

Light Treatment and Biological Rhythms

Bulletin of the Society for Light Treatment and Biological Rhythms



Volume 3, Number 3

May 1991

ANNUAL MEETING SCHEDULE

Final preparations are under way for SLTBR's Third Annual Meeting. Co-sponsored by the University of Toronto's Clarke Institute of Psychiatry, the meeting will convene at 8:30 a.m. on 13 June 1991 at the Clarke Institute. The two-day meeting features oral research presentation sessions, an instructional course entitled *Light Treatment of Chronobiologic Sleep and Mood Disorders*, poster presentations, exhibit tables, and the opportunity to visit with colleagues and friends. Travel information is included with this issue of *LTBR* for participants who have registered before the 15 May deadline.

Late registration is available until 1 June 1991. Please return the registration form (mailed with the February issue of *LTBR*) and your payment to the SLTBR Executive Office, P.O. Box 478, Wilsonville, OR 97070. You may, instead, call/fax your request (charge card payment only) to the SLTBR office: 503-694-2404. Payment for late registration should include a \$10.00 late fee. Current registrants who have not reserved space for our Friday evening banquet may do so until 1 June with payment of \$40.00.

ANNUAL MEETING SCHEDULE

Thursday, 13 June 1991

- 8:00 - 8:30 Registration, exhibits, refreshments
- 8:30 - 12:00 Oral Scientific Presentations I
(break included)
- 9:50 - 10:20 Break: Posters, exhibits, refreshments
- 12:00 - 13:30 Lunch, posters, exhibits
- 13:30 - 17:00 Oral Scientific Presentations II
(break included)
- 14:50 - 15:20 Break: Posters, exhibits, refreshments
- 17:00 - 18:00 SLTBR Business Meeting

Friday, 14 June 1991

- 8:00 - 8:30 Exhibits, refreshments
- 8:30 - 10:30 Oral Scientific Presentations III
- 10:30 - 11:00 Break: Posters, exhibits, refreshments
- 11:00 - 12:00 Grand Rounds Presentation
- 12:00 - 13:30 Lunch, posters, exhibits
- 13:30 - 18:00 Course
*Light Treatment of Chronobiologic
Sleep and Mood Disorders*
- 13:30 - 15:30 Committee Meetings (optional)
- 15:30 - 16:00 Break: Posters, exhibits, refreshments
- 19:00 - Banquet

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Light Treatment and Biological Rhythms
Bulletin of the Society for Light Treatment and Biological Rhythms

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Unsolicited manuscripts, letters to the editor, and Bulletin Board announcements should be submitted to Dr. Michael Terman, Editor, 722 West 168th Street, Box 50, New York NY 10032. Please submit one double-spaced hard copy and a diskette file (DOS: text or WordPerfect; Macintosh: text, Word, MacWrite or WordPerfect; MCI Mail: 308-7099; BITNET: MTERMAN @ MCIMAIL.COM). Manuscripts and diskettes will not be returned. We reserve the right to edit and condense letters to the editor.

This publication is provided to SLTBR members as an entitlement for part of their dues. Annual subscription rate for non-members is \$15.00. Single copies are available at \$2.50 for members; \$3.50 for non-members.

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ORAL SCIENTIFIC PRESENTATIONS I**Seasonal Affective Disorder****D. Kripke, Chair**

Demjen et al.: Seasonal affective disorder: A controlled study of phototherapy.

Bauer et al.: Mood and behavioral effects of four-week light treatment in winter depressives and controls.

Barbato et al.: Eye blinking in winter seasonal affective disorder.

Lam et al.: Electrooculography (EOG) in seasonal depression.

Avery et al.: Dawn simulation treatment of winter depression: A controlled study.

Oren et al.: Effects of L-dopa, carbidopa and placebo on mood in winter SAD.

Magnusson et al.: The prevalence of seasonal affective disorder is lower in Iceland and amongst Icelandic descendants in Canada, than on the east coast of the USA.

Terman, M. and J. Terman: Seasonal variation in detection of dim light by SAD patients and normals.

Schlager et al.: Seasonal morbidity in a random sample of primary medical care outpatients.

ORAL SCIENTIFIC PRESENTATIONS II**Light Therapy of Various Conditions****G. Brown and M. Terman, Chairs**

Moldofsky et al.: Seasonality of pain, mood and sleep in fibrositis vs rheumatoid arthritis patients.

