



THE CHESAPEAKE CHEMIST

MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY

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JANUARY, 1977

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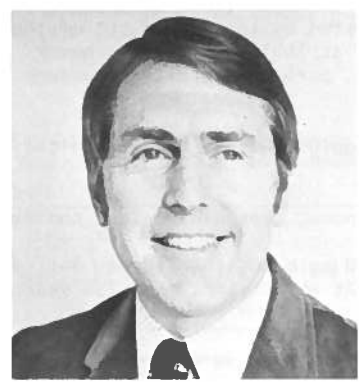
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THE EDITOR'S FIST

Happy New Year.

Once upon a time merchants never displayed Christmas merchandise until the day after Thanksgiving. Nowadays, one sees Santa Claus trimmed with black and orange Halloween treats. Not to be left behind, the calendar manufacturers have taken to selling 16-month calendars that start in September.

But we are traditional and firmly believe that the civil war (in contrast with fiscal years, school years, religious years, geophysical years) starts on the first day of January of each year. So -- a civil and HAPPY NEW YEAR to all (even to West Coast grass rooters).

A Resolution

The New Year is the time for New Year's Resolutions. (How about some Washington's Birthday resolutions for a change?) We never make any, so we can always truthfully say that we haven't broken a New Year's Resolution for decades. But we do wish that others would make at least one with regard to *The Chesapeake Chemist*.

There are many ways to make New Year's Resolutions. Try this one. Stand in front of a mirror, look yourself straight in the eye, and intone, "I firmly resolve to send at least one news item to *The Chesapeake Chemist* about myself, my company, school, job, or department this year."

Defense d'Employer

New Year's is as good a time as any for establishing some policy (ah! a fine sounding bureaucratic phrase!) for acceptable and unacceptable words in *The Chesapeake Chemist*. In doing this, we are only following the path taken by other august publications, such as the *Comptes Rendues* of the French Academy of Science.

Unlike the French Academy, however, we will permit the word "laser" to be used in this magazine. We also have no qualms about four-letter words. Indeed, some four-letter words, such as acid, base, and salt, are indispensable to any chemistry magazine. Others, including those of ancient Anglo-Saxon origin, are not essential, but we decline to rule on them until a test case comes along. The use of these words is often thought to indicate a paucity of vocabulary and a lack of thought, neither of which sins we want imputed to us. Still, the shock created by the mere sight of these words, even out of context, just as epithets scribbled on a wall, never ceases to amaze us. Like cheap, bright dyes, perhaps a greater exposure to daylight might cause their impact to fade.

Our special wrath will be directed instead against widely-used technical words in non-technical surroundings.

- (a) *Minimal*. Why not small, little, no or none, depending on the context?
- (b) *Quantum jump*. This phrase is often used to mean a big jump. But real quantum jumps are very small. Isn't that why it took some 250 years from Newton's time to discover them?
- (c) *At this point in time*. Fine, when one is directing attention to one point on a graph of, say, concentration vs. time; but for everyday use, whatever happened to *now*?

...continued on p. 6



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Dale L. Whalen received his B.S. in Chemistry from Loras College in Dubuque, Iowa in 1961. He did his doctoral research under the direction of Professor William G. Dauben at the University of California at Berkeley (Ph.D., 1965). He then went south to spend two years doing post-doctoral research with Professor Saul Winstein at the University of California at Los Angeles.

He was a visiting assistant professor of chemistry at California State University (Los Angeles) in 1967-68. He has been at the University of Maryland in Baltimore County since 1968, where he is currently an associate professor.

His primary research interest is the solvolytic reactions of epoxides.

THE HYDROLYSIS OF HIGHLY REACTIVE EPOXIDES

Many mutagenic and carcinogenic unsaturated hydrocarbons are oxidatively metabolized to epoxides. Although formation of an epoxide appears to be the first step of a detoxification mechanism that eventually yields vicinal diols, glutathione conjugates, and phenols, the intermediate epoxide is also capable of covalent binding to critical cellular reagents. It has therefore been postulated that epoxide intermediates are in fact responsible for the carcinogenic nature of certain polycyclic aromatic hydrocarbons.

