First Annual Scientific Meeting

Opening Session

Van Wezel Performing Arts Hall
Sarasota, Florida

Sunday, June 10, 1973
8:00 P.M.
CHARTER OFFICERS

Kendric C. Smith, President
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Karl H. Norris
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Frederick Urbach

EXECUTIVE SECRETARY

Richard J. Burk, Jr.
American Society for Photobiology,
4211 39th Street, N. W.
Washington, D. C. 20016
8:00 P.M. to 8:30 P.M.  
SPEAKERS

Kendric C. Smith  
President American Society for Photobiology

Alan D. Conger  
Past President Radiation Research Society

Luiz R. Caldas  
Member Executive Committee of Comité International de Photobiologie

Ray Jensen  
Manager Biological Programs, Climatic Impact Assessment Program of the Department of Transportation

Honorable Paul G. Rogers, M.C.  
Chairman Subcommittee, Public Health and Environment

8:30 P.M. to 9:00 P.M.  
STUDYING PHOTOBIOLOGY WITH TIME-LAPSE PHOTOGRAPHY  
John Ott
SARASOTA ARRANGEMENTS COMMITTEE

JOHN NASH OTT, Chairman
PHILIP L. SALVATORI
HOWARD WILLIAMS

WOMENS' COMMITTEE

MRS. SCOTT APPLEBY, Chairman
MRS. JOHN G. ALLBRIGHT
MRS. ELIAS ATKINS
MRS. HURLEY BOGARDUS
MRS. J. W. CURTIS
MRS. MORGAN DAVIES
MRS. C. L. EVANS
MRS. WHARTON INGRAM
MRS. ERNEST JOHNSON
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MRS. LAWRENCE MARSHALL
MRS. KENT MCKINLEY
MRS. LAWRENCE MEEKER
MRS. JOHN OTT
MRS. H. B. VAN CLEVE
MRS. NORMAN WAITE
MRS. S. A. WELSH
MRS. E. K. WILD
Society For Photobiology Speakers

... Rep. Rogers, President Smith and Sarasotan Ott
Photobiology Unit Discusses Effects Of Polluted Light

By JEFF SMITH
Herald-Tribune Staff Writer

"The biological effects of light have for too long been ignored by the scientific community and the public," said Dr. Kendric C. Smith, and the first annual meeting of the newly formed American Society for Photobiology had begun.

In Sarasota for their first meeting at the invitation of Sarasotan John Ott, the 200 new delegates "joined together" Sunday night to hear U.S. Rep. Paul G. Rogers of Florida, among other speakers, agree the "effects of polluted light have been overlooked."

"We've walled ourselves in behind glass and live under artificial light, drastically changing our environment," said Rogers, chairman of the House subcommittee on Public Health and Environment.

Only recently, explained Dr. Smith, of the Stanford Medical Center, have dramatic effects of such changes been given attention. The Society for Photobiology, or group of medical researchers, chemists, and physicists working on the biological effects of light, has been formed to correct that situation.

Throughout the week, the Society will be meeting in Sarasota to "call attention to the effects of light as related to national problems, and educate others — even within our own discipline — of the importance of light and its biological effects," Smith explained.

Sarasota was chosen for the "historic meeting" at the behest of Dr. John Ott, whose work in time-lapse photography has been valuable to photobiological studies and even to legislation already enacted as a result of studies.
Light Pollution A New Concern, Legislator Tells Meeting

By DOROTHY STOCKBRIDGE
Journal Staff Writer

Light pollution, a new concern, was among the challenges Rep. Paul G. Rogers of West Palm Beach offered up to the American Society for Photobiology holding its first annual scientific meeting in Sarasota.

"We've walled ourselves behind glass and live under artificial light, drastically changing our environment," noted Rogers, chairman of the House subcommittee on public health and the environment. "Many life responses are found to respond to a delicate balance of light waves. It's the responsibility of government to establish proper safeguards to insure against a polluted spectrum."

