

The Radiographer

A PUBLICATION OF THE MISSOURI SOCIETY OF RADIOLOGIC TECHNOLOGISTS

Summer 1993



The Missouri Society of Radiologic Technologists was founded in 1931, chartered as a professional scientific society dedicated to education, communication and patient care.

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Debra Hurst, RTR,BSRT

FROM THE EDITOR



I hope you enjoy this issue of the Radiographer. It will catch you up on all of the MSRT news from the past few months. If you missed the annual conference in St. Louis, you'll want to read about the winners, the sudden roentgen-death student bowl, the conference clips, and don't miss the winning student essay, I know you will find it very educational. Your district update is enclosed, as well as legislative and student activities updates. You may also want to take note that your 1993-1994 membership will be due soon, get a head start on your fellow technologists and mail back the membership application enclosed. Better yet, check out the membership contest for this year, and EARN your dues back. Don't miss President Daniels first communication with her members on the opposite page. Have a great summer, and we'll see you in the fall.

Anyone interested can advertise in the MSRT Publications. Simply contact the editor by the deadline date as listed below.

RADIOGRAPHER-----May 15, 1993

October 15, 1993

MSRT Newsletter--August 15, 1993

January 15, 1994

RADIOGRAPHER ADVERTISING FEES--per issue

Full Page	\$150.00
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Quarter Page	\$ 50.00
Business Card	\$ 30.00

NEWSLETTER ADVERTISING FEES--per issue

Business Card	\$ 25.00
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All Pages will be 8 1/2 inches by 11 inches. All fees must be paid when ad is placed with editor.

ANY AND ALL QUESTIONS SHOULD BE DIRECTED TO THE EDITOR

Debra A. Hurst
1658 Sonora
Columbia, MO. 65201
314-449-1805



THE MISSOURI SOCIETY OF RADIOLOGIC TECHNOLOGISTS

It is my honor to address you as President of the Missouri Society of Radiologic Technologists (MSRT). The upcoming year promises to be very exciting and challenging for our profession and Society. The 61st Annual MSRT Conference was a great success. This year's total registration surpassed its highest goal of participants in several years! The conference provided innovative and provocative educational courses. Everyone in attendance gained new insight from the many diversified courses, activities, and events.

The radiology profession is very challenging and dynamic - constantly changing. These changes are causing today's radiographers to become more involved and to actively participate in their professional organizations. Additionally, change brings the added responsibility of quality patient care, cost containment, and continuing education.

In past instances, once a radiographer completed his/her two year training program, that was the extent of their education. Advances in medical imaging technology and the changing health care system, have caused today's radiographer to become knowledgeable and kept abreast of new imaging modalities which enhance quality patient care.

An excellent and inexpensive way to receive this information is to join your professional organizations. The Missouri Society of Radiologic Technologists offers a wide variety of educational seminars/meetings at both the state and local levels. The MSRT also provides updated information in its' publications - the Newsletter and The Radiographer.

In this year of change, 1993 ushers in the continuing education credits. For two years, compliance of this standard is voluntary. However, in 1995 compliance becomes mandatory for all registered technologists. Failure to comply with this continuing education requirement will cause the individual's registration (R.T.) to be placed on a probationary status.

How are radiographers expected to obtain the required continuing education hours? Attend your local district meetings. These meetings provide informative lectures which have been approved, by the ASRT and ARRT, for continuing education credits. In order to meet the needs of radiographers, many of the districts are planning day long seminars.

The responsibility of bettering the radiography profession is placed on everyone. In order to meet your needs, get involved. Tell your professional organization what topics interest you. Next, attend those lectures to show your support and obtain the required continuing education credits. As a radiographer, you are the future of your profession. I extend an invitation, to all radiographers, to join us and be a voice for tomorrow.

Cindy Daniels, B.S., R.T.(R)
President and Chairman of the Board
Missouri Society of Radiologic Technologists

LEGISLATIVE WRAP-UP 1993

If you have been paying attention to what has been going on in Jefferson City this legislative session, you know that very little moved through the legislature. Technologist licensure or certification was no exception. We did accomplish several things, however.

Through the hard work of Representative Carole Roper Park and lobbyist Harry Hill:

- 1. We established a working relationship with the Missouri Hospital Association and the Missouri Medical Association;**
- 2. We went through about nine drafts to develop a substitute bill which would guarantee patients that radiologic technologists were educated and capable while satisfying the MMA and MHA that it wouldn't put an undue burden on hospitals and practitioners;**
- 3. We obtained strong support from the Missouri Department of Health;**
- 4. We located a possible Senate sponsor for next year.**

The end result was that our final substitute was submitted as an amendment to a Senate bill on May 10. Lobbyists working on that bill managed to have our amendment removed on the Senate floor in an effort to keep their bill clean and improve its chances of passage. So, on to next year.

Plans for the upcoming year for the Legislative Activities Committee include

- Starting with the final product from this year's session and working with the MMA, MHA, Department of Health, and all other involved groups beginning in September or October.**
- Pursuing concurrent Senate and House introduction of bills.**
- A "letter to the editor" campaign by technologists throughout the state to increase public awareness of uneducated, untrained "technicians" performing radiologic procedures.**

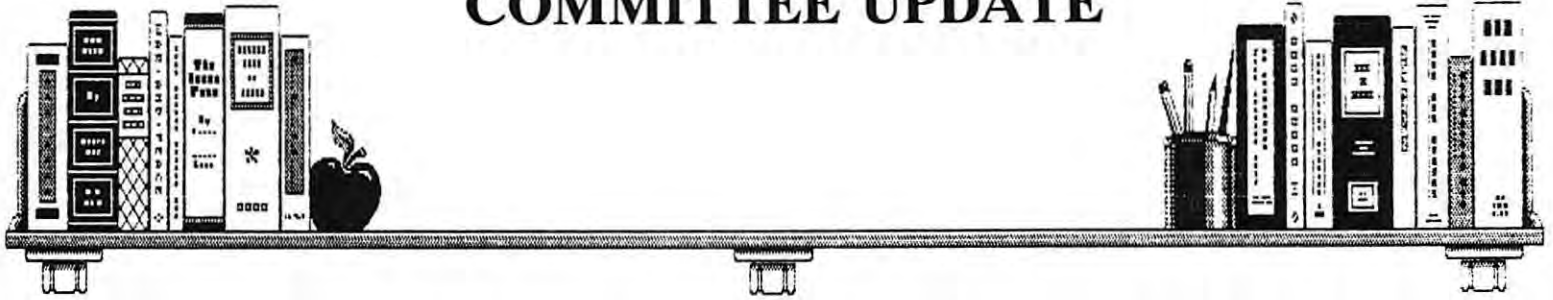
To do all of these things, the MSRT again needs an active Legislative Activities Committee. If you are interested in working on the LAC in 1993-94, contact me at this address:

**Shawn Snider
RR 1, Box 119 A
Carthage, MO 64836
Work phone (417) 358-8121, ext 448
Home phone 358-7908**

A big THANK YOU to all who worked on Legislative Activities this year. We had over 35 technologists involved in the committee. Even though it became impossible to contact everyone when things started moving fast, the participation of so many technologists was an advantage we haven't had in past years.

