



TEXAS SOCIETY FOR ELECTRON MICROSCOPY

TEXAS SOCIETY FOR ELECTRON MICROSCOPY  
NEWSLETTER

Vol. 3

No. 2

Spring 1972

Supplement 1

TITLE: A SHORT HISTORY OF DEVELOPMENT  
OF ELECTRON MICROSCOPY IN THE  
GREAT STATE OF TEXAS

(As I remember it)

—Donald Duncan

The following is an account of what I know, heard and remember about early electron microscopes in Texas.

Either in 1941 or early in 1942 I proposed and recommended that the Medical Branch acquire an electron microscope. A decade earlier I had good reason to believe that there were nerve fibers too small to be visible with the light microscope. Naturally, I wanted to see them.

In June of 1942 I left UTMB and did not return until February 1, 1946. By that time it was rumored that there was an electron microscope at the Brooks Army Hospital in San Antonio and there may have been two 'scopes in the possession of and used by industrial firms. It was about 1946, '47 or '48 that there was a microscope in Port Arthur and another in Freeport.

The first University of Texas microscope was purchased in 1947 or 1948. It was acquired by a special legislative appropriation and was assigned to the Electrical Engineering Department on the Austin Campus. The tale I heard was that this was due largely to a young member of the legislature who was also a student at the main campus. World War II produced a number of these.

Upon my return to the Medical Branch I again recommended purchase of an electron microscope. Doctor Chauncey Leake's response to this, after some delay, was that he had consulted with the authorities of the day and they had expressed exceedingly pessimistic opinions on the usefulness of the electron microscope as a biological research tool. They told Doctor Leake that what little could be garnered with this instrument had been harvested already.

During 1947 and 1948 I sort of fumed and fumbled on this topic. I did propose to the American Optical Company that they make a modification of their microtome by reducing the pitch of the advancing screw so as to permit at least the possibility of sections less than one micron thick. Their response was it couldn't be done despite the fact that it had been done long before in connection with the making of diffraction gratings.

In 1948 I learned of the invention of Pease and Baker, a simple device that reduced the unit advance of the Spencer Microtome from 1 $\mu$  to 0.1 $\mu$ . I acquired one of these wedges as soon as possible and began to work with it. After much struggle it seemed fairly certain that I had some sections that were considerably less than 1 $\mu$  thick. Remember this was done with a steel knife and no trough to receive the sections. Furthermore, material was doubly embedded in celloidin and paraffin. As to where and how I learned about and acquired grids to mount them on I have no memory.

With sections in hand I went to Austin to use the electron microscope. It was in the charge of Mr. Leland Antes, an electrical engineer. Between us, but mostly Antes, we produced the first EM pictures in Texas of biological specimens. After much effort a little paper on the ultrastructure of peripheral nerves was published in 1950.

(Editor's Note: Duncan and Antes, 1950. Some electron microscope observations on the structure of myelin sheath and axis cylinder in thin sections. Texas Reports on Biology and Medicine, 8:329-340.)

In the meantime, Francis O. Schmitt, Fernandez-Moran and F. Sjostrand had beaten me to the draw.

Antes was succeeded for a brief period by a young lady

whose name I have forgotten. After leaving Texas she was for a time the EM technician for Doctor Farquhar and that is the last I know about her. She was followed by Hilton Mollenhauer. Hilton at that time was an electrical engineer. Subsequently, he developed into one of the truly distinguished members among the biologically oriented electron microscopists. Many and many were the days when I was on the road to Austin by 4 a.m. and back in Galveston at 11 p.m.. Hilton and I spent many very happy but nearly always frustrating hours together. Each visit was always preceded by weeks of effort here at the Medical Branch. Somehow I did manage to put out another paper, this one on the posterior lobe of the chicken pituitary. Our chief problem was focus. In retrospect I cannot understand why this was so; but at least 9 pictures out of 10 were hopelessly fuzzy.

