of 130 patients (177 eyes) who met the following criteria: open-angle glaucoma, definite glaucomatous visual field defects, good visual acuity, reliable responses during perimetry, and two perimetric examinations one year apart. Patients were separated into three groups: a surgical group, a group newly started on medical treatment, and a control group continued on previous medication. Visual fields were tested on the Goldmann perimeter, using Armaly's strategy of "selective perimetry" for detection of defects and quantitative kinetic perimetry for their assessment.

Visual fields improved in 7% and worsened in 15% of the 177 eyes. Improvement occurred more frequently in young patients, in eyes treated surgically, when the reductions of intraocular pressure were large, and when the cup of the optic disc did not extend to its rim. Worsening occurred more often in old patients and in eyes treated medically. Neither systemic blood pressure, horizontal cup-to-disc ratio, nor severity or location of visual field defects influenced the prognosis.

THE CLINICAL SIGNIFICANCE OF REVERSIBILITY OF GLAUCOMATOUS VISUAL FIELD DEFECTS.

E.L. Greve, F. Furuno, W.M. Verduin.
Eye Clinic, University of Amsterdam.

This report deals with the following questions:

1. What is a glaucomatous visual field defect (GVFD)?
2. How to measure a GVFD?
3. What are the spontaneous variations of a GVFD?
4. Why are there spontaneous variations of GVFD; their significance?
5. How to measure spontaneous variation of GVFD?
6. What is reversibility of GVFD?
7. Spontaneous variation and reversibility of GVFD; separate entities?
8. Can reversibility be induced?

Considerations on these matters will be based on a retrospective investigation on reversibility of GVFD, a prospective investigation on spontaneous variation and a prospective investigation on the influence of short-term changes in IOP.

RECOVERY OF VISUAL FUNCTION FOLLOWING ELEVATION OF THE INTRAOCULAR PRESSURE.

J. Terry Ernest
University of Wisconsin - Madison, USA.

In this introductory paper I will discuss three aspects of the problem of the reversibility of glaucomatous visual field defects. First, a review of the experimental evidence supporting the existance of ocular regulating mechanisms which may compensate for acute elevations in the intraocular pressure. Second, a review of the arguments for and against the notion that acute glaucoma may produce the same kind of visual field defects as chronic open angle glaucoma. Third, the data from a retrospective study of chronic open angle glaucoma patients with presumed reversibility of glaucomatous visual field defects.

In concluding this introductory paper I will discuss the concept of homeostasis and autoregulation as it may apply to glaucoma and suggest the kind of diagnostic visual field testing necessary for the earliest detection of function loss.

STUDIES ON THE MODE OF DEVELOPMENT AND PROGRESSION OF FIELD DEFECTS IN EARLY GLAUCOMA.

Yoshiaki Kitazawa, Osamu Takahashi and Yohko Ohiwa

Department of Ophthalmology, University of Tokyo School of Medicine and Department of Ophthalmology, Chiba University School of Medicine.

The mode of development and progression of early glaucomatous field defects was studied in 120 patients with a moderately elevated intraocular pressure (21 to 30 mmHg) but without field defects and in 20 primary open-angle glaucoma patients with unilateral field loss. Visual field was examined periodically with a Goldmann perimeter and a Friedmann visual field analyser while all the eyes without field changes were kept untreated for 2 to 14 years. During the period of observation 10 cases with ocular hypertension but without field changes and 4 cases with unilateral glaucomatous field defects developed field changes in those eyes which originally had no field defects.

PERIPHERAL NASAL FIELD DEFECTS IN GLAUCOMA.

Elliot B. Werner, M.D.
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One hundred and fifty-one eyes of 101 consecutive patients with chronic open angle glaucoma and low tension glaucoma showed typical visual field defects. Sixty-five of the eyes had a nasal step, either alone or in combination with other defects. In 17 of these eyes, it was possible to demonstrate an isolated scotoma in the nasal periphery. It was concluded that the peripheral nasal step is a nerve fiber bundle defect and in its earliest phase produces a scotoma. In this sense it behaves similar to the more central defects, rather than simply as a depression of peripheral isopters nasally. Stereo photographs of the optic discs were obtained and the appearance of the discs and fields was correlated.