Roberts et al.: Cellular immune response to visible light treatment of SAD patients.

Rosenthal et al.: Effects of light on mood and T-cell values in HIV-infected individuals with and without winter-SAD.

Deltito et al.: The effect of bright light treatment on non-SAD bipolar spectrum depressed patients.

Ancoli-Israel et al.: Light exposure and sleep in nursing home patients.

Campbell et al.: Bright light treatment of sleep disturbance in older subjects.

Drennan et al.: Night lights shorten long and irregular, but not regular, menstrual cycles.

Dawson, D. and S. Campbell: Timed exposure to bright light improves sleep and alertness during simulated night shifts.

Eastman, C.I.: Bright light on the night shift: Circadian rhythms can advance or delay.

ORAL SCIENTIFIC PRESENTATIONS III**Photobiology****N. Rosenthal, Chair**

Gaddy et al.: Differential melatonin suppression despite equal corneal illuminance.

Edelson et al.: Effect of light intensity on oral, rectal and tympanic temperature and full body activity.

Dollins et al.: Timed exposure to bright light improves sleep and alertness during simulated night shifts.

Lewy et al.: A complete PRC for melatonin administration in humans.

Kern, H.E.: Twilight zeitgebers for daily resetting of circadian pacemakers: A rate hypothesis.

Brainard et al.: Effects of bright illumination on melatonin, prolactin and cortisol rhythms in subjects during sustained wakefulness.

POSTER PRESENTATIONS***Thursday, 13 June**

Anderson et al.: Nighttime body-core temperature in SAD patients following 5 days' bright midday light.

Booker et al.: Health correlates of seasonal affective disorders in Alaska.

Cole et al.: Effects of one-eye and two-eye illumination with illuminated blinders on the breeding season in horses.

Cupahug et al.: Cerebral blood flow before and after light therapy in seasonal affective disorders.

Dumont et al.: Bright light therapy in hypersomnia: A case study.

Faedda et al.: Seasonal mood disorders: Patterns of seasonal recurrence in major affective disorders.

Glod et al.: Circadian activity rhythm dysregulation: A marker for major mood disorder in children and adolescents.

Glotzbach et al.: Light in the newborn nursery: Chronobiologic issues.

Kranz et al.: Predictors of response to light therapy for SAD.

Minors et al.: Phase shifting effects of a single 3-hour bright light pulse in humans.

Friday, 14 June

Myers et al.: Non-circadian and energizing effects of light on temperature and alertness.

Nemeth et al.: Biochemical investigations in seasonal and non-seasonal depression.

Norden et al.: Antimanic and prophylactic efficacy of fluoxetine in seasonal and non-seasonal bipolar disorders.

Rice, J.: A photobiological approach to light therapy: Green versus full spectrum light.

Schultz-Ross et al.: Phototherapy in the context of psychotherapy.

Shapiro et al.: Seasonality and rhythms in psychiatry.

Leviton et al.: Seasonal subgroups in bulimia nervosa (BN): Implications for light therapy of BN.

Francesetti et al.: Effectiveness of light therapy in eleven patients with major depression.

Hagfors, C.: Morning light simulation study in 100 normal Finnish families during winter period.

Meesters et al.: The use of bright light in winter depression: Treatment and prevention.

**All posters will be mounted for viewing on both days. Presenters will be available for discussion at their posters during the last 45-minute portion of the lunch break on the day indicated.*

GRAND ROUNDS PRESENTATION

A conjoint presentation to the Society for Light Treatment and Biological Rhythms and for Grand Rounds for the Clarke Institute of Psychiatry.

Levitt et al.: Light visor treatment of SAD.

COURSE***Light Treatment of Chronobiologic Sleep and Mood Disorders***

Lewy, A.J.: Basic and clinical chronobiology.

Sack, R.L.: Clinical chronobiology: Lessons from the blind.

Rosenthal, N.E.: Diagnosis and treatment of SAD

Kripke, D.F.: Light therapy of non-seasonal depression, jet lag and shiftwork.

EXHIBITORS**Ambulatory Monitoring, Inc.**

William Gruen, President
Ardsley, NY

Bio-Brite, Inc.

Gordon D. Wallace, President
Bethesda, MD

Health Light, Inc.