Rogers credited the Sarasota host to the Photobiology group Dr. John Ott, with pointing out the harmful effects of television radiation on plants and laboratory mice.

"As a result of research done right here in Sarasota we were able to sponsor the Radiation Health and Safety Act of 1988," said Rogers. "We need to look at those standards again to see if the levels are low enough. I think we'll find them too high."

Rogers pointed out the historic significance of the first meeting, noting that by correlating research through a photobiology group more attention can be focused on important findings.

"I hope that photobiology will be recognized as much as anything in medical research. The nation needs your services," Rogers concluded.

Dr. Kenneth C. Smith of Stanford Medical Center, president of the new photobiology group, said that people are becoming more aware of the effects of photobiology -- the phenomena of ultra-violet, visible and infra-red light.

Focusing attention on the field is the use of light therapy in treating congenital jaundice in premature babies, reducing the total body blood transfusions that had been necessary.

A question as to whether the supersonic transport exhalations would destroy the ozone layer in the atmosphere, letting through more ultra-violet light, has also turned attention to biological effects of upsetting advance.

A third implication that's making medical men sit up and take notice is the use of photobiological techniques in treating the common cold.

The School Board is scheduled to view the films July 3.

Previous time-lapse work by Ott indicated that different kinds of artificial light could upset the normal process of photosynthesis. These discoveries led to curiosity as to what happened to animals.

Under ordinary incandescent light, chinchillas produced almost all male offspring; under bluish, almost all female which are considered more valuable. Today chinchilla breeders (and now horse breeders) use lights recommended by Ott and obtain up to 85 per cent control on the sex of foetuses. Ott's findings have pointed to the fact that cutting down the ultra-violet part of the spectrum by window glass or eyepieces can be harmful to the health.

Laboratory animals living under artificial light lacking part of the spectrum have developed tumors more quickly than control groups.

"It may be raising more questions than answering," Ott told his audience.

Finding the answers is the challenge of the photobiology group.
Siestas Can Help Avoid Cancer

By DOROTHY STOCKBRIDGE
Journal, Staff Writer

Mad dogs and Englishmen go out in the noon-day sun.
And so do people who risk skin cancer, according to Dr. Frederick Urbach, dermatologist and Temple University researcher.

He’d like to see Americans adopt the siesta of the Latins living near the equator who know better than to venture out when the rays of the sun are at their highest.

“Stay out of the sun from 10 until 2 (that’s 11 to 3 o’clock DLS),” said Dr. Urbach, in Sarasota for the first scientific meeting of the American Society for Photobiology.

He said that skin cancer accounts for one-third of all cancer in the United States - some 300,000 new skin cancer cases every year. Mostly it’s curable and only 4-5,000 of this number will die from the disease.

“It’s almost entirely preventable,” lamented Dr. Urbach, who is lucky to have the kind of skin that tans easily, protecting him from the burn and blister that causes the trouble. He said that 60 to 70 per cent of the ultraviolet rays that produce the burn and delayed skin changes including cancer penetrate during the four hour period around noon.

Dr. Frederick Urbach And Faber Birren

Skin cancer among Caucasians is on the increase throughout the world because of increased leisure patterns, he said.

“Before World War II it was fashionable to be pale. The poor who worked outdoors had the tans,” he said. “Now it’s a status symbol to have a tan. It proves you have enough money to be out on the golf course or on the beach.”

Evidence is building up that skin cancer and premalignant skin lesions, not to mention wrinkles and aging skin, are caused by prolonged sunlight exposure. Blacks and other dark-skinned people escape this hazard, which is why a 70-year-old black appears ageless. His skin has been protected.

A girl who’s been deeply tanned for 10 years will look older than a girl of the same age who has been more careful of the sun, said Dr. Urbach. He calls sunlight one of the great pleasures of life but only a few minutes of exposure will provide the Vitamin D the body needs.