REVERSIBILITY OF VISUAL FIELD DEFECTS IN SIMPLE GLAUCOMA.

Iwao Iinuma
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Glaucomatous field defects may be caused by some unknown toxins from metabolic disorders in the patient's body besides elevated intraocular pressure or reduced blood supply to the optic disc. From a broad view of simple glaucoma, this is a genetic, geriatric and progressive disease, and has slightly reduced glucose tolerance, in general. In order to normalize the suspected metabolic disorders in any extent, I have administered anthranilic acid 30-90 mgs daily since 1956, vitamin B_{12} 2-3 mgs weekly since 1964 or both over one month duration to patients of normo-tensive or even of borderline cases. These physiological substances have some favorable actions, i.e., improvement of anemia, promotion of glucose tolerance, diuresis and many other important actions. About two-thirds of cases recovered from the field defects in some degrees as the results.

REVERSIBLE CUPPING AND REVERSIBLE FIELD DEFECT IN GLAUCOMA

Kazuo Iwata
Niigata University, School of Medicine, Department of Ophthalmology, Japan

We have investigated on the correlation of reversible cupping and reversible field defect of glaucomas. The sequential color stereo fundus stereophotogrammetry in large size was applied. A remarkable reversible cupping was identified predominantly in younger patients, and exceptionally in 63 year-old patient. The stereometry revealed that the reversible process consisted in putting back the undermined cup wall in its place. Any impairment was not proved by Goldmann perimetry, however, spot-depressions on Bjerrum area were identified by Friedmann Analyser. These scotomata disappeared completely in the course. Any slit like defect of retinal nerve fiber layer was not found. Therefore, both reversibility should be functional process.

THE REVERSIVILITY OF VISUAL FIELD DEFECTS IN THE JUVENILE GLAUCOMA CASES.

Kuniyoshi MIZOKAMI,Yusaku TAGAMI,Yoshimasa ISAYAMA.
Department of Ophthalmology,School of Medicine,Kobe University,Kobe,Japan.

In the early stage of juvenile glaucoma cases,we followed up the changes of the spot-like scotomas in the Bjerrum area with newly developed our Quntitative Maculometry with direct fundus examination and other perimetries. In the present study,we analysed the relationships between the appearance of scotomas and the defects of the arcuate nerve fiber bundle which were photographed through red-free filters,in other words,we marked the scotomas on the fundus photographs and determined their accurate position in the fundus.

In some cases with no nerve fiber bundle defects, the scotomas diminished or improved after the intra-ocular pressure was controlled.However,if the nerve fiber bundle defects had already appeared , the scotomas did not improve under the control of the ocular pressure.

In the cases of the juvenile glaucoma,the scotomas without nerve fiber bundle defect were considered that they have the possivility of a transient loss of the nerve fiber function.

VISUAL FIELD CHANGE EXAMINED BY PUPILLOGRAPHY IN GLAUCOMA.

Tatsuya AOYAMA
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Ever since Aulhorn and Harms have reported, early glaucomatous visual field change has been considered as a spot-like scotoma at the Bjerrum area. These repórts demonstrated the matter subjectively and no report which demonstrated the matter objectively has been done up to now. The author this time, attempted Pupillographic perimetry on such cases that no abnormality was observed by the kinetic and the static visual field measurement, and demonstrated their so-called spot-like scotoma. Namely, in case of ocular hypertension and early glaucoma that were found normal by the subjective visual field measurement, the difference between the two particularly became larger at the area of 15°. That is, the pupillary threshold alone showed upward tendency at this area while the subjective visual threshold didn't rise. Consequently, Pupillographic Perimetry is considered to be a very available method for early diagnosis of glaucoma compared to a subjective visual field measurement.

The author carried out diurnal variation of the subjective visual field and the pupillary visual field on normal and pathological cases and examined mutual relation of plasma cortisol and intraocular pressure. At the same time, the author likewise compared changes of before and after water tonography and made this report.

EARLY VISUAL FIELD DEFECTS IN GLAUCOMA: INVESTIGATIONS IN THE OBLIQUE MERIDIANS.