So sign up and we'll get 'em next year.

STUDENT ACTIVITIES COMMITTEE UPDATE



The 1993 Annual Conference in St. Louis was a tremendous success for students. Activities such as the Mock Registry, student Bowl Competition, Rap Session, as well as the Exhibits, Essays, and Scholarships made the conference meaningful to our future technologists. I know that everyone had a lot of fun and, most likely, learned some things in the process! Thanks to all the participants and congratulations to all the contest winners.

It's not too soon to begin planning for the 1994 conference in Springfield. The student activities committee would like your input on possible educational sessions and other activities for students. We want to tailor the conference to fit your needs and desires. You may even have some fund raising ideas that you would like to share with other programs. Please send your suggestions to me at the address below.

Also, the committee would like to see representation from every educational program in the state. We would like each program to select a Student Representative. This individual would help disseminate information between the student activities committee and their fellow classmates. Students, please send the name, address, and phone number of a representative from your program to me as soon as possible at the address below. Don't delay! This is an excellent opportunity to have a voice in your society.

In addition, Bob Klingensmith, the student representative to the legislative committee is graduating soon. Bob had done an exceptional job providing input into the committee and keeping the students informed. This was a great learning experience for Bob. It also provided him an opportunity for professional interaction with legislators and technologists throughout the state. Thanks again, Bob. Any student interested in replacing Bob on the legislative committee please contact me at the address below.

Joan Hedrick, B.A., R.T.(R)
Chairman MSRT Student Activities Committee
RR 1, Box 183 C-1
Republic, MO. 65738

I would like to thank the past chairman of the Student Activities Committee, Henry Cashion, R.T.(R), for his work and support on the committee over the past few years. Henry has strived to motivate students and educators alike. His commitment to the educational process and the MSRT has helped inspire students throughout the state. Thanks, Henry!!

Finally, I encourage each student to be an active member of the ASRT, MSRT and the local district. Get involved in your education and the profession now.

**YOU ARE THE FUTURE
OF THE PROFESSION OF RADIOLOGIC TECHNOLOGY.**

DISTRICT UPDATES

District 1--Your new District Representative is Stephanie Whisler, 6306 N. Indiana, Gladstone, MO. 64119

District 3--Meeting held May 5, 1993 at the Lake of the Ozarks Genreal Hospital. The education Director of the hospital spoke about TQM and CQI. Her presentation was enjoyed by all in attendance. Due to resignation of the Vice President, an election was held for that office and Jim Watson was elected to that position. Donita Shipman's election to the State Board as Secretary leaves a vacancy for District Representative which will be filled at a later time. Sally Holtkamp and Karen Schneiders were appointed co-chairs for the Program Committee. Plans are under way for District 3 to host a mini-convention in the fall of 1994. It will be on a Saturday and 5-6 ECE credits will be available. Contact Donita if you are interested in helping with the plans. The next district meeting will be held in September in Columbia. Watch for more information as to time and place.

District 4--Your new District Representative is Coretta Schroer, 627 Nirk, Kirkwood, MO. 63122

District 5--The last 5th District meeting was March 18 in Springfield. Dr. Kester, Radiologist, spoke on "Imaging Comparison of CT and MRI." The membership voted to charge \$1.00 admission to future 5th District meetings in place of membership dues. Half of the admission will be used for a drawing during the meeting and half the admission will be used for membership dues. The next 5th District meeting will be Thursday, September 16, in Carthage, MO. The NEW 5th District Representative is: Pat Blamey, 915 Hilcrest, Monett, MO. 65708. Home (417)235-3403 or WORK (417)235-3144. Contact Pat and find out about YOUR district activities!!!

District 6--The membership stands at over 100 technologists. All of which have been offered a chance to attend educational meetings almost every month. District 6 is co-hosting a Mini-Convention in Cape Girardeau, September 11th at the Holiday Inn. This will be an all day workshop with outstanding speakers, and provide 8 ECE credits. The cost will be as low as possible due to outside sponsors. On March 25th new officers were elected as follows:

President: Tom Welch, R.T.

Vice President: Ken Killian, R.T.

Sec/Treas.: Janice Hickman, R.T.

District Rep.: Chuck Eaves, R.T.

Education Chair: Henry Cashion, R.T.

Contact these people and we'll see you in Cape September 11th!!!

Membership Notes



This past year has been a very good year for the MSRT. I want to thank the following people for their help in recruiting new members during the 1992-1993 membership drive.

Karen Johns	Barb Hente	Allen Smith
Donita Shipman	Linda Cody	H.C. Shen, M.D.
Cindy Daniels	Elaine Hall	Sherry Bellafiore
Debra Hurst	Ruth Daerda	Melanie Mack
Eddie Terrill	Ali Shahrak	Lisa Wynd
LaDonna Wolfe	Shawn Snider	Joan Hedrick
Henry Cashion	Dan Cantrell	Linda Holmes
Ruth Gray	Joe Rackers	Randy Ginten
Barry Siegel	Chuck Robinson	Jerry Schnarr
Kimberly Kastel	James Henson	Stephanie Whisler
Tedra Pirneck	Mary Sebacher	Eric Owens
Bob Klingensmith	Tina Smith	Darrell McKay
Barbara Curry	Ann Lach	Robert Bock
Kim Thebeau	Jim Watson	Stephen Reis
Wiley Beals	Laura Murney	Judy Taylor

At the 61st Annual Conference the following people received checks for their recruiting efforts. Each of them were refunded their 1992-1993 dues. Congratulations and Thanks for their efforts on the MSRT's behalf.

Students (\$15.00)

James Henson
Kimberly Kastel
Bob Klingensmith
Chuck Robinson
Jerry Schnarr
Barry Siegel

Technologists(\$25.00)

Cindy Daniels
Donita Shipman

Due to the tremendous success this past year, we will continue the membership drive for this next year also. Technologists receive credit for recruiting technologists, and students receive credit for recruiting students. You must recruit at least 5 NEW (never before) members to qualify for the dues refund.

Let's all work together and make 1993-1994 the biggest and best year yet to be a MSRT member!!!!

