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About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

October 22, 1993

Dear Al:

GREETINGS to you and Betty. Thank you for forwarding the mail, and here are the stamps. Congratulations to Betty for passing her comps.

Yes, time flies - Helen is already 3 1/2, and finally the "parental investment":work investment ratio is easing up to an almost reasonable degree.

I'm in my last year as Visiting Lecturer here at UNC. This semester I'm designing a new course called "Issues in Modern Biology" and teaching the regular Biology Intro. course with over 400 students in one large lecture hall. Think they're getting their money's worth? Really, except for the time deficit, I'm enjoying it greatly, especially the "Issues" course.

Sincerely

Norma J.

Norma Johnson

THE PENNSYLVANIA STATE UNIVERSITY
DEPARTMENT OF GEOSCIENCES
PALYNOLOGICAL LABORATORIES
435 DEIKE BUILDING
UNIVERSITY PARK, PA 16802
Phone: (814)863-3419; Fax: 814-863-7823

12 September, 1993

Dr. Norma G. Johnson
Department of Biology
University of North Carolina
Chapel Hill, NC 27599

Dear Norma:

Forwarding herewith a letter that came here for you. Is the above still a viable address for you?

Ye gods, I note on my card that you are now in your seventh year of marriage. Really does seem impossible.

Betty has passed her comps and is well along on the disseration. I am very busy with a flock of projects, and have 20 in the palynology course (four more than capacity of room 418).

If you don't want the stamps, I would accept them as a gift!--I collect botanical subjects-on-stamps. Some day when I can't do anything else, I'll work on the collection. The way I've been "burying" friends and relatives lately makes me aware of the racing by of the years! I just had another birthday.

Best regards.

Yours very truly,

Alfred Traverse

encl

TO AT
DATE 23.VII.90 TIME 11:15

WHILE YOU WERE OUT

M. Norma Johnson
Of _____
Phone _____

TELEPHONED PLEASE RETURN CALL
CALLED TO SEE YOU WILL CALL AGAIN
RETURNED YOUR CALL RUSH

MESSAGE. Coming Fri -
will call during
9. m.

Signed BT

The Standard Register Company

27-VII-90

Norma and husband, Rex Moody, a
psychiatrist, came to visit wo. baby, 3 mos. old,
(Helen Moody) Tilled 1 hr. Norma
is lecturer at UNC in biology for this
year.

2139-D. Old Oxford Rd E.
Chapel Hill, NC 27514

Rex J. Moody and
Norma S. Johnson

are proud to announce

the birth of
Helen Frazier Moody

on April 30, 1990

at 12:44 P.M. o'clock

weight 8 lb. 14 oz.

March 8, 1989

Dear Dr. Traverse,

Thank-you for the reprints. *Plant Evolution Dances To a Different Beat* was fascinating. It went a long way toward answering some long-standing questions I've had concerning the issue of "What happened to plants during major extinction events?", especially during "a (one?)" catastrophic K/T ~~event~~ ^{-time}. I keep fig. 7 next to my geological scale.

I should be defending my dissertation early in April. Wish me luck.

Sincerely,
Norma Johnson

THE PENNSYLVANIA STATE UNIVERSITY
DEPARTMENT OF GEOSCIENCES
PALYNOLOGICAL LABORATORIES
435 Deike Building
University Park, PA 16802
(814)863-3419 or (814)865-6711

31 October, 1988

Norma G. Johnson
Department of Biology
University of North Carolina
010A Coker Hall
Chapel Hill, NC 27514

Dear Norma:

Well I can kill two.....Pkg. from Czecho. enclosed.

Thanks for the reprint and for the neat photo of your vascular plant. As you say, We'd also like to meet your husband and look forward to it.

The new head of biology here is a female frog-molecular-evolution type. No real use for botany of any kind, let alone paleo-. I've been fired from the evolution course (also Cuffey), and my joint appointment and the co-listing of palynology and paleobotany are threatened. If "wicked witch of the West" weren't a preoccupied nomen (JG), it would fit.

Best to you all.

Yours very truly,

Alfred Traverse

AT/et
encl

Department of Biology
CB# 3280 Coker Hall
University of North Carolina
Chapel Hill, NC 27599
October 26, 1988

Prof. A. Traverse
The Pennsylvania State University
Department of Geosciences
Palynological Laboratories
435 Deike Building
University Park, PA 16802

Dear Dr. Traverse:

Here's a copy of the RPP paper. Just in case you're interested, I've also enclosed a photo of Bitelaria. Katherine, PGG's technician, thinks I should have enclosed a picture of Rex (my husband) instead. I don't have one handy, so I'll have to get him back to State College to meet you. Furthermore, the enclosed photo is more representative of where my time is being spent.