Duncan Worthington, President
Hamilton, Ontario, Canada

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SLTBR welcomes the active participation of its Corporate Members in presenting technology they have developed for the market. SLTBR, however, does not endorse or specifically recommend any particular lighting product for clinical, research or general purpose use. Furthermore, SLTBR maintains no responsibility for implicit or explicit claims for efficacy, or instructions for use, that may be contained in literature written and distributed by its Corporate Members.

PRESS INVITED TO ANNUAL MEETING

Members of the press are cordially invited to attend SLTBR oral presentations, tutorial course, poster presentations and exhibits at no charge. Please request a press badge in advance by writing on letterhead to Marty McCullough, Executive Secretary, SLTBR, P.O. Box 478, Wilsonville, OR 97070.

APSS/SLTBR JOINT CME COURSE

SLTBR meeting registrants are welcome to attend the SLTBR/Association of Professional Sleep Societies joint continuing education course entitled *Light Treatment of Circadian Rhythm and Sleep Disturbances* scheduled for 15 June from 8:00 a.m. - 5:00 p.m. at the Westin Convention Centre in Toronto. Registration for this program is being administered by APSS. Registration fee of \$100 should be sent directly to APSS. An appropriate registration form is included with this *LTBR* mailing for those who are already registered for the SLTBR meeting. Others may contact our office for this form or call APSS directly at (507) 287-6006. Program topics and speakers are summarized below. A bound volume of germinal papers on these topics will be distributed to course participants.

M. Terman: *Ways to deliver therapeutic light.*

D.-J Dijk: *Light and the physiologic control systems for circadian rhythms and sleep.*

R.L. Sack and H. Martens: *Absence of photic input: circadian rhythms, sleep and phase control in the blind.*

R.L. Sack and M. Terman: *Advanced and delayed sleep phase disorders, and hypersomnia: light treatment approaches.*

S.S. Campbell: *Shiftwork distress: circadian rhythms, sleep performance, alertness, and indirect and direct effects of light.*

R.L. Sack and M. Terman: *Winter depression: diagnosis, light treatment.*

D.F. Kripke: *Nonseasonal depression: light therapy, drug interactions.*

D.F. Kripke: *Premenstrual syndrome (LLPDD): light treatment approaches.*

S.S. Campbell, D.-J. Dijk and S. Ancoli-Israel: *Circadian disturbances and sleep in the elderly: light treatment approaches.*

BOOK REVIEW

Sleep and Biological Rhythms — Basic Mechanisms and Applications to Psychiatry

Edited by Jacques Montplaisir and Roger Godbout (New York: Oxford University Press, 1990, 272 pp, \$49.95).

The editors have assembled internationally recognized experts who have written clear, concise chapters in their areas of expertise. The contributors to this book have done an excellent job updating the reader on current advances in selected topics in sleep and biological rhythms. Extensive bibliographies allow the reader to follow up on areas of special interest.

The chapter by Lewy et al. includes a concise summary of the development of the Portland perspective of the one-pacemaker model of circadian rhythms and the use of the Dim Light Melatonin Onset as a marker for the clock. Lewy's phase-typing theory is summarized, as is the controversy concerning the most appropriate timing of bright light therapy in winter depression. Since the original work of the first author led to several major advances in this area, the chapter is also of historical importance for those interested in light therapy for winter depression.

The chapter by Terman and Schlager about dawn simulation provides the reader with a brief summary of the animal work in this area and describes their pilot data. In an open design, they were able to show significant improvement in 6 of 8 winter depressives receiving dawn simulation. Further, they were able to demonstrate a phase shift of the melatonin rhythm in two patients. Having just completed a study showing dawn simulation to be superior to a placebo condition and similar to the effect we have seen with standard bright light therapy, I feel that this chapter will be frequently cited for the pioneering work in the development of dawn simulation.

The chapter by Czeisler et al. summarizes their proposed method for measuring circadian period. To reduce the effects of the sleep-wake cycle on the endogenous oscillator, they impose a 28 hour sleep-wake schedule,

forcing a state of internal desynchrony. Estimation of circadian phase through the use of constant routines is done when the temperature cycle is approximately 180° out of phase with respect to the sleep-wake cycle. The period can be calculated by regression analysis of the estimated circadian phase assessments. A case report shows that this technique gives an estimated circadian period similar to that of spectral analysis of the temperature data. Having done two studies utilizing Czeisler's constant routine protocol for estimating circadian phase, I am impressed with the investigators' energy and determination in pursuing such a demanding protocol.