One amusing incident occurred on a fine spring day when Hilton and I were working together. Close to noon a red headed fireball of a young woman burst into the E.M. lab where we were working. (By the way this was the first air-conditioned facility on the Austin campus). Without introduction or explanation this lady said, "Are you the people who work with the electron microscope?" We gently allowed that we were. The next blast was "I don't want my boss to know I am here, so I'll not tell you where I come from". More or less glaring at Hilton she said, "Can you cut thin sections?" His answer was no, that is Dr. Duncan's department. So it was my turn, "Where are you from, how do you do it, etc. etc?". My response was "You are from Houston, aren't you?". She wanted to know how I knew that and I said it was fairly obvious. "You won't tell my boss, will you?" Of course not, but if you will come to Galveston a week from

today (Saturday) with some of your blocks I shall try to help you". The story behind this is to the effect that Dr. R. Lee Clark requested funds from the Regents to buy an electron microscope and was turned down. So he went down Fannin or Main Street a few blocks and came back with the money to buy the best available.

Editor's Note: This must have occurred in 1954 or 1955. The Houston Post reported the installation on Dec. 13th, 1955. The microscope was installed for use by Dr. Leon Dmochowski.

The Medical Branch did not have an electron microscope until Doctor Leake left and the institution was essentially managed by Doctor Blocker. This was carefully disguised as the infamous "Interim Committee", but that is another story. Truman Blocker secured the necessary money for the first 'scope from the Brown-Lupton Foundation. This must have been in 1955. The previous year I received an NIH grant for the development of biological electron microscopy in Texas, a grant that has been approved until 1974.

The initial instrument was the old RCA EML which is still functioning at Lamar University in Beaumont.

Charlie Moore of Dallas uncrated it and put it together. He more than anyone I know might have facts and figures on the first ten microscopes in Texas.

Prior to the one at the Medical Branch, first came the one in the Electrical Engineering Department at Austin. Texas A&M University received one at about the same time but this was put in the hands of a faculty committee and as a result was virtually sterile. Then came the one at M.D. Anderson (Editor's Note: see note below concerning Rice University) and following the Medical Branch another EML found residence at Southwestern Medical

School in Dallas. Not too long after the installation at South-western I was invited to bring specimens and demonstrate its potentialities. Fortunately I had some very good sections of the pars intermedia of the rat pituitary and took those with me. The Dean, (a pathologist by trade) was very interested. Cell boundaries, mitochondria and Golgi apparatus seemed all according to Hoyle. Next we looked at the nucleus and especially the nucleolus. He said, "Do you mean to say that the nucleolus is not a solid round dot?" My response was that the electron microscope says no. He said, "I give up" and left. Subsequently, this microscope was used with ever so great effectiveness by Hilton Mollenhauer.

Probably the third electron microscope in an educational institution came to Rice University under the control of Doctor Milligan. It was a Phillips 100. I spent one delightful day with him and the new microscope. Although he was the perfect host and put all else aside for the day, it was obvious without asking that the biologists at Rice or from anywhere else were not to have access to that particular microscope.

Editor's Note: This electron microscope was installed at Rice University early in the spring of 1951. Dr. Milligan states that, "We ordered the projected electrostatic electron microscope to be made by General Electric in approximately 1943, but none were ever produced, and the order was later cancelled."

In summary the first working microscopes in Texas belonged to industry, now twenty years later the same can be said of the electron probe.

-----Donald Duncan

P. S. Our RCA service men were in succession, Charley Moore, Mr. Lubker, Pat Tyner and Bob Shorthose.

## AMENDMENTS OF THE BY-LAWS

The Executive Committee 1972/73 is considering three amendments to the TSEM By-laws. The first two amendments are required by the Society in order to achieve a tax-exempt status. The third amendment would provide two-year terms for the Secretary and Treasurer (instead of one year) in order to ensure efficiency in dealing with society business.

The following amendments are given for your consideration. The Executive Committee will at a later date mail out a ballot. In the meantime, if you wish to make any suggestions, please write to Katy Miller, Secretary.

### First Amendment:

#### I. PURPOSE

(would delete "fellowship and" in the statement of purpose which reads:

The purpose of this Society shall be to increase and diffuse knowledge of electron microscopes and related instruments and results obtained through their use in whatever fields they may be found to be applicable, and to promote fellowship and free exchange of ideas among the members.)