Alberto Hernan Israel
Buenos Aires, Argentina.

In this research we took normal eyes of which we studied the meridians of beyond and below blind spot. We've demonstrated the relativity in the result when we've investigated glaucomated patients.

THE NASAL STEP: AN EARLY GLAUCOMATOUS DEFECT ?

Mario Zingirian, Giovanni Calabria, Enrico Gandolfo
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The nasal visual field was examined both with kinetic and static perimetry. The nasal step can be a physiological sign of the anatomic functional asymmetry of the retina. In this case it is of a small degree and changeable. Sometimes it is an artifact. The nasal step can be also a glaucomatous defect. It is sometimes late as a sign of the distal edge of the arcuate scotoma, but often is an early sign, because it is the result of the different susceptibility between opposite emifield. It is easy to discover by kinetic perimetry because of its typical shape and obliged localisation and easy to check by static perimetry. If an early sign, it is possible to reverse it. In practical terms, the nasal step is an early characteristic glaucomatous field loss like the isolated scotomas of the Bjerrum area. Unfortunately it can be observed also in normal visual fields and in other pathological conditions. Besides it may be easily detected, well analysed in the assessment phase of perimetry and used as a sensitive marker in the follow up of the glaucomatous damage.

SESSION III: METHODOLOGY

THRESHOLD FLUCTUATIONS, INTERPOLATIONS AND SPATIAL RESOLUTION IN PERIMETRY.

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The detrimental effect of threshold fluctuations upon detectability of sensitivity loss is emphasized. The only remedy seems to consist in the application of averaging methods, thereby attenuating threshold noise with computer methods. Two scanning methods directed at a rapid and accurate detection of scotomata are considered. In the first, the scanning points are distributed as a rectangular grid. In the second, the points are alined along meridians. The average detectability of the first method is rated superior and is therefore preferred. Futhermore, particular consideration is given to the role of interpolation procedures played in perimetry.

SEMI-AUTOMATIC CAMPIMETRY WITH GRAPHIC DISPLAY.

Susumu Hamazaki, Tsuneo Yokota, Hiroshi Mieno, Shinichi Koike, Michimasa Taga, Junji Hamazaki, Gen Kikuchi and Harutake Matsuo
Department of Ophthalmology, Tokyo Medical College, Japan.

Results of perimetry have a tendency to be influenced by tester's technique. Friedmann's visual field analyser has a merit of being able to acquire constant results without using special technique. This time, we have attempted to produce a new instrument which works automatically under the constant condition with multiple pattern stimuli.
At the first step, we made semi-automatic system. This system is composed of a common television system, tape-recorder and micro-computer system. Tester's tasks are to push the key (indicating numbers, directions and "go") of the computer, and to change the level of the stimulus intensity. Subject's task is to reply numbers and directions of the recognized points according to the indication displayed on television. The rest of the work will be carried out by the computer. Finally the results of all test were displayed on television.

AUTOMATIC PERIMETRY IN NEURO-OPHTHALMOLOGY

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About 40 patients with hemianopsia or other neurological field defects have been examined with a previously constructed automatic computerized perimeter (Krakåu & Heijl 1975). For comparison, kinetic perimetry with Goldmann´s instrument has also been performed. In detecting neurological field defects and in following up cases with bitemporal hemianopsia the automatic method has been found to have certain advantages over manual perimetry.

THE INFLUENCE OF SPONTANEOUS EYE-ROTATION ON THE PERIMETRIC DETERMINATION OF SMALL SCOTOMATA

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In perimetric control-examinations at fixed points in a given field of examination, misleading or erroneous changes in the size and shape of the scotomata may be observed. This occurs because the position of the eye is established through fixation according to height and width only, and not according to the spontaneous rotation of the eye. However, even a slight rotation of the eye can cause an examination-point, which lies inside the scotoma in the first examination, to lie outside the scotoma in the second examination. This occurs even though the scotoma in fact remains unchanged. The perimetric methods with which one can avoid this are discussed.

AUTOMATED PERIMETRY: MINICOMPUTER OR MICROPROCESSOR ?

Mario Zingirian - Vincenzo Tagliasco - Enrico Gandolfo

University Eye Clinic Genova, Italy.