Epoxides derived from aromatic hydrocarbons and conjugated olefins tend to be very reactive toward hydrolysis. Under biological conditions, therefore, hydrolysis of certain epoxides competes with other enzyme-catalyzed detoxification reactions. We have therefore undertaken a study of the hydrolysis of various epoxides conjugated to double bonds and aromatic rings. The mechanisms of hydrolysis of these epoxides as a function of pH will be discussed.

J. TYSON TILDON

J. Tyson Tildon is a native of Baltimore, Maryland. After receiving his B.S. degree from Morgan State College, he was a research assistant with Dr. Harry Gordon for five years, studying the effects of Vitamin E deficiencies on muscle metabolism. He then spent a year as a Fulbright Scholar in the laboratory of Dr. J. Szulmajster at the Institut de Biologie Physico-Chimique in Paris, France. He then pursued his graduate studies at the Johns Hopkins University and obtained his Ph.D. in Biochemistry in 1965. Following his graduation, he was a Helen Hay Whitney Postdoctoral Fellow with Nathan Caplan at Brandeis University from 1965 to 1967. He was an Assistant Professor in the Department of Chemistry at Goucher College from 1967 to 1968. Since then, Tyson Tildon has been a member of the department of Pediatrics where he is a Professor and has been the Director of Pediatric Research since 1970.

His research interests include developmental biochemistry and metabolic control processes. Among his contributions has been the description of a disease condition in infants called CoA Transferase Deficiency. This finding provides cogent evidence that ketone bodies are an energy source for the central nervous system of infants. This and a series of collaborative findings by Dr. Tildon and his colleagues have given him an international reputation in the area of brain metabolism, and he has a number of publications related to this subject. He recently completed a sabbatical year as a Josiah Macy Faculty Scholar at the University of Groningen in the Netherlands; it was during this tenure that he conducted many of the studies related to glycerol metabolism in brain. *...continued on p. 11*

Silver Findings

Happy New Year! We hope that your New Year's Resolutions included a resolution to participate in your Section's activities even more than before.

We have some very attractive monthly meetings lined up for 1977. On January 19, we will focus on biological chemistry. Dr. Dale Whalen of UMBC will tell us about some of his research on highly reactive epoxides, which has some interesting tie-ins with the cancer problem. Dr. J. Tyson Tildon, the Head of Pediatrics Research at the University of Maryland School of Medicine, will discuss his work on glycerol metabolism in the brain. There is more detail about these two talks elsewhere in this issue. Make it a point to attend this stimulating meeting!

Our February 16 meeting will feature Organic Synthesis. Dr. Gary Posner of Johns Hopkins has developed some ingenious new synthetic techniques; he will share some of his recent results with us. Then Dr. Maurice Shamma of the Pennsylvania State University, a renowned natural products researcher, will tell us about his work in the area of isoquinoline alkaloid synthesis. Both of these speakers have combined their synthetic skills with modern spectral methods of structure determination. It will be an interesting evening.

The March 16 meeting, which will take place at UMBC, will deal with the fascinating structural studies that are being conducted on RNA. Our speakers will be two leading researchers in this area, Dr. Richard Karpel of Princeton and Dr. Alexander Rich of MIT. The structural elucidation of DNA was, of course, one of the most publicized developments in recent years. The structural studies on RNA are a continuation of this very exciting chemical story. Here is a chance to hear about recent developments in a fascinating and important area.

Two brilliant inorganic-physical chemists will be featured on April 20 at the College of Notre Dame. Dr. Peter Hambright of Howard University is a young and very prolific researcher in both theoretical and experimental aspects of inorganic-physical chemistry. He will tell us about recent work in one of his areas of interest, the coordination chemistry of metalloporphyrins. This topic is also of interest to those of us that lean toward chemistry with a biological flavor. Our evening speaker will be Dr. Russell Drago of Illinois, who is known not only for his research work but also as the author of a general chemistry text. The subject of his talk will be announced later.