Even with the best suntan lotion, modern man still must practice moderation or risk long-range harm. Genetic factors, related to the capacity of the skin to tan, are also important. In redheads or people of Irish, Scot or Welsh extraction, the...
By DOROTHY STOCKBRIDGE
Journal Staff Writer

Many offices and factories could cause snow blindness.
"High intensity lights and white walls are awful on the eyes," said Pabel Birren, a
Stamford, Conn., color consultant, who addressed the American Society for Photobiology in Sarasota this week.
"For the best concentration keep the lighting but paint the walls rose!"

It's not that he's partial to rose, but he believes that a color environment that's interesting and attractive makes for factory safety and relieves eye fatigue.

He has learned that colorfully decorated hospitals can help in the recovery of mental patients.

"Colors can be psychological therapy in drawing the patient's attention out of himself to his environment. A pretty nurse would do the same thing," joked Birren.

Yellow-green and purple would never be used in a hospital, he said, because their after-image adds a pallor to the skin tones.

Variety is good — one room yellow, the next one blue — so that as the patient walks around he has a constant shift in his visual stimulation.

People confined to areas without color stimulation are subject to hallucinations, he related.

Birren was trained as an artist because his father was a painter but said he had no talent along those lines. His interest in color stuck however.

Historically, red is exciting and associated with blood, fire and warmth. Orange and yellow are cheerful and have a stronger impact than cool colors. Green is neutral, like nature, while blues relax and pacify.

Following the findings of photobiologists, Birren believes that artificial lights should have a moderate amount of ultraviolet.

"I'm here as a student. A tremendous amount of this material has practical application to human welfare," he said. "I'm not interested in appearance and aesthetics as much as human reactions."
Scientist Explains Dangers Of Severe Sun Exposure

By JEFF SMITH
Herald-Tribune Staff Writer

As most Floridians would agree, "to avoid the sun would be to exist without one of the greatest pleasures in life." Many Floridians may not realize, though, that individual susceptibility to the sun can be affected by such things as hobbies, occupation, habits, genetic background, and total lifetime sunlight exposure, and that severe exposure will cause "unhappiness and serious illness."

Those are the conclusions of Dr. Frederick Urbach of the Temple University Health Sciences Center, as related in a symposium Thursday of the Society for Photobiology meeting in Sarasota.

Sunburn, he said is due to "acute overexposure of the shorter wavelengths of ultraviolet radiation in sunlight." The long term effects of such exposure, which may cause the unhappiness and illness, are skin cancer and precancerous and malignant skin tumors. Aging or wrinkling of the skin, in fact, is nothing more than a reaction of the skin to lifetime sunlight or light exposure.

Susceptibility to skin cancer and tumors is affected first by the intensity and duration of the ultraviolet component in the sunlight. Epidemiological studies carried out in Queensland, Australia, and Galway, Ireland, he said, have shown "a highly significant correlation" between skin cancer incidence and great lifetime sunlight exposure.

This relationship is in part due to cumulative dose, but Urbach stated, it also depends on the duration of high intensity exposure each year - which is where habits, occupation, and hobbies come into play.

An additional factor which determines susceptibility to light is heredity, stated Dr. John H. Epstein of the University of California. Persons whose skin genetically lack the capacity to produce melanin (to tan) are more susceptible to the sun.

"Individuals of Celtic origin of light complexioned individuals fit into this group," says Epstein.

In another category, certain genetically determined amounts of chemicals cause "chemical photosensitization leading to phototoxic damage." A third group delineated by Epstein contains less prevalent genetically-consequent reactions to the sun.

The wave lengths of sunlight which are modulated by the presence of ozone in the stratosphere are those that are "detrimental to biological systems." It is in this same wavelength region of light, however, that produces "the essential vitamin in the skin of man: vitamin D," said Urbach. "Thus, the situation is one of balance: sunlight is necessary for life, yet, in excess it is harmful."
Color Role In Nature Intrigues Coeds

By DOROTHY STOCKBRIDGE

Photophosphorylation and redox potential don't pertain a trio of pretty coeds from the Northwestern University.