Wehr does a scholarly job in his chapter, "Effects of Wakefulness and Sleep on Depression and Mania". He reviews an extensive sleep deprivation literature, not only in relation to treating depression but also to induction of mania and to activating effects in schizophrenia, and summarizes problems in interpreting these findings. Different models for the mechanism of action of sleep deprivation are evaluated: the internal coincidence model, the rapid eye movement (REM) sleep model, and the slow wave sleep (SWS) model. He concludes by summarizing his novel, compelling thermoregulatory model of sleep deprivation. Wehr reviews the data showing that depressed patients have elevated nocturnal temperatures and argues that the sleep deprivation in effect cools the brain, since sleep itself is analogous to heating. He briefly mentions an ingenious study showing that sleep deprivation is very effective in an 18°C ambient temperature, but that the effect is blocked by a 33°C condition. Although I am biased by my own view that thermoregulation is intimately involved in the pathophysiology of affective disorder, I believe any reader interested in sleep or depression will find this chapter particularly fascinating.

The chapter by Broughton et al. focuses on ultradian rhythms, especially the 12-hour (circasemidian, hemicircadian) rhythm. The chapter begins with the best review of the ultradian rhythms that I have read. The authors share with us a reanalysis of their previously published extended sleep studies trying to understand the reemergence of SWS after 13.5 hours of extended sleep. They compare baseline extended sleep with acutely delayed extended sleep and adapted delayed extended sleep. Their data support roles for both a circadian factor and sleep dependent factor in the development of the SWS 12-hour periodicity. Anyone interested in napping should read this chapter.

The chapter by Gillin and Shiromani, "Cholinergic Mechanisms in Sleep — Basic and Clinical Applications", demonstrates the great breadth and depth of the authors' knowledge. They are able to lead us from the clinical problem of abnormal REM sleep in psychiatric disorders to the details of the neuroanatomical organization of the cholinergic system and REM generation and then back again to clinical research studies of cholinergic REM induction. The journey is interesting and well worth taking. The authors provide us with new data concerning arecoline induction of REM sleep in depression. While these data are not as compelling as their previous data concerning increased muscarinic sensitivity in depression, the reader is left with a clear view of the importance of the cholinergic system in REM generation.

In the thought-provoking chapter by Mendelson concerning chronic insomnia and sedative/hypnotics, the author shares his insights based on a vast experience in this area. He reviews data concerning the perception of the sleep experience by patients with insomnia and summarizes some of the recent physiological data. He confronts the question of how sedative/hypnotics work, pointing out the lack of clear data showing physiological effects that might explain their efficacy (other than a modest increase in EEG sleep duration). Mendelson offers some interesting possible explanations, including a thermoregulatory view based on his finding of elevated nocturnal temperature in insomniacs compared to controls: hypnotics serve to lower temperature. He also entertains the possibility that cognitive effects of hypnotics may be important to their therapeutic effect.

The chapter by Godbout et al. reviews the neuropharmacology of restless legs syndrome and narcolepsy. The effects of benzodiazepines, baclofen, opioids and L-dopa in restless legs syndrome and the effects of L-dopa, gamma-hydroxybutyrate, viloxazine and zimeclidine in narcolepsy are concisely described and related to theories of the underlying pathophysiology.

As a clinical researcher, I am unable to evaluate the several chapters concerning basic animal research. However, they are uniformly clear, readable even to the clinician, and provide important data for understanding basic mechanisms and generating hypotheses for human studies. As with the clinical chapters, authors of the basic science chapters are stars in their areas. Moore describes the circadian system and sleep-wake behavior including his work on the suprachiasmatic nucleus.

Rusak summarizes data supporting the concept of closed-loop control system for the mammalian circadian pacemaker. McCarley focuses on the cholinergic control of REM sleep production. Steriade and Pare review work concerning neurophysiological studies of pontogeniculooccipital waves and their relationship to REM events. Krueger et al. summarize a large literature concerning putative sleep neuromodulators.

Overall, the book is well organized, and the chapters form a logical progression. Anyone interested in circadian rhythms and sleep will profit from and enjoy reading this compendium.

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MEDIA REVIEW

SPECIAL REPORT: On Health

(Knoxville, TN: Whittle Communications, February-April 1991, 56 pp, \$3.50).