The annual Remsen Lecture will come in May. Details will be announced later. Let me just state that last year's Remsen Award winner, Dr. William Lipscomb, has just won the Nobel Prize in chemistry!

Reserve these dates on your calendar NOW. There will be other activities also; keep watching *The Chesapeake Chemist* for details.

P.S. Did you notice that "The Magnificent Lake Clifton," the subject of Mr. Joseph Jenkin's September talk, was featured in the November 14 Sunday Sun magazine section?

"WHEN DID YOU LAST ATTEND AN ACS MEETING?"

THE LOVE SONG OF J. CONRAD BLEET
by Edward Aibleet

Let us go then, you and I,
When the evening is spread out around
the sky
Like a Grignard etherized inside a flask;
Let us go, through certain half-deserted
labs,
The muttering blabs
Of restless nights of fourteen-hour
preps
And seminars and instrumental reps
Who sell their wares with tedious argu-
ment
Of insidious intent . . .
Oh, do not ask, "What is it?"
Let us go and make our visit.

In the lab the students come and eat
Talking of specific heat

The yellow fog that rubs its back along
the vacuum trains,
The yellow fumes that oxidize the vacu-
um trains,
Let fall the soot that comes from Bun-
sen burners
Clogging sinks and other laboratory
drains.
In the lab the students come and eat
Talking of specific heat.

For I have known them all already,
known them all:
Have known the evenings, mornings, af-
ternoons,
I have measured life with deflagrating
spoons;
The blades that mix you in a formulated
batch,
And when I am formulated, mixed into
a vat,
Then how do I begin
To list the concentrations and viscosi-
ties I match?
Is it perfume from a cess —
Pool that makes me so digress?
And should I then resume?
And how should I progress?

Shall I say, I have gone at dusk through
narrow labs
And watched the smoke that rises from
the flasks

Of lonely men in labcoats leaning over
benches?
I should have been a pair of beaker
tongs
Taking samples out of vacuum ovens.

And would it have been worth it, after
all,
To enzymatically degrade,
To wrap a spiral helix in a ball,
To say: "I am Gibbs, come from the
dead,
Come back to free your energy, free
your all!"
That is not it at all,
That is not what I meant at all.

No! I am not a Pauling, nor was meant
to be;
Am a postdoc fellow, one that will do

To fill a beaker, start a still or two,
Advise the Prof.; no doubt, an easy tool,
Deferential, glad to be around;
Meticulous, cautious but unsound;
Attempting thesis research, a bit ob-
tuse;
At times, indeed, almost ridiculous.
Almost, at times, the Fool.

I grow old . . . I grow old . . .
I shall wear the sleeves of my labcoat
rolled.
Shall I aliquot the sample? Do I dare
distill a peach?
I shall wear white flannel labcoats, and
walk along the beach.
I have heard technicians talking, each
to each.

I do not think that they will talk to me.

I have seen them riding homeward on
their bikes
Combing the white hair of engine fumes
When the green light glows and traffic
resumes.
We have lingered in the chambers of the
lab
By chimneys wreathed with vapors red
and brown
Till EPA inspects us, and we drown.

REPRINTED FROM THE CHEMICAL BULLETIN (Chicago), Oct. 1976. By Permission.

...continued from p. 2

- (d) *And/or*. Fine for lawyers, and for bureaucrats who ape lawyers, thinking that they are thereby acquiring the famed (but actually nonexistent) legal precision. Logicians distinguish between the *exclusive or* and the *inclusive or*, and have devised appropriate symbolism for each of them. In *The Chesapeake Chemist*, only the *inclusive or* is used. In the rare event that the *exclusive or* is required, we shall write out, Either A or B, but not both. Otherwise, the common role of standard English will apply: A or B always includes the case, A and B.