The girls, doctoral students in biochemistry, are among the few women at the first annual scientific meeting of the American Society for Photobiology, taking place through Thursday on Lake Beach.

In fact, peptide Jennifer Culbert is presenting a paper on the dependency of environmental redox potential of bacterial photophosphorylation on rhodopseudomonas spheroides. If you have a couple of hours, she'll patiently explain that has something to do with bow light excites bacteria.

The girls are pretty excited about themselves being in Sarasota for the meeting.

"But when you go to all the meetings, it's work," informed Jennifer who was trying to figure when she was going to put some of that sunlight, the scientists have been studying to work on her sun shopping on the circle and eating some Florida seafood were also on the minds of her fellow students Therese Cotton and Hong Kong born Mayfair Kung.

Mrs. Kung is married to a doctoral candidate in biochemistry and Jennifer is engaged to one, which Jennifer figures will help along the marital bliss.

"This kind of mental work is exhausting," Jennifer pointed out.

Mrs. Cotton, who's married to an engineer, has had a few interruptions in her schooling — four of them when her children, now 10, 7 and 3 months, were born.

While the girls admit they are decided in the minority at the scientific meeting, they said that girls make up about half the biochemistry students at Northwestern — a much higher percentage than in any of the other chemical fields.

"The ultraviolet world of insects" was the topic picking them into the Rabi fellowship dinner room Monday afternoon. Timothy H. Goodenough of Yale University was explaining that vision for many insects extends into the ultraviolet region which is a distinct color, because near UV light is the most effective in attracting insects. Insect traps are fitted with UV lamps. Conversely, because lamps that are poor in blue and UV light offer much less stimulation to insects, yellow bulbs are used to light porches and patios. Flower colors frequently involve patterns of differential UV light reflectance that flag prospective mates. (It only works with but can be appreciated by insect pollinators but not by the unaided human eye. Butterfly wings also contain patches of high UV reflectance which termites, flies Many insects navigate by the polarization patterns of natural sky light, involving near UV and ultraviolet light.

One of today's featured symposia focuses on the role of light in the human environment. Visible light, as much as ultraviolet or infrared radiation, has the ability to exert measurable biological effects. A new appreciation of this fact has been stimulated by the use of light therapy in treating psychiatric patients with phototherapy. Phototherapy and spectrophotometry are now becoming widely used as aids in the diagnosis of disease. By using light in combination with photosensitizing dyes, viruses that produce disease, such as acid stains in humans and malignant tumors in experimental animals are caused to regress.

Studies of the effects of constant dark or light environment and light of differing spectral distributions have shown effects on organ size, growth patterns and sexual maturation in some animal species.

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Color Role In Nature (continued)

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Studies of the effects of constant dark or light environment and light of differing spectral distributions have shown effects on organ size, growth patterns and sexual maturation in some animal species.

The psychological effects of light, particularly of colors, are well known but not well understood. Light intensity as well as wavelength may alter productivity and mood. The penetrance of visible light rays into tissues deeper than the skin has not been adequately measured. Investigations have demonstrated a significant transmission of blue light through the entire abdominal wall of the rat. Light is perceived by structures other than the eyes in many animals. Pinpointing these photoreceptors presents a challenge to the ingenuity of photobiologists.

The types and sources of artificial light, intensities, spectral characteristics and the chemical, physiological and psychological effects on man present enough problems to keep photobiologists busy for many more scientific sessions.
PHOTOBIOLGY MEET — W. Dean Rupp, right, of the Yale University School of Medicine, and Alice F. Stevenson of Ft. Myers check in for the first annual scientific meeting of the American Society for Photobiology being held on Lido Beach. Helping with registration, from left, are Joann DeLuca, Barbara Coberly, Emma Walsh, Celia Terry and Mrs. Sally Appleby.
Body Chemistry Influenced By Light

By JANE SHEETS
Herald-Tribune Staff Writer

"I believe we need to know much more about natural and artificial light and how it does to us and to the plants and animals sharing our world. Modern technology has made our old ideas about light obsolete," said Dr. John N. Ott.