The amended sentence should read:

A. The purpose of this Society shall be to increase and diffuse knowledge of electron microscopes and related instruments and results obtained through their use in whatever fields they may be found to be applicable, and to promote free exchange of ideas among the members.

### Second Amendment:

#### I. PURPOSE, B

In the event of dissolution of this Society, all assets of the Society remaining after payment of debts shall be transferred to the Electron Microscopy Society of America to be used for educational purposes only.

### Third Amendment:

#### VI. ELECTIONS, A.

(would replace the old Article VI A which reads:

In February of each year the executive committee shall appoint four members, other than officers, to nominate one candidate for the various offices for the next year. The secretary shall serve as chairman of the nominating committee.)



AMENDMENTS (cont.)

The new Article VI A should read:

In February of each year the executive committee shall appoint four members, other than officers, to nominate one candidate for the various offices to be filled for the next year. The secretary shall serve as chairman of the nominating committee. The president, president-elect, and program chairman shall serve one year. The secretary and treasurer shall serve two years.

July, 1972

Dear TSEM Member,

The next issue of the TSEM Newsletter will be distributed at the October meeting in San Antonio. The subject of the plate for this issue will be "Scanning Electron Microscopy" and will consist of pictures submitted by our members. Please select any one or more of such items from your files or current work and forward them to the editor as soon as possible (now). Again, please remember the dimensions must be  $1\frac{1}{4}$  by  $1\frac{3}{4}$  inches. Leave approximately  $1/16$  inch about the margin of the micrograph free of the fine structure you wish to depict to allow for masking between insets. Include a short descriptive phrase, the cell or tissue of origin and the magnification. Micrographs should be of medium contrast and without a hard gray background. The reproductive method will tend to boost contrast. These micrographs should be submitted by October 1, 1972.

For this issue of the TSEM Newsletter, we are again especially requesting you to contribute to the news of the Society. To facilitate this, we are enclosing forms for completion and return. Your contributions will greatly aid in the communications among the Society members to the benefit of all. Please return these forms prior to October 1, 1972.

Thank you sincerely for your cooperation.

Yours truly,

C. Ward Kischer, PhD  
Editor, TSEM Newsletter

## ANNOUNCEMENTS

### New Program Chairman Appointed

Dr. Vernon Scholes is leaving Texas to accept the position of departmental chairman at the University of Southern Alabama. He has resigned from his duties as Program Chairman of TSEM.

The executive Committee met in Salado on June 23rd and voted to ask Dr. Terrell R. Hoage to serve as Program Chairman for 1972-73. Dr. Hoage has kindly consented to serve in this capacity.

### Dues Notice

Please see enclosed letter from our Treasurer. Won't you send that check and completed address card today? Note the new address.

### Future Meetings

Fall Meeting - October 27 & 28, San Antonio, Hilton Palacio del Rio, "Scanning Electron Microscopy" Further notices from Dr. Robert V. Blystone, Local Arrangements Chairman, prior to meeting dates.

Winter Meeting - February 8 & 9, New Orleans, Chateau Le Moyne Hotel, Joint Symposium with Louisiana Society for Electron Microscopy. Guest speakers include: Daniel Pease, Benjamin Siegel, Kenneth Lawless, Walter Humphreys, H. Fernandez-Morán. Further notices from LSEM.

Spring Meeting - May in Galveston

TEXAS SOCIETY FOR ELECTRON MICROSCOPY

TREASURER'S REPORT

Thru May 19, 1972

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TOTAL ASSETS:

Balance on hand ..... \$1, 526.98

ALLOCATION OF FUNDS:

A. Bank Accounts:

1. University National Bank of Galveston, Texas Checking Acct. #00-0248-8 .....	96.62
2. 1st National Bank of Garland, Texas Checking Acct. #720704 .....	50.00

B. Savings Accounts:

1. University of Texas Medical Branch Credit Union Savings Acct. #00996 .....	380.36
2. University of Texas Medical Branch Credit Union Certificate of Deposit #9996 .....	1, 000.00

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Total ... 1, 526.98

## Financial Report

### TSEM FALL (1971) SYMPOSIUM ASTROWORLD HOTEL HOUSTON, TEXAS

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#### EXPENSES:

Audio Visual Services, Inc. of Houston (for delivery and pick-up of tripod screen) .....	15.25
Astroworld Hotel	
Banquet, Coffee, Gratuity and Tax .....	243.01
N. Feder (Hotel expenses) .....	40.15
S.J. Singer (Hotel room) .....	19.95
Change for registration desk use .....	50.00
Dinner for registration desk workers .....	34.90
Registration desk supplies (paid to Bill Brinkley) .....	14.00
Daniel Pease, Honorarium .....	50.00
Ned Feder, Honorarium .....	50.00
Arnold Seligman, Honorarium .....	50.00
S.J. Singer, Honorarium .....	50.00
Ned Feder, Travel expenses .....	219.30
Arnold Seligman, Personal and travel expenses .....	211.75
S.J. Singer ....., Travel expenses .....	248.50
Total Expenses ...	<u>1,296.81</u>

#### INCOME:

Registration fees .....	447.00
Net cost of meeting .....	849.81

# TSEM/LSEM JOINT SYMPOSIUM

Fort Worth, Texas

Feb. 4-5, 1972

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## EXPENSES:

### Tarrant County Convention Center

1. Projection screen .....	4.00
2. Meeting rooms .....	125.00

### Harold Nowlin Insurance Co.

(Liability insurance covering use of convention center ..	30.00
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### Sheraton-Fort Worth Hotel

1. Coffee and soft drinks .....	40.80
2. Keith Porter (Room and food) .....	17.02
3. Banquet (plus tax and 15% gratuity) .....	324.00
4. R.M. Fischer (Room and food).....	17.49
5. Lee Peachey (Room and food) .....	27.03

IATSE Local #126 (for projectionist and services) .....	21.50
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### R.M. Fischer

1. Travel .....	<sup>189</sup> 238.75
2. Honorarium .....	50.00

### Keith Porter

1. Travel .....	115.00
2. Honorarium .....	50.00

### Lee Peachey

1. Travel .....	197.50
2. Honorarium .....	50.00

Total Expenses .. 1,258.09

## INCCME AND CONTRIBUTIONS:

Registration receipts .....	656.60
AMR Corp. (Mr. Tom Baum) .....	75.00
Olympus Corp. (Mr. Richard Geist) .....	50.00
Carrollton Optical (Mr. John Allison) .....	50.00
Dean of Sciences - S.M.U. ....	50.00
EMSA Grant .....	500.00

Total receipts ... 1,381.60

Net Gain ..... 123.51

# MISCELLANEOUS EXPENSES

Thru May 19, 1972

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U.T.M.B. Dept. of Anatomy	
Telephone calls in relation to Newsletter .....	37.74
Emblem & Badge Co., Providence, Rhode Island	
for plaque presented to Jean-Paul Revel .....	15.00
U.T.M.B. Dept. of Anatomy	
Telephone calls in relation to Newsletter .....	30.95
U.T.M.B. Medical Illustrations Dept.	
TSEM letterhead stationary.....	8.80
Fred F. Hunter Co., Galveston, Texas	
for rubber stamps 1972-73 .....	8.51
Dimitrij Lang, Vice-Pres., TSEM	
Travel expenses from Dallas to Houston to attend	
Executive Committee meeting .....	41.00
Katy Miller, Secretary, TSEM (Same as above) .....	40.00
Joe A. Mascorro, Treasurer, TSEM	
Reimbursement for lunch for Executive Committee members ...	25.00
U.T.M.B. Dept. of Anatomy	
Telephone calls in relation to Newsletter .....	20.85
Same as above .....	25.10
U.T.M.B. Medical Illustrations Dept.	
Newsletter printing costs .....	41.49
Mrs. Joyce Eckleberg	
Newsletter typing .....	27.00
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Total Miscellaneous .....	321.44

8/25/72

For Newsletter - TSEM  
Department of Virology, The University of Texas  
Institution or Affiliation M. D. Anderson Hospital and Tumor Institute at Houston  
New Members of your group to TSEM Dr. Munemitsu Hoshino, Chief, Laboratory of  
Research Institute, Tashiko-Cho, Chikusa-Ku, Nagoya, Japan. Project Investigator in  
~~The Department of Virology at MDAH for 1 year.~~