JANUARY MEETING

DATE:

Wednesday, January 19, 1977

PLACE:

Eudowood Gardens Lecture Room
Eudowood Plaza, Joppa Road near
Goucher Boulevard

SPEAKERS AND TOPICS:

5:30 PM
Dr. Dale Whalen
University of Maryland at
Baltimore County
"The Hydrolysis of Highly
Reactive Epoxides"

8:30 PM
Dr. J. Tyson Tildon
School of Medicine
University of Maryland
"Glycerol Metabolism in Brain
and its Role as a Neurotoxic
Agent"

SOCIAL HOUR:

There will be a social hour after
the meeting. Refreshments will
be served.



Dr. J. TYSON TILDON



Dr. DALE WHALEN

COCKTAILS AND DINNER:

Eudowood Gardens Dining Room
Cocktails 6:30-7:15
Cash Bar
Hot buffet dinner (7:15) \$6.25
per person, EXCEPT: Spouses,
retired chemists and students,
and their spouses, may attend the
dinner at \$4.25. Reservations are
necessary for the dinner and
should be made with

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c/o Dr. Ernest Silversmith

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APPEARS ELSEWHERE IN THIS ISSUE

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weekends)

It is not necessary to be a member
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to attend the dinner or the talks,
and the talks may be attended
without attending the dinner. You
are invited to bring your wife and
friends to both the dinner and the
meeting.

EXECUTIVE COMMITTEE MINUTES

Minutes of the Executive Committee Meeting of the Maryland Section of the American Chemical Society held on October 27, 1976 at the Martin-Marietta Laboratories, Baltimore, Maryland. Present: A. Bober, T. Caplan, J. Cogliano, H. J. Cohen, D. E. Jones, J. J. Kaufman, J. Kolbe, J. Leslie, M. P. Miller, C. Minnier, T. Parr, E. C. Penski, D. Roswell, R. Schneider, E. F. Silversmith, L. P. Turner, and K. Zeller.

The meeting was called to order by the Chairman, J. Kolbe, at 8:10 p.m.

The minutes of the meeting of March 24, 1976 as reported in the September 1976 issue of *The Chesapeake Chemist* were approved with a change of B. Nurr to B. Murr.

Treasurer H. Cohen reported that the Section had a balance of \$9,558.35 (\$8,520.08 in saving account and \$1,038.27 in checking account). This does not include receipts of \$350 for the September meeting.

J. Kaufman for the Awards Committee announced that the 1976 Maryland Chemist Award is to be presented to Richard L. Hall. She announced that the Awards Committee was seeking nominees for national ACS Awards. The Committee was charged to seek a nomination for the MARM E. E. Reid Award, and to make this nomination without prior approval of the Executive Committee. It was also suggested that the Committee consider making a nomination for the Conant Award.

M. Miller for the Education Committee announced that 25 audio tapes (with descriptive booklets) covering 22 topics are available for loan to institutions and individuals at no charge. The list is to be published in *The Chesapeake Chemist*. After discussion, M. Miller was authorized to explore the possibility of the Section sponsoring an ACS short course in conjunction with Loyola College at a convenient location.

A letter was read from E. Freedman regarding *The Chesapeake Chemist*. He reported that the typing for the magazine was now done by a professional typing service. R. Petersen has agreed to serve as Associate Editor. E. Freedman suggested, and the Executive Committee passed, a resolution expressing appreciation of the fine work done for *The Chesapeake Chemist* by Jo Lannon of Glidden-Durkee and Shirley Vecchio of the Ballistic Research Laboratories. Letters to this effect are to be sent along with a flower arrangement to the ladies concerned.

D. Jones announced that W. Galetto had to resign as General Chairman of MARM 1978 for health reasons. After some discussion D. Jones was authorized by the Executive Committee to select a General Chairman.

Y. Caplan for the Nominating Committee announced a slate of candidates for the 1977 officers and members-at-large of the Executive Committee and a councilor and alternate councilor for the three year period 1977-1979. The secretary was instructed to prepare and mail a ballot listing the names of candidates for all the offices and including space for write-in candidates to all members of the Section. A. Bober, Y. Caplan, and E. Krikorian were selected as tellers for the election.