Ott is the head of the Environmental Health and Light Research Institute which this week will welcome members of the American Society of Photobiology at the first annual meeting. The opening session will be held Sunday at 8 p.m. in the Van Wezel Performing Arts Hall.

Ott, who retired from a banking career in 1977, has been devoting full time to his hobby — photography. He became intensely interested in time-lapse photography and so participated in a number of Disney films and other motion pictures. One of the most notable films was "On A Clear Day," starring Barbara Streisand.

"I had noticed," said Ott, "the way light affected blossoms and plants in time-lapse work, and in experiments I made on sex determination in fish and litters of chinchillas. Enough was learned to serve as a basis for further experiments with horses, and the results so far indicate that the same responses will be obtained with these larger animals.

"Light enters through the eye, which stimulates the pituitary gland, which is the master balance wheel of the entire glandular system.

"If the entire glandular system can be affected by light, the resulting consequences and possibilities of what this might mean are utterly fantastic. Different types of light and lighting conditions from natural unfiltered sunlight to artificial light could affect the physical well-being of an individual." Ott has just completed some fascinating films dealing with fluorescent lighting in classrooms. For the last two months he has been taking pictures at Gocio Elementary School and these films will be shown at the Van Wezel on Sunday.

In the first group of pictures, primary graders were working under standard schoolroom fluorescent lighting. Most of the youngsters were fidgety, distractable and paid little attention to classroom procedure.

Then after leaded shields were added to the lighting, he again took a series of films at intervals of slightly less than two months and then slightly less than three months. The results were most unbelievable. One little boy who stood out in the first films because of his constant motion and who was inactive to everything, even his own head-banging, had changed in behavior to a quieter child, able to sit still, able to concentrate on routines, and, according to the teacher, had even learned to read in that short period of time.

Ott is also greatly interested in the effects of TV radiation. In one experiment with rats, two were placed in a cage, protected from TV radiation by only a sheet of black paper. A second pair had lead shielding from the radiation. The first couple fought and ran ceaselessly — the second pair were normally placid and seemed content in their surroundings.

"A safety standard of .5 mR per hour set up by the 1968 Radiation Control Act," stated Ott, "is the new level since the discovery of the X-ray in 1995 that lower "safe" levels have been set. And we have now discovered that even .3 miliroentgens of radiation are too much and adversely affect children."

Perry A. Sperber, MD, in a report appearing in the May issue of the Journal of the Florida Medical Association states:

"The pineal gland obviously relays data concerning daily light wavelength cycles, color information, and artificial light sources. Changes in daily light reception by the brain may be responsible for seasonal changes seen in humans which produce spring fever, ulcers, psychoses, and suicides."

Speakers for the opening session on Sunday will be: Dr. Kendrick C. Smith, president American Society for Photobiology; Dr. Alan D. Conger, past president Radiation Research Society; Dr. Luis R. Caldas of Brazil, who is a member of the executive committee and the Comite International de Photobiologie; Ray Jensen, manager biological programs Climatic Impact Assessment Program of the Department of Transportation; the Hon. Paul G. Rogers, M.C., chairman subcommittee Public Health and Environment; and Dr. John Ott. Tickets will be $7.50, $5.50 for students and are available at Ellie's Bookstore, and all the principal optical stores in Sarasota, and the public is invited to attend.
Cancer Cells Destroyed
By Simple Light Bulb

By DOROTHY STOCKBRIDGE
Staff Writer

Cancer cells in mice have been destroyed by a 150-watt light bulb.

"It's a promising (and still an experimental) approach," said Dr. F. I. Diamond of the University of California in San Francisco.

A neurologist, Dr. Diamond presented the findings of a six-man medical team at the scientific meeting of the American Society for Photobiology. He was accompanied to the La Jolla sessions by Dr. Anthony F. McGuffin.