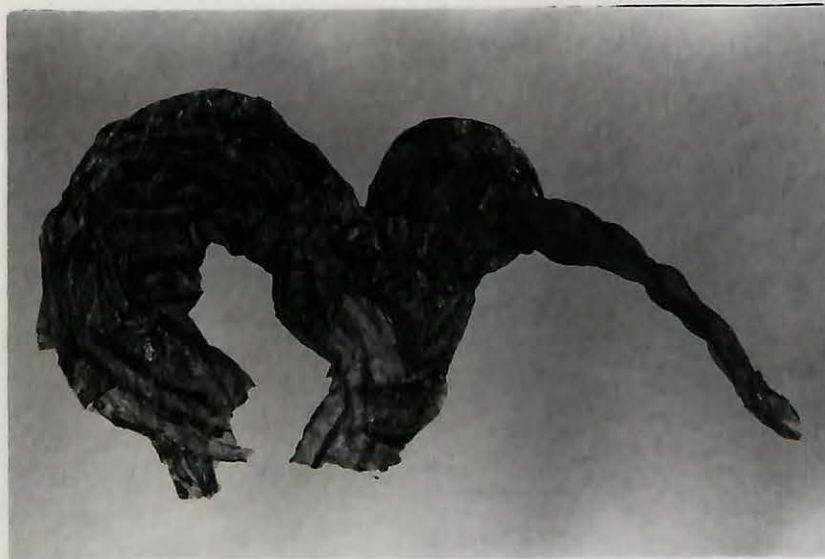
I miss everyone at Penn State. As far as I'm concerned, the North Caroling piedmont is "nowhere" compared to the central PA mountains.

Sincerely,

Norma J.

Norma Johnson

P.S. PGG and I both have ordered copies of your book and are looking forward to their arrival.



Bitelaria dubjanskii Istchenko & Istchenko 1979

This plant was described
(in Russian*) as a brown alga,
but it's a true vascular plant with
a thick central strand of scalariform-
pitted tracheids.

(*lucky thing it took Russian)

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DEPARTMENT OF GEOSCIENCES
PALYNOLOGICAL LABORATORIES
435 Deike Building
University Park, PA 16802
(814)863-3419 or (814)865-6711

20 October, 1988

Norma G. Johnson
Department of Biology
010A Coker Hall
University of North Carolina
Chapel Hill, NC 27514

Dear Norma:

Do you still have any reprints of your P-P paper based on your "thesis"? I can't find mine and really need it. People are always asking about it.

Hope you're getting on as well as "rumor" has it. Maybe I'll be here the next time you're in the area.

Best.

Yours very truly,

Alfred Traverse

AT/et

TO AT

DATE 16-IV-88 TIME 11:25

WHILE YOU WERE OUT

M. Norma Johnson

Of _____

Phone _____

TELEPHONED PLEASE RETURN CALL

CALLED TO SEE YOU WILL CALL AGAIN

RETURNED YOUR CALL RUSH

MESSAGE Passing thru
town - wanted to stop -
Sorry to miss you.
(I said let us know
ahead next time.)

Signed BT

THE PENNSYLVANIA STATE UNIVERSITY
DEPARTMENT OF GEOSCIENCES
PALYNOLOGICAL LABORATORIES
435 Deike Building
University Park, PA 16802
(814)863-3419 or (814)865-6393

15 June, 1987

Norma G. Johnson
Department of Biology
University of North Carolina
Chapel Hill, N.C. 27514

Dear Norma:

Congratulations! We are very happy for you--one of our favorite people. We look forward to meeting Dr. Moody one of these days. Wow!--you'll be a learned family. I'm sure he's a very interesting fellow. Now please don't forget my lecture (sermon?) that you should remain N.G.J. for scientific purposes! Synonyms in the literature are a pain. (For social matters, Moody is fine.)

Deer are not much of a problem this summer--we're not having a garden because we won't be here except occasionally during gardening season.* Since early May we've already been to Indianapolis and Memphis, Ottawa, Binghamton and the Adirondacks. There's the IBC in Berlin, the Devonian Symposium in Calgary, a trip to Greece, etc.

Ron L.'s address went off on the card. Too bad you wasted the stamp.

All the best.

Yours very truly,

Alfred Traverse
Professor of Palynology

*P.S. Since I wrote this, deer munched a flowering quince and topped the lilies and a rose bush by the house.

AT/et



THE UNIVERSITY OF NORTH CAROLINA
AT
CHAPEL HILL

Department of Biology
(919) 962-3775

The University of North Carolina at Chapel Hill
Coker Hall 010 A
Chapel Hill, N.C. 27514

June 8, 1987

435 Deike Building
University Park, PA 16802

Dear Dr. Traverse and Mrs. Traverse,

Here is a long overdue letter to catch you up on recent and past events.