In the last years the role of minicomputers in the automation of visual field examination referred mainly to their typical features: flexibility, versatility, interface facilities, etc. However minicomputers required large investments and a structure able to cope with the problems of maintenance and software updating. Besides, there are some problems connected to the standardization and the diffusion on a large scale.

Microprocessors overcome many of the disadvantages of minicomputers and reduce the delay between designing and testing a prototype. The introduction of microprocessors in the automation of perimetry stresses the importance of standardization in order to facilitate the adoption of this technique for more accurate and reliable results.

Moreover microprocessor technology, for its economical advantages, has the potentiality to shift the kernel of the automation from the engineering aspect to the usual medical aspect involving choices among established philosophies and methods in the study of visual field.

Therefore, in order to achieve some common international standards, it is necessary to compare the philosophies on which the systems were tested in several laboratories and to evaluate as a reasonable alternative the introduction of a microprocessor based unit in existing perimeters presently used in clinical practice.

THE RELATION BETWEEN THE POSITION OF A LESION IN THE FUNDUS AND IN THE VISUAL FIELD.

Kazutaka Kani

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Two types of infrared television fundus perimeter is developed. The first one is reported at the 2nd. Int. V.F. Symposium. The 2nd one is composed of an infrared television ophthalmoscope, a cathode ray tube for stimulation and a microcomputer. Concerning with the blind spot and angioscotoma, and cases of the optic atrophy, hemianopsia and localized retinal diseases such as hemorrhage, edema, inflammation etc., perimetric results measured by these perimeter will be shown.

ANALYSIS OF ANGIOSCOTOMA TESTING WITH FRIEDMANN VISUAL FIELD ANALYSER AND TÜBINGER PERIMETER.

Ryujiro Suzuki and Masaaki Tomonaga
Department of Ophthalmology, Tokyo Medical College, Japan.

Authors have been noticed while measuring Friedmann Visual Field Analyser (F. V. F. A.), there were frequently encoutered that a sole stimulus point's sensitivity was decreased as compared to remaining stimulus points. In order to clarify the problem, authors have studied the following subjects. It involved the following steps, (1) to take photographs (within 30° from fovea) (2) to superimpose a chart of F.V.F.A. over the photograph, to see there was a point which corresponds to retinal vessel, (3) to examine F.V.F.A. (4) to examine Tübinger perimeter at that point, (5) to make a comparison between the result of F.V.F.A. and Tübinger perimeter. Authors will discuss influencing mechanical factors of retinal vessels to the decreased sensitivity point.

VISUAL FIELD CHANGES AFTER PHOTOCOAGULATION IN RETINAL BRANCH VEIN OCCLUSION

Kimiko Matsudaira and Ryujiro Suzuki
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It has been reported many studies on the visual acuity after photocoaglation(PC) in retinal branch vein occlusion(RBVO). However, a few reports have been presented about the visual field changes before and after PC attributed to venous occlusive deseases. We examined the visual field by Goldmann perimeter, 27 eyes of 25 cases of RBVO treated with xenon photocoagulator and analysed the visual field changes for study of the influence of PC.

The results of visual field were as follows:

Types of visual field	No. of eyes	
	pre-treatment	post-treatment
paracentral scotoma	8	5
relative arcuate defect	18	9
peripheral defect	0	2
absolute arcuate defect	1	11

Peripheral visual field changes in all eyes were not improved by PC therapy and large visual field defects were remained. On the other hand, the changes of the central area of the visual field as well as visual acuity were improved by PC therapy.

MESOPIC AND PHOTOPIC STATIC PERIMETRY AND FLUORESCEIN FUNDUS ANGIOGRAPHY IN SENILE DISCIFORM MACULAR DEGENERATION.

E.L. Greve.; Breetvelt, H.M.; Bakker, D.; de Jong, P.T.V.M.; Bos, P.J.M.