Debra A. Hurst, BSRT(R)
1993-1994 Membership Chairman



THE MISSOURI SOCIETY OF RADIOLOGIC TECHNOLOGISTS

Application for Membership
July 1, 1993-June 30, 1994

Please complete ALL sections and return to MSRT with payment

New Applicant ___ Renewal ___ (other name membership under) ___

First name ___ M.I. ___ Last name ___

Mailing Address ___

City/State/Zip ___

Home Phone() ___ Work Phone() ___

Present Employer ___

Business Address ___

Table with columns: Certified in: () Radiography, () Nuclear Medicine, () Radiation Therapy, () Sonography; Position Title () Staff Technologist, () Special Procedures, () Supervisor, () Director/Education, () Instructor, () Administrator, () Chief Administrator, () Asst. Chief Admin., () CT Technologist, () MRI Technologist, () not employed, () other; Education Level () Certificate, () Associate, () Baccalaureate Major, () Masters Major, () Doctorate Major; check all that apply () ASRT member, () MSRT member, () ARCRT member, District member circle all that apply; 1 2 3 4 5 6 7

ACTIVE MEMBER: Radiologic Technologist registered by and in good standing with a nationally recognized certifying body. \$25.00 ___

SUPPORTING MEMBER: Those persons interested in Radiologic Technology but not having qualifications for other categories. \$25.00 ___

IN-ACTIVE MEMBER: Certified Technologists not engaged in any area of the field of Radiologic Technology. \$10.00 ___

STUDENT MEMBERS: Students enrolled in a training program recognized by ARRT and or of 24 month duration. This is a 2 year membership, due on or before Sept. 1st. \$15.00 ___

Name of School ___ Graduation Date ___

Make your check payable to: M.S.R.T. submit to: Donna Lang MSRT Treasurer 2841 Bee Tree Lane St. Louis, MO. 63129

RECOMMENDED FOR MEMBERSHIP BY : ___

"WANTED"

Radiologic Technology Program Director

Program Director needed in well-established two year program which has been in existence six years. The program holds accreditation from the Joint Review Committee for Education in Radiologic Technology.

POSITION TITLE: Radiologic Technology Program Director

JOB DESCRIPTION:

The program director is a full-time employee of Rolla Area Vocational-Technical School. The Program Director is responsible for the organization, administration, periodic review, continued development, and general effectiveness of the program. The director shall be responsible for evaluation and assuring educational effectiveness of clinical education centers. This broad statement of responsibilities includes the following duties:

1. Financial planning - budget preparation
2. Student selection applications/interview
3. Teaching
4. Counsel students
5. Coordinate clinical activities
6. Supervise, evaluate, and select faculty
7. Professional development activities
8. Program review
9. Community awareness activities

CERTIFICATION:

Applicants considered shall be credentialed, in good standing, in Radiography, by the American Registry of Radiologic Technologists, have the equivalent of three years full-time professional experience as a radiographer, hold a baccalaureate degree and a minimum of two years experience as an instructor in an accredited radiography program.

LENGTH OF CONTRACT: Twelve (12) months.

SALARY: Commensurate with experience and education.

INFORMATION: Applications will be accepted through June 30, 1993. Information requests and applications should be sent to:

Dr. Bob Chapman, Director
Rolla Area Vocational-Technical School
1304 East Tenth Street
Rolla, Missouri 65401

HELP WANTED

MSRT ANNUAL CONFERENCE CO-ORDINATOR

The MSRT Board of Directors is now accepting resumes for the position of conference co-ordinator. This Board position is a non voting, non paid position. You might ask, why do it. It is truly a rewarding experience to be in on all the planning and plotting involved with the annual convention. If you have any questions, please contact any board member, and mail your resume along with a letter of intent to :

MSRT Board of Directors
P.O. Box 881
Columbia, Mo. 65205-0881

61ST MSRT CONFERENCE GIGANTIC SUCCESS

1993 Annual Conference Chairman Cindy Daniels and her crews did a fantastic job of combining fun, frolic, and education this past April in St. Louis. From the first lectures on Wednesday evening all in attendance knew they were in for a top notch educational program. Wednesday evening brought the first "Radiation Induced Olympics" with all of the pomp and fanfare of Los Angeles?!!! This event was enjoyed by ALL participants and observers alike. It will be hard for any of us to forget, if you missed it make sure you ask someone who was there! Thursday and Friday's educational lectures were very well attended and very informative. On Saturday, Sonographers, and Mammographers from all over the state gathered for day long meetings in their specific areas of expertise.

The following people all contributed to the annual conference, a handshake and thank you to each of them!!!

CONFERENCE COMMITTEE

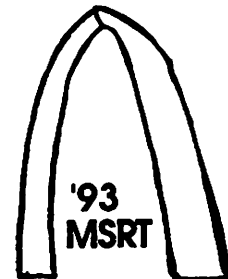
Mary Ainley
Dean Brake
Dan Cantrell
Henry Cashion
Tammy Danieley
Amy Duvall
Chuck Eaves
Mary Feldhaus
Ruth Gray
Sherry Grubbs
Jim Henson
Barbara Hente
Bob Klingensmith
Donna Lang
Brett Menke
Mitzi Reece
Brian Ringwald
Jerry Schnarr
Coretta Schroer
Mike Vassel

GUEST LECTURERS HOST/HOSTESS

Jerry Schnarr
Brett Menke
Tammy Danieley
Eric Owens
Bob Klingensmith
Jim Henson
Brian Ringwald
Dareld LaBeau
Randy Dunn
Jarrod Cartee
Brian Crippen
Michelle Marlow
Chera Prater
Franklin Hicks
David Massey
Bob Muehlenbrock
Coretta Schroer

RADIATION INDUCED OLYMPIC JUDGES

Brian Crippen
Jeff Dalton
Sandi Dorrin
Jim Henson
Mitzi Reece
Jerry Schnarr



A special thanks from Cindy to all of her committee personel, plus...

"Special Thanks and Appreciation to JOHN DANIELS. His Continuous encouragement, support, and assurance gave me the confidence that the 61st Annual MSRT Conference would be a success."

-Cindy Daniels
1993 Annual Conference Chairman

**SPECIAL THANKS
TO THE
1993 MSRT ANNUAL MEETING
Commercial Sponsors**

Break Sponsors

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Supplemental Medical Services, Inc.
Maxum Health Corp.
Sanofi-Winthrop Pharmaceuticals
Burlington Medical Supplies, Inc.
Mowry, Enterprises

**Radiation Induced Olympics
St. Louis University Medical Center**

**Murray Lecture Reception
Sanofi-Winthrop Pharmaceuticals**

SUPPORT THESE FINE BUSINESSES AND COMPANIES AS THEY ARE MSRT SUPPORTERS

1993 STUDENT BOWL HIGH SUCCESS

The competition this year was superb. All of the 10 teams came ready, willing, and able to demonstrate their radiography knowledge. Michael Kleinhoffer once again served as moderator, keeping the audience entertained with his "remarks", and thus maintaining the spirit of fun for all, win or lose. Thomas Kraker, and Allen Bode assumed the incredible responsibilities of the JUDGES, and both did a marvelous job. Other less stressful duties were assumed by Shawn Snider and Allen Smith as scorekeepers, Norman Hente as timekeeper, and Debbie Hurst as reference keeper.

As in years past a Sudden Roentgen Death was necessary. This year it was to determine the second place team. Here are your winners.