SPECIAL REPORT: On Health is an oversized (10½" x 14"), 56-page high gloss lay magazine recently circulated in the United States (though apparently not in Canada), and devoted exclusively to "Understanding Sleep and Other Body Rhythms". Articles include "A Good Night's Sleep", "Blame It on Shiftwork", "A New Light on Winter Blues", an article on PMS, and even an article on whether and how "new skin-care products [can] work in harmony with your body's natural rhythms". In a manner that befits the 90s, high-tech looking graphics imaginatively illustrate important chronobiological principles. Some of the corresponding copy, however, lacks the explanatory detail typical of the illustrations.

The *SPECIAL REPORT* begins with an interview with Charles Ehret of the Argonne National Laboratory. The author of the piece, entitled "The Best of Times, the Worst of Times", sadly chooses to devote more space to a description of lunch at Argonne than he does to his explanation of basic principles of circadian physiology. However, if one is to judge by the curiosity that patients usually exhibit about wanting to function normally in a relatively sleep-deprived state, then lay readers might be very interested in the author's description of 24-hour testing to determine times of peak performance for various tasks.

A question and answer session with Franz Halberg of the University of Minnesota covers the potential for using chronobiology as an adjunct to medical therapy, such as in determining that "cancer cells are more susceptible to chemotherapy drugs at certain times." There is balance in the reporting of these possibilities in that opinions contrary to Halberg's are adequately represented, opinions which cite the lack of scientific data to justify the cost of implementing his proposals.

A section entitled "A Good Night's Sleep" follows. It is evident that considerably more research went into writing this particular grouping of articles which seem to focus on more "mainstream" subjects in the field of sleep disorders, subjects such as our societal trend towards insufficient sleep and the need for proper sleep hygiene (Mary Carskadon and Charles Pollak are interviewed), the resurgence of interest in the afternoon nap (David Dinges and Timothy Roehrs are quoted here), dreams (Allan Hobson), sleeping pills (Peter Hauri, Anthony Kales and Thomas Roth, among others, are quoted), mutual sleep disruption by bed partners, and pediatric sleep development and disorders. Brief reports on the symptoms of sleep apnea and narcolepsy round out this section.

"Blame It on Shiftwork" will likely be of great general interest; the historical facts of shiftwork-related disasters illustrate the practical importance and applications of chronobiology and sleep disorders medicine. Descriptions of airline pilots on long haul flights, the disasters and potential disasters associated with nightshift nuclear power plant operators, and the incidence of motor vehicle accidents during the early morning hours are mixed with a smattering of circadian physiology presented by Richard Coleman. The kind of reporting one finds in this section illustrates how the *SPECIAL REPORT*, and other publications like it, can successfully bring home to the lay population at large important messages about the day-to-day relevance of chronobiology, using illustrations of, and references to, the disastrous effect on public safety and on the economy of such well-known shiftwork-related accidents as Three Mile Island, Chernobyl and Bhopal.

The final substantial article is entitled "A New Light on Winter Blues", and gives a reasonable, if superficial, overview of seasonal affective disorder and its variants, and light therapy. Skimping somewhat on detailed explanations of physiology, the text does convey the signs and symptoms of a composite SAD patient and mentions the experiences and contributions of Charmane

Eastman, Herbert Kern, Alfred Lewy, Michael Terman, Norman Rosenthal, Thomas Wehr and others. In a separate box, readers are directed to contact SLTBR for more information about SAD.

This publication has, to some considerable degree, traded in a comprehensive and methodical approach to explaining complicated (and still controversial) physiology for a more visually appealing format. As is so often the case, the two are really not compatible, but it is the latter which is more palatable to a public that still remains to be educated about the potentially devastating effects of sleep disorders. If, indeed, *SPECIAL REPORT: On Health* is sitting on the waiting room tables of health care practitioners throughout America, then it will help clinicians and researchers in a variety of related fields raise the profile of the disorders that concern us, so that some time in the future the appropriate attention and research support will follow.

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TO THE EDITOR

Operation of a Light Therapy Clinic

Although there have been many reports of patients receiving light therapy for SAD in research settings, none have discussed the operation of such a clinic in a private setting. The Light Therapy Clinic (LTC) at the Cleveland Clinic Foundation (CCF), established in 1988 by Joseph Calabrese, M.D., is a case in point. Our experience may be of interest to colleagues who are considering establishing similar programs.