It was noted that the 1976 Remsen Memorial Lecturer, Dr. Lipscomb, had received the 1976 Nobel Prize in Chemistry and the Section should publicize the fact that a number of Remsen Memorial Lecturers had subsequently received the Nobel Prize. ...continued on p. 10

NEW MEMBERS OF THE MARYLAND SECTION

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...continued from p. 8

K. Zeller reported that the cost of publishing *The Chesapeake Chemist* had decreased substantially this year. He requested \$1,000 for operating expenses to the end of the year (this allotment has been previously authorized by the Executive Committee).

D. Roswell for the Publicity Committee asked for guidance in the mailing of notices for the monthly meetings and the Executive Committee agreed that he should continue to do so as in the past.

E. Silversmith announced that the speaker for 8:30 p.m. for November would be Loyal Goff rather than Richard S. Young as previously announced.

Under new business it was suggested that the Executive Committee should meet at least five times per year. Means of expressing disapproval to the National ACS Office of the high cost of national meeting registration and the escalating annual dues was discussed: this issue is to be pursued in the immediate future. The Committee voted to reestablish the practice of inviting new members of the Section to be a guest at a monthly meeting during January through April, 1977.

The meeting adjourned at 10:40 p.m.

Respectfully submitted,
JAMES LESLIE
Secretary

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DEADLINE NOTICE

Editorial material intended for the Nth issue of *The Chesapeake Chemist* must be received by the 25th of month N-2. Time and tide and the printer wait for no person.

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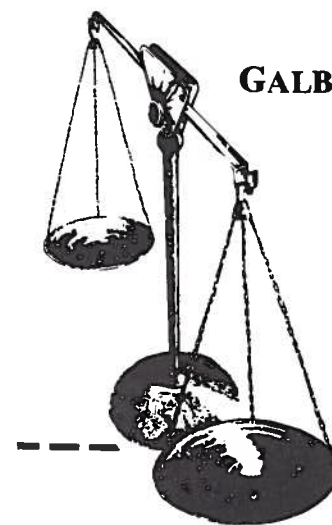
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*See note on p. 7.

Return by January 13



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...continued from p. 4

His spare time is devoted to writing non-science articles and books, and he has given many lectures and guest appearances to discuss his book, *The Anglo-Saxon Agony*. He is a member of many civic organizations and is on the Board of Directors of the Center for Metropolitan Planning and Research of the Johns Hopkins University, the Board of Directors of Center Stage, and the Board of Directors of the Maryland Academy of Sciences.

GLYCEROL METABOLISM IN BRAIN AND ITS ROLE AS A NEUROTOXIC AGENT

To elucidate the mechanism of possible glycerol neurotoxicity as proposed by Maclaren *et al*, metabolic studies have been extended to include measurements of serum dopamine β -hydroxylase as an index of sympathetic nervous activity. It was found that after the oral administration of glycerol, dopamine β -hydroxylase activity decreased approximately 50% of the initial value in human volunteers. Additional studies of glycerol oxidation in rat brain revealed the presence of glycerol kinase in this tissue and a discontinuous sucrose density gradient to separate myelin synaptosomal and mitochondrial fractions revealed that the enzyme was mostly associated with the mitochondrial fraction. The activity was not increased by detergent sonication or freezing and thawing and remained bound to the particulate fraction. Using ^{14}C glycerol, the rate of oxidation to CO_2 by the mitochondrial fraction was three times the rate observed with the synaptosomal fraction. Lineweaver-Burke plots of the rates of oxidation versus concentration gave a biphasic curve and two apparent K_m values. The oxidation was not decreased by acetate and only partially by glucose. The results indicate that glycerol oxidation takes place in a particulate compartment of the brain that is less available to glucose and acetate, and the kinetics of this reaction suggest that there are a high and a low affinity uptake system for glycerol into this compartment. It is proposed that this oxidation provides the brain with a detoxification mechanism that prevents the accumulation of glycerol in situ, which might affect norepinephrine metabolism.

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