1st place

St. Lukes Hospital School of Radiologic Technology
Kansas City--Mary Lou Carlson, R.T.-Program Director

TEAM

Julie Neperud-Captain
Todd Wells
Robert Zillman
Michael Murry-Alternate
Sherry Bellafiore, R.T.-Coach

2nd place

St. Louis Community College at Forest Park-School of Radiologic Technology
St. Louis--Darrell McKay, R.T.-Program Director

TEAM

Brian Ringwald-Captain
Janet Hughes
JoAnn Christensen
Exequiel Navalta-Alternate
Jon Hartwein, R.T.-Coach

3rd place

Penn Valley Community College-School of Radiologic Technology
Kansas City--Judith Taylor, R.T.-Program Director

Team

Debra Smith-Captain
Polly Snyder
Heather Norton
Melinda Roth-Alternate
Kim Thebeau, R.T.-Coach

CONGRATULATIONS to ALL of the participating teams for a great competition.

A big **thank you** to Michael D. Ward for all his hard work to make this years student bowl competition the success it was.



CONVENTION CLIPBOARD

1993 X-RAY SPRING FASHION SHOW

Students from the schools of Mineral Area Regional medical Center School of Radiologic Technology and Barnes Hospital school of Radiologic Technology-MIR modeled uniform apparel during the student luncheon held on Friday during the Annual Conference. A thank you to each of our models, as well as Life Uniform and Shoe Shops of Crestwood, Mo. and Picker International, Inc. for providing the uniforms and aprons modeled. Prizes were also given away during the show, and these had been donated by Pepsi-Cola General Bottlers, of Farmington, MO. and Perry County Memorial Hospital , of Perryville, MO.

Congratulations

Sue Wagy , from Childrens Hospital of St. Louis won a lead apron with her choice of embroidery from Burlington Medical Supply during the annual conference.

AND THE WINNERS ARE.....

1993 SCHOLARSHIP WINNERS

Feldhaus Scholarship Recipient--Robert Klingensmith

Mineral Area Regional Medical Center School of Radiologic Technology

MSRT Scholarship Recipient--Eric Owens

Barnes School of Radiologic Technology-Mallinckrodt Institute of Radiology

1993 ESSAY WINNERS

STUDENT ESSAY WINNERS

1st place--Julie Neperud, St. Lukes Hospital School of Radiologic Technology

2nd place--Robert Zillman, St. Lukes Hospital School of Radiologic Technology

3rd place--Eric L. Owens, Barnes School of Radiologic Technology-Mallinckrodt Institute of Radiology

TECHNOLOGIST ESSAY WINNERS

1st place--Janice Hickman, Clinical Coordinator, Mineral Area Regional Medical Center-School of Radiologic Technology

1993 EXHIBIT WINNERS

STUDENT EXHIBIT WINNERS

1st place--"Boomerang" by David Pankey and Richard Nagle

Barnes School of Radiologic Technology-Mallinckrodt Institute of Radiology

2nd place--"Prostate CA" by Kent Foster

Avila College School of Radiologic Technology

3rd place--"VAN Rotationplasty: Surgical Advances through Radiology"
by Todd Wells, Mike Murry, Bob Zillman, Heather Boan, and Jenny Cubellis
St. Lukes Hospital School of Radiologic Technology

Honorable Mention

"To Catch a Killer" by Janet Hughes and JoAnn Christensen

St. Louis Community College at Forest Park-School of Radiologic Technology

"TIPS-Transjugular Intrahepatic Portosystemic Shunt"

by Dareld LaBeau and Robert Muehlenbrock

Barnes School of Radiologic Technology-Mallinckrodt Institute of Radiology

"Radiology Dx of Esophageal Carcinoma" by Carla McCaghren

University of Missouri-Columbia Radiologic Science Program

1993 MALLINCKRODT AWARD FOR EXCELLENCE

Presented to Debra A. Hurst, B.S.R.T.(R)

CT Supervisor, Columbia Regional Hospital,

and MRI Technologist, Maxum Health Corporation, Dallas, TX.

MEET YOUR WINNERS

MSRT Scholarship Recipient--Eric Owens

Eric attends the Barnes School of Radiologic Technology at Mallinckrodt Institute of Radiology in St. Louis, and will be graduating this June 25, 1993. Eric is originally from Indianapolis, Indiana, which must be where his interest in basketball comes from, but while attending xray school he has been living in Brighton, Illinois. Cindy Daniels, our new MSRT President, commented that Eric has driven one hour to work, and one hour home, for the duration of his schooling. Cindy also let us know that Eric has attended night school during his xray training, with a 4.0 GPA, all the while keeping his GPA at Barnes at an almost perfect mark. This certainly explains why Eric couldn't tell us what he likes to do in his free time, he must not have any!! Eric is going to finish his bachelor's degree in Business Administration or Accounting, and is wanting to go into Radiology Management, or possibly start his own business. I'm sure that you will agree that Eric Owens is an outstanding student of radiography, has high goals for himself professionally, and is very deserving of the MSRT Student Scholarship. Congratulations, Eric, and best wishes for a bright and very deserving future.

Feldhaus Scholarship Recipient--Robert Klingensmith

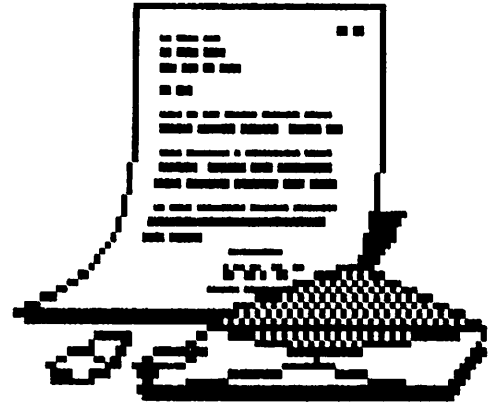
Bob attends the Mineral Area Regional Medical Center School of Radiologic Technology in Farmington, Missouri and will be graduating July 9, 1993. Bob is originally from Mountain Grove but now lives in Caledonia with his wife and two girls. Henry Cashion, Bob's Program Director tells us that Bob formally worked for a large business that closed, and Bob made the decision to attend Radiology School to provide a better future for his family. During his two years of training Bob has worked various part time jobs as well as maintain a high GPA in his classes. Bob has been very active in District 6 activities, as well as serving for the past two years as his class representative to the MSRT student activities committee, plus this past year he was the MSRT legislative activities committee student liaison. Bob travelled to numerous hearings and planning meetings and served the MSRT membership very well in this position. Bob is going to continue his education this fall even further as he has been accepted to attend the Nuclear Medicine Program at St. Lukes Hospital in Kansas City. The MSRT is very proud to have students such as Bob active in our organization, Keep up the good work BOB, and again Congratulations on earning the Feldhaus Scholarship.