CCF is a group practice made up of about 470 physicians, with a hospital of 1000 medical and surgical beds. Its physicians manage more than 600,000 outpatient visits and 32,000 hospital admissions each year. The Department of Psychiatry has 13 full-time psychiatrists and five full-time psychologists.

LTC patients include both self- and physician-referred individuals with SAD symptoms. At the end of each summer a notice is sent to all department members reminding them of the LTC. We have also been granted yearly interviews by the local CBS-TV affiliate, which

has helped generate referrals. As current director of the LTC, I conduct all patient screenings using a semi-structured DSM-III-R interview, as well as the Beck Depression Inventory and the SIGH-SAD. Over the last two years I have evaluated 68 patients, 54 of whom were determined to have SAD.

Patients who meet criteria for SAD — or even subsyndromal SAD — are given the option to begin medication, start light therapy, or both. Those who choose light therapy go on a preliminary trial period of two weeks' duration. The LTC has a light therapy room that can accommodate up to six patients at a time, and is open beginning at 7 a.m., at a cost of \$8 per session. Most patients electing to use the light room, rather than home treatment, are CCF employees or nearby residents. We have worked with a lighting supplier whose products have been tested in research settings. Selection of a single supplier also has had the benefit of generating financial arrangements favorable for our patients. For example, they can pay for the apparatus in three monthly installments, and all rental costs are applied toward purchase. In our experience, it is best to have a ready stock of light units on the premises; in our first year of operation there were significant delays in receiving apparatus when shipped on individual order.

We currently rent and sell units, all providing 10,000 lux intensity. Prices are set at professional discount rates. The rental fee is \$100 for the first week and \$50 for the second. Patients are encouraged to apply for third-party reimbursement and are asked to contact us if they receive refusals. Only two patients have, in fact, come for such assistance and, after sending SLTBR's *Insurance Endorsement Packet* [see Publications List enclosed with *LTBR* Vol. 3, No. 2], we heard of no further problems. We have not tracked the actual reimbursement rate, however.

Patients go through a preliminary two week trial period and are seen twice, at the end of weeks 1 and 2. The starting dose is 10,000 lux for 1 hour upon awakening. If there is no indication of response after week 1, the duration is increased to 1½ or 2 hours. If there is still no response, we recommend medication instead. Only three of our patients have failed to respond to light therapy. If a patient becomes overstimulated or hypomanic, the exposure duration is reduced in 20-30 minute steps. Once stabilized, patients are seen again in March or April to assess their experience with light therapy and to plan for the following fall/winter season.

Operating an LTC in the private practice setting is quite feasible, though individual or small-group practitioners may need to compromise on procedures available only in the clinic setting (e.g., the dedicated light room). I would be happy to hear from other practitioners who have set up or are thinking about setting up such clinics to discuss any start-up or ongoing management problems. Many of our patients have remarked about their relief

upon finding practitioners who can recognize and treat their seasonal affliction, and the private clinic model thus serves a real need.

Enrico G. Camara, M.D., Dept. of Psychiatry and Psychology/P-68, The Cleveland Clinic Foundation, 9500 Euclid Ave., Cleveland, OH 44195. Tel 216-444-0477.

BULLETIN BOARD

WELCOME TO NEW MEMBERS

We welcome the following new members who have joined SLTBR since publication of the February 1991 issue:

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MEMBERSHIP DIRECTORY IN PRODUCTION

The membership directory will be published as soon as our new members have had the opportunity to complete the professional interest form mailed to them. Deadline for receipt of this form is 1 June 1991. Our goal is to include the directory in the conference packets for our annual meeting participants in Toronto and distribute the remainder by mail.

INFORMATION PACKET WELL RECEIVED

Since developing our \$5.00 public information packets in February, we have mailed over 400 to interested individuals, primarily in the United States and Canada.

In order to keep the packet's contents current, we will update the bibliographic, research and referral lists periodically. An updated clinical referral list will be printed in conjunction with the completion of our membership directory. In order to have your name included in this list, we must have written confirmation from you in our files. If you did not check the "referral box" on your membership renewal form or have not otherwise advised our office of your interest in clinical referral, please write to Marty McCullough at the SLTBR office, P.O. Box 478, Wilsonville, OR 97070.