Instruments recently acquired for EM Lab \_\_\_\_\_

None

Grants recently awarded involving EM \_\_\_\_\_

None

\*Technique hints from investigators \_\_\_\_\_

None

\*Visitors, lecturers, seminars given in last three months \_\_

See Attached

\*Papers accepted for publication from EM lab \_\_\_\_\_

See Attached

\*\*Placement Service \_\_\_\_\_

Other \_\_\_\_\_ See Attached

Please mail to: Dr. C. Ward Kischer, Editor  
TSEM Newsletter  
Department of Anatomy  
University of Texas Medical Branch  
Galveston, Texas 77550

\*Use additional sheets, if necessary

\*\*May be omitted and information sent directly to:  
Dr. Bill Brinkley  
Dept. of Cell Biology  
University of Texas Medical Branch  
Galveston, Texas 77550

*Summary of Monthly Report thru August 1, 1972*



(Department of Virology, The University of Texas M. D. Anderson Hosp. and Tumor Institute)

VISITORS, LECTURERS, SEMINARS

Mr. Carroll Nyquist of the U. S. Information Agency, visited the Department February 21, 1972. Mr. Nyquist filmed Drs. L. Dmochowski and E. Priori for the the State Department (this film is to be shown outside the United States).

Dr. E. S. Priori presented a lecture entitled "Summary of The Gustave Stern Symposium on Perspectives in Virology" to the members of the Department of Virology at the Monthly Seminar on February 22, 1972.

Dr. Werner Schafer, Director, Max-Planck Institut fur Virusforschung, Tubingen, Germany, visited the Department March 7, 1972.

Dr. Deward E. Waggoner, National Cancer Institute, Bethesda, Maryland, and Dr. Jan Polissar, Wolfe Research and Development Corporation, Bethesda, Maryland, visited the Department March 13-14, 1972.

Professor Leone Castelli, Istituto Regina Elena, Rome, Italy, visited the Department on March 27, 1972.

Dr. Virginia Boyd, Department of Virology, Baylor College of Medicine, Houston, Texas, visited the Department on March 29, 1972. Dr. Boyd presented a talk entitled "Isolation and characterization of virus from animals infected with equine infectious anemia" on March 29, 1972.

Dr. J. Georgiades presented a paper entitled "Cell transforming agent isolated from cultures derived from human neoplasma" in collaboration with Elizabeth S. Priori, Robert Hales, Patton T. Allen, James M. Bowen and Leon Dmochowski. This was presented at the Department of Virology Monthly Seminar on April 20, 1972.

(Department of Virology, The University of Texas M. D. Anderson Hosp. and Tumor Institute)

(VISITORS, LECTURERS, SEMINARS CONTINUED)

Dr. J. Georgiades presented a paper entitled "Rescue of transforming activity from human osteosarcoma cells after co-cultivation with human leukemic bone marrow cells" in collaboration with E. S. Priori, R. L. Hales, J. M. Bowen, P. T. Allen, W. A. Newton, and L. Dmochowski. This was presented at the Department of Virology Monthly Seminar on April 20, 1972.

Dr. Flaviano Magrassi, Direttore, Istituto di Clinica Medica Generale e Terapia Medica, Naples, Italy, visited the Department April 11, 1972.

Dr. Roland Reuckert, Biophysics Laboratory, University of Wisconsin, Madison, Wisconsin, visited the Department April 19-20, 1972. Dr. Rueckert presented a seminar entitled "The structure and morphogenesis of picorna viruses" on April 20, 1972.

Dr. Michael Moore, Principal Research Biologist, Cancer Immunology Section, Charles Salt Research Center, Shropshire, England, visited the Department May 15-19, 1972, to discuss the current status of our research on the immunological aspects of human osteosarcoma and made comparison of his results with ours. Dr. Moore presented a seminar entitled "Antigenic systems in human sarcomas" on May 17, 1972.

Drs. A. Bacharov and E. F. Barivski of the Moscow Institute of Virology, Moscow, U. S. S. R., visited the Department on May 18, 1972.

Mr. James Wilkinson of the London Daily Express, London, England, interviewed Drs. L. Dmochowski, J. M. Bowen and E. S. Priori on the history of the ESP-1 virus on May 24, 1972.