Mallinckrodt Award of Excellence--Debra A. Hurst, BSRT(R)

Debbie graduated from the University of Missouri at Columbia with a BS in Radiologic Technology. Debbie has worked full-time at AMI-Columbia Regional Hospital for the past 2 years, and is now CT supervisor. The 10 prior to this was spent working for various mobile CT and MRI companies, and she continues to work part time as an MRI technologist for Maxum Health Corporation in their Kansas City region. She has been very active in the MSRT since her graduation in 1980. Debbie began her MSRT service as the 3rd district representative for 2 years, and gained board experience to help her serve as MSRT President Elect 1982-1983, MSRT President 1983-84, MSRT Treasurer 1987-1990, Conference Co-Ordinator 1990-1991, MSRT Membership Chairman 1990-present, MSRT Editor 1992-present. Debbie would like everyone to know what a total surprise and great honor it was to be presented with the Mallinckrodt Award. Debbie's co-workers wonder why she spends (wastes?) so much time working on MSRT "STUFF", but she knows that it will take all of us working together to promote OUR profession and to BE professionals. Congratulations and thanks again to Debbie!!

Kodak sponsors Annual Past President Breakfast

The morning after the MSRT Presidential Banquet it has become tradition that Past Presidents of the MSRT gather for fun and to talk about the "old" days. This year was no different and 7 past MSRT presidents gathered to welcome Judith Taylor 1992-1993 MSRT President to the fold. No acts of congress were decided, just MSRT history shared and remembered. Dan Cantrell, Senior Board Member, was in charge of the breakfast this year, and he provided these letters to be published.



Dear Past MSRT President

The Missouri Society of Radiologic Technologists will be holding it's 61st Annual Conference, April 21 - 24, 1993 at the Airport Hilton in St. Louis, Mo. As is tradition, there will be a Past Presidents breakfast on Saturday morning, to which you are cordially invited. The breakfast will be at 7:30 a.m. in the Garden Terrace II Room.

Please RSVP if you plan to attend by calling 417-836-8988 or by a letter or post card no later than April 19, 1993 at my address listed below.

I look forward to seeing you in St. Louis.

Sincerely,

Dan Cantrell ☺

Dan Cantrell, RTR, CNMT
Senior Board Member, MSRT
Rt. 1, Box 264
Fordland, MO 65652

Denver, Colo.
April 12, 1993

Mr. Danny Cantrell
Rt. 1, Box 264
Fordland, Mo.

Dear Mr. Cantrell

It is very kind of you to invite me to attend the Past Presidents breakfast. Unfortunately, it will be impossible for me to attend this breakfast.

Mary and I send our love to the members of the MSRT. We do miss our many friends we have known in the MSRT.

May I take this occasion to wish you and all the members of MSRT attending, a most successful Annual Meeting.

April 8, 1993

Dan Cantrell, RTR, CNMT
Senior Board Member, MSRT
Rt. 1, Box 264
Fordland, MO 65652

Sincerely,

Clair S. Vincent
Clair S. Vincent.

Dear Mr. Cantrell:

Thank you for the invitation to attend the Past Presidents breakfast on April 24th. I had noted the dates of the conference previous to receiving your invitation and had tentatively planned on attending part of the conference. I regret that due to an unforeseen conflict I will be unable to attend.

The Missouri Society holds a special spot in my memories and though I have been retired for more than 11 years I keep up with the "news".

Best wishes for an excellent Conference and warmest greetings to all.

Sincerely,

Jack La Fond

John V. La Fond, RTR, FASRT
1576 E. Lake Shore Drive
Decatur, IL 62521

6TH ANNUAL

ULYSSES D. MURRAY MEMORIAL LECTURE

*Radiologic Technology:
The Future!*

Darrell E. McKay, RT, PhD, FASRT

April 23, 1993

Saint Louis, Missouri



Ulysses D. Murray, RT

Mr. Murray was born in Hattiesburg, Mississippi and moved to St. Louis when he was in the second grade. After graduation from high school he attended Stowe Teachers' College & St. Louis University. He received a certificate in hospital administration from St. Louis University in 1957. His interest in x-ray began during his Navy career during World War II. After his discharge from the Navy he entered Homer Phillips School of X-Ray Technology graduating with the very first class. He was registered by the American Registry of X-ray Technicians in January 1949, and joined the American Society of X-ray Technicians the same year. He joined the Missouri Society of Radiographers in 1950.

Ulysses served the MSRT as President, vice-president, secretary, the chair of many committees and chaired Annual Meetings. He was associate editor of "The Missouri Minutes" and served as the Parliamentarian for over 25 years. Mr. Murray was the first Region V ASRT Regional Director. He served ASRT as General Convention Chairman in 1967, as a counselor for Missouri and as chairman of the Resolutions and Bylaws Committee in 1970.

Mr. Murray won many Exhibit awards on the state level, including a 1st place for "Cerebral Angiography" in 1954 and a 3rd for "Zygoma" in 1957. Ulysses was a published author and presented numerous lectures to his fellow technologists at our MSRT annual conferences.

Darrell E. McKay, RT, PhD, FASRT

Dr. McKay received his training in radiologic technology at the Central Missouri School of X-Ray Technology in Jefferson City. After graduation in 1965 he served as staff technologist and clinical instructor at Sullivan, Mo., Community Hospital. He went on to become chief technologist and didactic instructor for the Dr. Joseph Summers School of X-Ray Technology in Rolla, Mo.

Darrell holds a bachelor of science in radiologic technology, a master's in vocational technical education from the University of Missouri at Columbia, and a doctorate in education from St. Louis University. He joined the staff of St. Louis Community College in 1976 where he is professor and chairman of the Department of Health Technology.

Darrell joined the ASRT and the Missouri Society of Radiologic Technologists in 1965. His service to the MSRT includes the chairmanship of many committees, affiliate



delegate, co-editor of *The Radiographer*, treasurer for two terms and president for two terms. In 1991 the MSRT recognized Darrell for his continuing efforts for the Missouri society by awarding him the *Mallinckrodt Award of Excellence for Outstanding Contribution*.

He has served the ASRT as a counselor, member and chairman of the Education Committee, and member, vice chairman and chairman of the Commission on Education. Darrell most recently served as Speaker of the House of Delegates, a member of the Executive Subcommittee of the Board and chairman of the Committee on Education. A career, distinguished by his many activities on behalf of the profession of radiologic technology, was capped when Darrell was elevated to Fellow of the ASRT in 1990.

Dr. McKay is currently President-Elect of the ASRT and will be installed as President of the ASRT this June in Baltimore.

Ulysses D. Murray Lecturers

1987	Beth M. Anderhub, R.T., B.S., CNMT, FASRT
1988	Norman L. Hente, R.T., B.S., FASRT
1989	Henry Y. Cashion, R.T.
1990	Michael D. Ward, R.T., M.Ed., FASRT
1991	In Memoriam
1992	Debra A. Hurst, B.S.R.T.