It will be six months to a year before the findings are attempted with selected human patients. Similar research is also progressing at the Roswell Park Institute in Buffalo.

A photosensitizing dye similar to blood pigment is injected into the cancerous cells and this reacts with the light bulb to destroy the malignant cells. This photodynamic therapy offers a new approach to the treatment of brain tumors and other neoplasms resistant to existing forms of therapy, the photobiologists were told.

(Continued from Page 2A, Col. 2)

According to Dr. Diamond the research was a spinoff of successful phototherapy in treating premature babies with jaundice.

"This illustrates again how it's possible to use the span of unrelated observations," said Dr. Diamond, praising the exchange of ideas coming out of the photobiology session. "Success depends on having a talent pool to attack problems."

Dr. Thomas Sisson, a Temple University School of Medicine, Md., who has worked with treating jaundiced babies, explored the role of light as a human environment during the session.

He said the combination of phototherapy for the jaundiced and elevated oxygen in respirator distresses in the premature babies had possibly caused some visual damage.

"We're particularly concerned with the effect of an artificial lighting environment," he said.

The babies are kept in the always-lighted atmosphere for their first two months. Altering the normal day-night rhythms may also disrupt biological rhythms, Dr. Sisson said.

"Visible light, as much as ultra violet or infra red, has the ability to exert measurable biologic effects."

"Only recently have we been concerned with the visible spectrum as it affects humans," he added. "We don't yet know that artificial light is bad compared to natural light."

He too credited the jaundice light therapy with opening up a whole new promise that light of one kind or another may be therapeutic.

Cold sores, the virus of herpes simplex, can be destroyed when light reacts with a photosensitizing dye applied to the sores. Fluorescent dyes activated in the fetal cells have also permitted the diagnosis of some hereditary disease.

Dr. Sisson also indicated that rhythms of metabolic and biochemical processes, the reproduction of hormones, enzymes, amino acids, are regulated by light and dark. Studies of the effects of constant dark or light environment and light of differing spectral distributions have shown effects on organ size, growth patterns and sexual maturation in some animal species, possibly including man. Light intensity as well as wavelength may alter productivity and mood, according to Dr. Sisson.

"It's obvious we must consider the photobiologic consequences of artificial light, intensities, spectral characteristics and the chemical, physiological and psychological effects of the lighting environment in man."
Plant Reaction Quickly Seen

BY SALLY REMALEY
Herald Staff Writer

At the first meeting of the American Society for Photobiology being held in Sarasota, scientists reported that recently designed equipment allows them to follow reactions which take place within 10 picoseconds after light is absorbed by the chlorophyll of plants. (A picosecond is one trillionth of a second.)

The success of the “four carbon cycle” depends upon an ability of plastids to remit internal compartmentalization of some of the light energy they absorb and which they cannot use in photosynthesis.

The report by Drs. M. Gelbert of the GTE Laboratories in Waltham, Mass., and R. R. Alfano of the Physics Dept. of City College of New York, indicates that it is possible to study directly the primary and extremely-rapid reactions of photosynthesis involving the absorption of the light energy from the sun.

This energy is expressed many milliseconds later in the plant cell in the form of chemical energy in specific sugars formed from the carbon dioxide in the air and water from the soil.

Dr. C. C. Black of the University of Georgia reported on the different mechanisms by which plants take carbon dioxide from the air to form sugars, which are then converted into other forms of plant food.

The first process discovered and described in the 1960s by Nobel-prize winner Melvin Calvin is the classical “pentose cycle.”

In all phases of biological and medical research there is intense interest in how the various cell components are organized into the membranes which are so vital to the cell processes.

Photosynthesis is no exception. Although most of the components of the chloroplast membrane are known (the chloroplast is the green factory in the cell where sunlight is absorbed by the chlorophyll and photosynthesis takes place), the scientists working in this field do not know how they are put together.
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