Mr. R. L. Hales presented an Eli Lilly film "The Penetrating Eye", concerning scanning electron microscopy of biological materials, to the staff and personnel of M. D. Anderson Hospital on May 23, 1972.

(Department of Virology, The University of Texas M. D. Anderson Hosp. and Tumor Institute)

(VISITORS, LECTURERS, SEMINARS CONTINUED)

Mr. Chen Lin, Biology Department, North Texas State University, Denton, Texas, visited the Department to learn in vivo and in vitro tumor cell culture techniques May 18-31, 1972.

Dr. Hank Fleering, Medisch Biologisch Laboratorium, RVO-TNO, Rotterdam, The Netherlands, visited the department June 29, 1972.

Dr. K. Maruyama presented a seminar entitled "Proceedings of the 12th Meeting of the Pacific Coast Tumor Virology Group Meeting, held in Los Angeles on June 26, 1972", to the Department of Virology monthly seminar and the meeting of the Viral Leukemia Lymphoma Study Section on July 19, 1972.

Professor Kiyoshi Hiraki, Chairman, Department of Medicine, Okayama University Medical School, Okayama-shi, Japan, visited the Department on July 3-6, 1972. Dr. Hiraki lectured on "Current Problems of Viral Neoplasia".

Dr. S. Irino, Department of Medicine, Okayama University Medical School, Okayama-shi, Japan, visited the department on July 3-6, 1972.

Mr. Louis Greenberg, Head, Information Unit, Viral Oncology Branch, National Cancer Institute, visited the Department on July 26-28, 1972.

(Department of Virology, The Univ. of Texas M. D. Anderson Hosp. and Tumor Institute)

PAPERS ACCEPTED FOR PUBLICATION FROM EM LABORATORY

"Viruses and breast cancer" by L. Dmochowski. Hospital Practice, January 1972, pp. 73-81.

"Viruses and breast cancer: Introductory remarks" by L. Dmochowski. Cancer 28 (6) : 1404-1405, December 1971.

"Studies on the presence of particles resembling RNA virus particles in human breast tumors, pleural effusions, their tissue culture and milk" by G. Seman, H. S. Gallager, J. M. Lukeman, and L. Dmochowski. Cancer 28 (6) : 1431-1442, December 1971.

"Molecular studies of cells derived from human solid tumors" by P. T. Allen, J. M. Bowen, W. A. Newton, J. L. East, J. Georgiades, E. S. Priori, M. F. Miller, M. A. Nash, B. Myers, and L. Dmochowski. In "Molecular Studies in Viral Neoplasia", Program and Abstracts of Papers of the 25th Annual Symposium on Fundamental Cancer Research, The University of Texas M. D. Anderson Hospital and Tumor Institute at Houston, March 8-10, 1972, pp. 55-56.

"Rescue of transforming activity from human osteosarcoma cells after co-cultivation with human leukemia bone marrow cells" by J. Georgiades, E. S. Priori, R. L. Hales, J. M. Bowen, T. T. Allen, W. A. Newton and L. Dmochowski. Proceedings of the 63rd Annual Meeting of the American Association for Cancer Research, Boston, Massachusetts, April 4-6, 1972, p. 109, Abstract #434.

"Viral diagnosis: The patient and the physician" by L. Dmochowski. In American Journal of Clinical Pathology 57 (6): 733-736, June 1972.

(Department of Virology, The Univ. of Texas M. D. Anderson Hosp. and Tumor Institute)

#### OTHER

Dr. L. Dmochowski has been appointed to the membership of the Sub-Committee on Virology of the World Association of Pathology Societies.

Dr. J. M. Bowen served as Chairman of the 25th Annual Symposium on Fundamental Cancer Research, "Molecular Studies in Viral Neoplasia", March 8-10, 1972. The symposium was attended by 1,227 persons and several hundreds of students.

Dr. J. M. Bowen has been asked by Dr. Thomas Matney, Associate Dean of the Graduate School of Biomedical Sciences to enlarge his role as Assistant Graduate Advisor for Microbiology and Virology to include coordination of the ultrastructure program.