Sante Memorial Lecturers

1968	Armand E. Brodeur, M.D.
1969	James Morgan, R.T.
1970	Clair S. Vincent, R.T.
1971	Thomas Finnegan
1972	Majorie Tolan, R.T.
1973	Richard Hammer, R.T.
1974	Walter S. Anderssen, R.T.
1975	John A. Doht, R.T.
1976	Ulysses D. Murray, R.T.
1977	Dalmer A. Blankenship, R.T.
1978	Orvil M. Sikes, R.T.
1979	Sr. Francita Barringhaus, SSM, R.T.
1980	Elva Ross Falknor, R.T.(R)
1981	Marilyn Holland, R.T.(R)
1982	Robert Rein, R.T.(R)
1983	Ronald A. Ott, R.T.(R)
1984	Sr. Hilda Brickus, SSM, R.T.
1985	Mary C. Sebacher, M.Ed., R.T.
1986	Coretta Schroer, R.T.(R), G.I.A.

STEREOTACTIC RADIOSURGERY FOR TREATMENT OF INTRACRANIAL LESIONS

BY

JULIE NEPERUD

Saint Luke's Hospital School of Radiography

INTRODUCTION

"I'm Sorry, Mr. Jones, but your brain tumor is inoperable." This has been a response patients like Mr. Jones have heard in the past. Patients like him have gone a long time without the hope of a treatment for their intracranial disorders. Surgical removal of lesions have not been an option for these patients. However, they now have an alternative in the form of a non-surgical treatment; this is done through a procedure called "Stereotactic Radiosurgery".

The goal of stereotactic radiosurgery is to produce necrosis of the lesion by using a single, high dose of radiation. This is accomplished with very small and well collimated beams so that surrounding brain tissues are not affected (Podgorsak, et al. 115). The procedure involves many modalities of radiology; computerized tomography(CT), magnetic resonance imaging(MRI), and angiography are used for localization and planning of the procedure. Radiation therapy is then used for final precise planning and the actual treatment. "Radiosurgery has little in common with radiation therapy. there is no attempt to 'treat tissue', but instead to destroy a precisely defined region of tissue using radiation as the surgical tool instead of a knife." (Winston and Lutz 461)

Stereotactic radiosurgery is a very meticulous procedure that must be performed with complete accuracy. Neurosurgeons, radiologists, radiation oncologists and physicists are all specialized doctors who participate in this complex process.

LESIONS TREATED

Stereotactic radiosurgery is a procedure that can treat several types of lesions in the brain. The name stereotactic radiosurgery is actually a misnomer, for the reason that there is not an actual incision into the patient as there would be in surgery. The high doses of radiation are the tools that are used to treat these lesions. There have been many reported uses of radiosurgery which include numerous types of tumors, arteriovenous malformations and metastases. Aneurysms have also been treated with stereotactic radiosurgery (Larson 37).

Treatment of arteriovenous malformations using radiosurgery is a great advancement in medical technology. "Arteriovenous malformations (AVMS) of the brain are clusters of abnormal arteries and veins that shunt blood from the arterial system to the venous." (Saunders 441) They are thought to be congenital lesions in nature and bear the problem that they are prone to spontaneous bleeding. Many neurosurgeons believe that surgical excision is the choice treatment for the small, easily accessible lesions (Saunders 441). However, there are some lesions that can be treated by embolization- a procedure whereby material, which produces a complete occlusion of vessels, is injected through an arterial catheter (Johnsrude, Jackson, and Dunwick 87). Several AVMs have been treated with both embolization and surgery. But there still remains those patients who cannot be treated by any of these choices. These are the patients whose AVMs are small and inoperable (Saunders 441: Wen 3).

Brain metastases can often be treated with stereotactic radiosurgery, because these lesions are usually well circumscribed and more spherical, making them good targets for the procedure (Sturm et al. 279). Many times these metastatic lesions are recurrent and have received prior whole brain radiotherapy. Radiosurgery is able to strongly "reirradiate" and, hopefully, control these tumors (Loeffler et al. 577).

There has been several types of tumors treated with stereotactic radiosurgery. Some examples are astrocytoma, glioblastoma, meningioma, craniopharyngioma, pituitary adenoma, ependymoma, etc. (Loeffler and Alexander 25). When these tumors can be precisely localized the treatment has good results.

PATIENT SELECTION

Stereotactic radiosurgery is a very precise and delicate procedure, therefore limiting the patient selection. Selecting the patients for stereotactic radiosurgery is difficult because many standards must be met before allowing this procedure to be performed.

Each institution established its own criteria regarding patient selection for stereotactic radiosurgery, however, the following criteria was established by a radiation oncology group for a study they conducted in 1990. This study was performed primarily for the treatment of recurrent brain tumors and CNS metastases. The remaining content of this paper will refer back to this study.

The first step of selection is the neurological exam. The neurosurgeon then decides, using this criteria, if radiosurgery is the procedure of choice for that individual patient. If the patient has had previous whole brain or localized radiation, it must be more than three months before the stereotactic radiosurgery can be done. Before radiosurgery is performed it is important that the institution undergoing the procedure has all the data on previous radiation the patient has received. Each institution may have their own standard of acceptance, but the average maximum diameter of the recurrence must be no more than between 30-40 mm. The age of the patient can vary. For the study group the patient had to be at least eighteen years of age, although, other places have treated much younger (Shaw and Mackie 2).

After the patient's evaluation, their status can be determined. Many establishments rank a patient's condition according to the Karnofsky Performance Scale, which ranges from zero to one hundred. Zero is defined as dead and one hundred is described as normal with no complaints and no evidence of disease. In order for the patient to receive treatment in this group's study, the score had to be at least sixty. According to this scale, a patient with the score of sixty requires occasional assistance, but is able to care for most of their personal needs (Shaw and Mackie 11).

Another guidance an institution may use is ranking the patient's neurological function status. The oncology study group's standard required that a patient be ranked at least 0, 1, 2, or 3, with zero having no neurologic symptoms, fully active at home and work without assistance. With a score of one, the patient has minor neurologic symptoms and is still fully active. A score of two also defines a patient as fully active, but requiring assistance, and with moderate neurologic symptoms. A score of three is the last acceptable neurological function status, where the patient has moderate neurologic symptoms, but is less than fully active at home and work and requires assistance. A score of four is an unacceptable neurologic function status. This patient is characterized as having severe neurologic symptoms, totally inactive and requires complete assistance in caring for themselves (Shaw and Mackie 12).

The patients's life expectancy plays a part in the eligibility criteria. Some establishments require at least a six month expectancy. In the above mentioned study, the only requirements is that it be greater than or equal to three months. As with any invasive procedure, prior to stereotactic radiosurgery, the patient must sign a consent form (shaw and Mackie 10).