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Since 1975 a group of patients with early stages of senile disciform macula degeneration (S.D.M.D.) have been investigated at regular intervals.
Several stages of development, each with a different clinical significance, have been indentified.
The results of myopic-photopic static perimetry (mesopic-photopic-static perimetry) and of fluorescein fundus angiography will be compared.
Mesopic-photopic-static perimetry is a highly sensitive method for following changes in the degenerative process

A SIMPLE FUNDUS PERIMETRY WITH FUNDUS CAMERA

Akihiro Inatomi

Shiga University of Medical Science, Department of Ophthalmology, Japan

Perimetry with direct ophthalmoscopy is used for the exploration of the topographical relation between portions of the fundus and the corresponding visual field.

In the present study, a special fundus camera was deviced for this purpose instead of using ophthalmoscopy. Namely, two targets were placed at the posterior forcus of the objective lens of the camera : one for the fixation point and another for the test object which was movable. While a patient was asked to see two targets in the light field, the examiner observed both the fundus of the patient and the targets of the camera simultaneously, and photographed.

It was found from the test results on several patients with hemianopsia that the dividing line between the seeing and nonseeing portions of the field was almost vertical, but it did not pass the foveola (fixation point). It was also deviated a few degrees toward the nonseeing field from the foveola. This finding would suggest that the temporal and nasal field are physiologically overlapping each other.

CONSIDERATIONS OF THE RELATIONSHIP BETWEEN FUNDUS LESIONS AND AREAS OF FUNCTIONAL CHANGES.

Jay M. Enoch, Constance Ramsey Fitzgerald, and Emilio C. Campos.
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A simple scheme for relating fundus photographs and fluorescein angiograms to field-test position has been developed. It is applicable to central field studies. As interest in relating observed anatomical change with functional alterations evolves in many laboratories, it becomes important to consider the degree of congruence between observed lesions and functional changes. Here retinal conditions will be reported where functional changes are shown to be more extensive than observed anatomical lesions. Examples of patients will be presented who have senile macular degeneration, diabetic retinopathy, and subretinal fluid secondary to ocular trauma.

A NEW INTERPRETATION OF THE RELATIVE CENTRAL SCOTOMA FOR BLUE STIMULI UNDER PHOTOPIC CONDITIONS.

Romuald Lakowski and Patrice Dunn

Visual Laboratory, Psychology Department, University of British Columbia, Vancouver, Canada.

A modified Goldmann perimeter with photometrically equated stimuli has been employed to investigate the relative central scotoma obtained with a blue stimulus reported by a number of authors. The method used was static perimetry. The scotoma is shown to represent increased parafoveal sensitivity to blue stimuli rather than decreased foveal sensitivity.

VISUAL FIELD CHANGES IN MESOPIC AND SCOTOPIC CONDITION USING FRIEDMANN VISUAL FIELD ANALYSER·

Takako Hara
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By attaching a central fixation target to Friedmann Visual Field Analyser, the author recorded a central visual field under scotopic condition in addition to routine mesopic examination. Values of both conditions were compared on pigmentary retinal degeneration(PRD) and similar diseases with nearly the same visual field as PRD.

The results were as follows,

1. Increase of threshold was observed from 5° to 25° area from an initial stage of PRD. Values were approximately the same under two conditions.
2. In central visual field within 5°, PRD with good visual acuity and nearly normal visual field in kinetic perimetry were divided into several groups by the threshold at macula.
3. In acquired choroid-retinal diseases, local and steep depressions coinciding with lesions in ocular fundus were observed. That was different from PRD which usually showed general depression.

FUNDUS PHOTO-PERIMETRY AND APPLICATION.

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With a purpose of photographing both the fundus and the visual field with one single exposure under direct observation, we developed a photo-perimeter. Fundus camera with infra-red TV was so modified that you might photograph fundus after plotting visual field with a target in response to a subject through a monitor TV screen, and that the plot-marks might be superimposed on a same film, Polaroid or 35mm size, simultaneously for recording. The measurable area is approximately 25 degrees of the central area, and any of the factors such as background illumination, fixation target, luminance of the target(visual angle:19') can be easily controlled. Color of the target is changeable to either white, red or green.
With this instrument, we have examined scotoma centrale, scotoma caecocentrale, hemianopsia and other visual field defects due to various fundus diseases, both kinetically and statically, to make a comparison study with other perimeters. This instrument may be applicable widely to various studies such as for fixation test for the amblyopia, study of optogram by photo.