Types of patients that are most likely reviewed for radiosurgery are those who have inoperable brain tumors located in areas of the brain that cannot be reached by surgical procedures. Patients who have inoperable AVMs or are unable to be treated by embolization are also considered (Wen 3). Patients with other medical problems, such as a bad heart condition, which causes them to be a poor candidates for surgery, can also be considered. Since there is no "surgery" involved, the procedure is ideal for those patients who refuse any type of surgery.

EQUIPMENT

"A complete system for stereotactic radiosurgery must have reliable hardware and a plan of operation, including software, to accomplish the following: a) determine the size and location of the lesion: b) plan the treatment and c) deliver the radiation precisely according to plan." (Winston and Lutz 454)

The most commonly used system for the stereotactic radiosurgery is the BRW (Brown-Roberts-Wells) CT Stereotactic Guide. It has been found that this system is very quick and

accurate with its target determination. The BRW system is mainly composed of the head ring, which attaches directly to the patient's head. There is a localizer ring and box used for localization during CT and angiography. The phantom base allows for an independent check that the target coordinates and arc settings are correct. During the actual treatment, the patient's head is supported by the BRW floor stand via the BRW head ring (Radionics).

PROCEDURE

The neurosurgeon first decided if he/she wants to attach the head ring under local or general anesthetic. This decision is based on the patient's age and their ability to cope. The head ring is affixed to the cranium by four vertical posts which are made of carbon-fiber and plastic, and steel fixation screws. If local anesthetic is used, lidocaine is injected at the areas of attachment. The screws are then inserted into the patient's skull. It has been found best to attach the ring anteriorly in the low frontal area and posteriorly in the low parieto-occipital area. The head ring then remains in place throughout the entire stereotactic procedure (Radionics 8).

The next step is attachment of the localizer ring. This localizer ring is composed of vertical and diagonal carbon fiber rods that are affixed to two end rings. After attachment, the patient is ready for their CT scan. If a lesion is going to be localized by CT scanning, it is preferable that the thinnest possible CT images be obtained. This is done to minimize error in localization (Winston and Lutz 456). An example of protocol for the CT exam is that of Saint Luke's Hospital of Kansas City; 3 mm thick slices are taken at 5 mm spacing with the first slice beginning at the infraorbital rim and the last slice ending at the vertex, scanning past the skin. As the Ct scan intersects through the carbon rods, nine marks appear on the CT scan image. To determine the exact position of the target relative to the heading, these coordinates of the nine marks are needed along with the target coordinates. Upon completion of the CT scan, the localizer ring is then removed (Saint Luke's Hospital).

In some instances, a cerebral angiogram may be needed, depending on the type of lesion being treated, usually for AVMs. With the head ring still in place, a specially constructed rectangular box is attached for the angiogram. On each of the four sides of the box are four lead markers positioned in a 6 by 6 cm square arrangement. For localization by angiography, two nonidentical planar angiographs are needed, usually frontal and lateral projections. Two sets of the lead markers (one set on each side of the box) must be present on each of the radiographs (Winston and Lutz 456).

To be able to compute the single line that passes from the source through the target, knowledge of the geometry of the box, the markers and their projected location on film must be obtained. The center of the lesions needs to be in the computation also. Test localizations that have been performed have shown that angiography is the most accurate method of localization; precision in localization with CT is limited because of the slice thickness (Winston and Lutz 462).

After completion of all the target localization exams, all the films must be reviewed by the neurologist, radiologist and the radiation oncologist. Between them, the tumor or AVM volume is outlined, along with any neural anatomy or internal structures needed for localization and dosimetric reading. "Vital structures such as the eyes are outlined on the treatment plan CT so that beams from the various arcs used for treatment will not enter or exit through these structures." (Loeffler et al. 674) Once a target or lesion is identified on a CT slice or the AP and lateral angiogram, the coordinates of the target can then be determined (Winston and Lutz 457).

A specially designed computer system has been developed for the stereotactic radiosurgery. This computer is used to accurately plan the actual treatment; very careful dosimetry must be calculated (Saunders 443). The idea of the procedure is to place the AVM or tumor accurately on the isocenter of the system. It is then irradiated with several noncoplanar rotations of the gantry. "It is critically important to be sure that the axis of rotation of the gantry, turntable and collimator all intersect at or very close to a common point (the isocenter) and remain stable during rotation." (Lutz et al. 374) Winston and Lutz, describing the isocenter say: "...the point in space where the three axes (gantry, turntable and collimator) come closest together is designated

the 'best compromise' isocenter. A 'true' mechanical isocenter does not exist because of the 0.5 mm and 0.6 mm displacements." (455)

The conventional collimator that is used on a linear accelerator is not appropriate for stereotactic radiosurgery because the distance from the isocenter has is about 70 cm away, resulting in a very large penumbra (Winston and Lutz 455). Another problem is that the conventional collimator has a rectangular beam which makes it difficult to adjust to an exact size (Winston and Lutz 455). The collimators that were designed specifically for stereotactic radiosurgery were made to improve the alignment and minimize the penumbra of the beam. "A circular collimator was chosen because it can deliver slightly sharper dose gradients than a square collimator when beams are delivered over a hemisphere." (Winston and Lutz 455) This circular collimator can be easily mounted to the gantry. It extends 23 cm from the isocenter and will accept one cylindrical collimating insert. These inserts are made from cerrobend (lead, tin and bismuth alloy), measure 10 cm thick, and are approximately 7.5 half value layers. They have conically drilled, circular openings (Winston and Lutz 455). There are eight different diameters of the openings that range from 12.5 mm to 30 mm. The openings are tapered in order to match beam divergence, and therefore further minimizing the penumbra (Winston and Lutz 375).

Before the patient is attached to the phantom base, testing must be performed to be sure that everything is precisely correct. A target simulator is attached to the phantom base. The simulator has a steel sphere that is precisely centered, by use of a magnifying glass, on the tip of the pointer of the phantom base. The target simulator is then removed from the phantom base and attached to the floor stand in the exact way the patient's head ring would be. In this position the target then represents the patient's lesion with its center at the "best compromise" isocenter (if there are no mistakes). Next a film would be exposed with the accelerator's beam at eight standardized combinations of turntable and gantry positions. This verification process detects any incorrect settings or problems with the accelerator. The gantry of the linear accelerator emits a beam of photon radiation while it rotates around a stable horizontal axis. It is very important that the wobble of the gantry and misdirection of the beam be kept to a minimum (Winston and Lutz 457).

The dose that is chosen must accomplish the effect on the portion of the lesion that receives the least amount of radiation, which is usually the periphery. It is also important to minimize the volume of tissue outside the lesion that will receive high doses of radiation. It has been found that the best way to prescribe a dose is to prescribe it for the periphery of the lesion, not the center of the lesion and not for the maximum dosage (Saunders 445).

The actual treatment consists of irradiating the lesion during a series of arc rotations of the gantry, each with the turntable in a different position (Lutz et al. 377). Once the treatment is completed, the patient's head ring is removed. The patient is usually detained for a few hours for observation, but then is free to leave.

SIDE EFFECTS

Because of the large increments of radiation used in stereotactic radiosurgery, several side effects could occur. Some resulting effects might be headache, nausea, vomiting, temperature elevation or cerebral herniation. It has been determined that the probable reason for the nausea and vomiting is the direct influence that the radiation has on the vomiting center, located in the floor of the fourth ventricle, in the medullary lateral reticular formation (Alexander, Siddon and Loeffler 40). "It has been shown in animal studies that stimulation of this area can induce nausea and vomiting" (Wang 335-339). Drapkin reports that dexamethasone given in high doses can often relieve the nausea and vomiting that is associated with radiation and cancer chemotherapy (1347-1349). Halopendol has also been shown to relieve these symptoms (Cole 1558-1562).

RESULTS

Follow-up examinations are an important part of stereotactic radiosurgery. CT's and

angiograms are the procedures used to detect changes that occur post-radiosurgery. Since angiography has other risks involved, and can yield a high total dosage of radiation, if done frequently, CT has been used more often for early follow-up reviews. CT may show possible delayed radiation effects, necroses or infarct, however, complete obliteration of an AVM can only be confirmed by angiography (Steiner 312). Even so, most institutions have a limit of at least twelve months before an angiogram can be performed.

Many studies have been conducted with encouraging results. One such study, with over one-half of the patients receiving a post-treatment angiogram, reported that the AVM had shrunk more than 50% in its greatest diameter. In one case the AVM had completely disappeared. In some instances, and for those patients who had neurological deficits prior to radiosurgery, the complaints and seizures either decreased in number or stopped completely (Steiner 303). Another study showed that after two years, 84% of the AVMs were totally obliterated, 11% were partially obliterated, and 4% did not have any change (Steiner 310). The results of stereotactic radiosurgery obviously reveal tremendous accomplishments especially considering that many of the patients were once without hope at all.

CONCLUSION

As medical technology advances, each modality of radiology advances with it. Because of these improvements, procedures like stereotactic radiosurgery can be developed to their fullest potential. Stereotactic radiosurgery provides an opportunity for patients with inoperable intracranial disorders; those who, at one time, had little hope for the future, can now, thanks to this advanced technology, foresee a better quality of life.

BIBLIOGRAPHY

- Alexander, Eben, Robert L. Siddon, and Jay S. Loeffler. "The Acute Onset of Nausea and Vomiting Following Stereotactic Radiosurgery: Correlation with Total Dose to Area Postrema." Surg Neurol 32 (1989):40-44.
- Cole, D.R. and D. F. Duffy. "Haloperidol and Radiation Sickness." New York State Journal of Medicine 74 (1974):1558-1562.
- Drapkin, R. L., et al. "The Antiemetic Effect and Dose of Dexamethasone in Patients Receiving Cancer Chemotherapy." Arch Internal Medicine 143:1347-1349.
- Johnsrude, Irwin, Donald C. Jackson, and N. Reed Dunwick. A Practical Approach to Angiography. Boston: Little, 1987.
- Larson, David A. "The article Reviewed." Oncology (1990):37.
- Loeffler, Jay S., et al. "Stereotactic Radiosurgery for Intracranial Arteriovenous Malformations Using A Standard Linear Accelerator." I.J. Radiation Oncology 17 (1989):673-677.
- Loeffler, Jay S., et al. "The Treatment of Recurrent Brain Metastases with Stereotactic Radiosurgery." Journal of Clinical Oncology 8.4 (1990):576-582.
- Loeffler, Jay S., et al. "Stereotactic Radiation Therapy for Intracranial Arteriovenous Malformations Using A Standard Linear Accelerator." I.J. Radiation Oncology Bio Phys in Press.
- Loeffler, Jay S. and Eben Alexander. "The Role of Stereotactic Radiosurgery in the Management of Intracranial Tumors." ONCOLOGY (1990):21-31.
- Lutz, Wendell, et al. "A System for Stereotactic Radiosurgery with a Linear Accelerator." I.J. Radiation Oncology 14 (1988):373-381
- Podgorsak, Ervin B. "Dynamic Stereotactic Radiosurgery." I.J. Radiation Oncology 14 (1988):115-126
- Radionics. "The BRW Brown-Roberts-Wells CT Stereotaxic Guide." Two Major Advances from Radionics (1983):1-27
- Saint Luke's Hospital of Kansas City. Computerized Tomography Procedure Protocol. 1991.
- Saint Luke's Hospital of Kansas City. Special Procedures Procedure Protocol. 1991.
- Shaw, Edward G. and T. R. Mackie, (Radiation Therapy Oncology Group). "Phase 1 Study of Small Field Stereotactic External Beam Irradiation for the Treatment of Recurrent Primary Brain Tumors and CNS Metastases." 1990.
- Steiner, Ladisiau. "Treatment of Arteriovenous Malformations by Radiosurgery." Intracranial Arteriovenous Malformations; Chapter 19:295-311.
- Sturms, Volker, et al. "Stereotactic Percutaneous Single Dose Irradiation of Brain Metastases with a Linear Accelerator." I.J. Radiation Oncology 13 (1987):279-282.
- Wang, S. C., A. A. Renzi, and S. I. Chinn. "Mechanisms of Emesis Following X-irradiation." American Journal Physiol 113 (1968)335-339.
- Wen, Dr. "Stereotactic Radiosurgery...Ray of Hope for Patients with Inoperable Brain Lesions." Pacemaker 18.9 (1991):3.
- Winston, Ken R. and Wendell Lutz. "Linear Accelerator as a Neurosurgical Tool for Stereotactic Radiosurgery." Neurosurgery 22.3 (1988):454-462.

1994 Annual MSRT Conference will be held April 27-30, 1994 in Springfield, Mo. at the University Plaza and Convention Center. Make plans NOW to attend.

The MSRT Board of Directors will be meeting July 17, 1993 in St. Louis. If you are interested in attending, please contact your district representative for the details.

An MRI seminar will be held in Sedalia on July 17, 1993. For more information contact Mark Ellis at 816-827-9535.

The MSRT would like to officially THANK the Missouri ARCRT members for their very generous donation of \$200.00 to be used for the pursuit of Legislation for Radiologic Technologists in the state of Missouri.

Did you read the RT Image--May 10, 1993 issue. If not, you missed the national coverage of the "Education under the Arch" by Brian Keefer. Lots of pictures and information about our past conference.

Remember--Encourage your employer to advertise with the RT Image, as the MSRT has resigned our contract with them. The society receives a percentage of all ads placed for our state. These are valuable funds that could be used for legislative or scholarship activities here in Missouri.

Dan Cantrell, Interim Convention Co-Ordinator, is accepting and any all persons interested in helping with the annual meeting to be held in Springfield. If you haven't worked on a convention, then this is your opportunity. It is a very rewarding and educational experience. Contact him if you are interested.

Dan Cantrell, R.T.(R), CNMT

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