Work here on the Devonian (Emsian) plant Bitelaria is going slowly but surely. You may have seen my abstract in this year's B.S.A. publication for the annual meeting this August. I have just a few more things to do before writing that up, then some comparative research on some other plants, and a possible chemical analysis before writing the dissertation this coming spring.

Pat has been quite busy being assistant to the dean of the College of Arts and Sciences, in addition to trying to get research done and be a mother as well.

Now for the big news. I've gotten married. I haven't told many people yet, so I hope the news hasn't reached you before now. His name is Rex Moody. I met him a month after I moved to Chapel Hill in 1984. He was in medical school at the time and is now a resident in psychiatry at Duke Medical Center in Durham. We were married May 16 in a small outdoor ceremony in Ligonier, Pa., with our immediate families and a few close friends - a fun, happy occasion for all. Our new home address is: 2139 D. Old Oxford Road East, Chapel Hill, NC, 27514. I would like for you to be able to meet Rex; perhaps we can stop by State College next time we come to Pennsylvania.

Also, would you please send me Ron Litwin's address on the enclosed postcard? I thought you had given it to me once before, but I can't find it.

I hope you're enjoying your summer and the deer are not eating too many of your garden vegetables.

Yours very truly,

Norma J.

Norma G. Johnson

30 January, 1986

Norma G. Johnson
Department of Biology
010A Coker Hall
University of North Carolina
Chapel Hill, NC 27514

Dear Norma:

I'm not sure that I ever acknowledged your nice note and the inscribed reprint. Thanks, if I haven't already said so! Several people (e.g., Aureal Cross) have phoned me to congratulate me on having a student who produced such a nice piece of work!

We have had a very wearing time of it for a year now with Betty's parents—we spent the Xmas break 100% on moving everything out of their house, which finally sold. However, we're o.k. and have much to be grateful ~~for~~

All the best.

Yours very truly,

Alfred Traverse
Professor of Palynology

AT/et

Nov. 19, 1985

Dr. Graverse -

Things going well here - I'm gearing up for comprehensives in mid-January. Meanwhile, working on a very strange (weeiiird) plant called Bitillaria (probably). It's one of those "enigmatic" things.

Katie is $3\frac{1}{2}$ months, and now smiles alot in addition to the usual cry-proop-pee act of the 1st 3 months.

Geneset says she costs 3 papers.

Hope all is well at P.S. U.

Sincerely,

Norma Johnson

P.S. I'm taking Paleobotany this semester - Stewart (the new text, p 328) credits you for working out vasculature of mesophylon.

13 September, 1985

Norma G. Johnson
University of North Carolina
Department of Biology
010A Coker Hall
Chapel Hill, NC 27514

Dear Norma:

What a neat envelope from you! It is good to have a MS of the oral paper and to hear all the good news about the poster (including that it stayed up!).

Re Prototaxites, I must say that ^{help} seems more likely than mushroom, but F.H. is a perceptive cookie. Silurian hyphae wouldn't surprise--they are also known from Proterozoic. It chitinous, it would surprise. You are of course right that Jane Gray should stop arm-waving and start minutely describing.

Very glad to hear that your paper is in press at RPP!

We're up to our ears in work here. The palynology course looked like a "no go"--only 2 pre-registered (and it would have been a blessing--but don't quote me). However, bodies materialized at the 11th hour, and it is going. For a non-required course, 20 straight years with no break is quite a record. (Paleobotany has "gone" about 5 times in that period.)

We miss you very much. All the best. Regards to PG, Bill and the sprout.

As ever,

Alfred Traverse
Professor of Palynology

AT/et

Aug 30, 1985

Dr. Traverse,

Thank-you for the contribution toward getting our paper + poster to the AIBS. The talk - Monday 9:15 AM - went very well - I got a lot of good questions and lots of people made positive comments. Dr. Phillips from Illinois seemed particularly interested and requested a slide for teaching purposes (which I sent to him). It was great timing to have the poster after the talk (Wed. AM), because a lot of people came by who had already heard the talk.

Frances Hueber chatted a long time - he thinks *Prototaxites* looks more like a fungus than anything else - a giant mushroom, so to speak? Martha Sherwood-Pike came by, too -- see Sherwood-Pike and Gray (Jane, of course), 1985. Silurian fungal remains: probable records of the Class Ascomycetes. *Lethaia* 18: 1-20. They have late Silurian hyphae and 'fungal spores' which look like the real thing! Have you seen Gray's latest? She backs off a little and allows 'bryophyte level of organization' as a possible origin for the tetrad. However, she also states that the tetrad is the most primitive type of dispersal unit -- I disagree, because she ignores the ~~other~~ monads and dyads! Too bad she doesn't report the whole microfossil assemblages. (see Gray '85 *Phil. Trans. R. Soc. Lond. B* 309: 167-195).

Enclosed is a photocopy of the talk.

Yours truly,

Norma Johnson

P.S. The poster stayed up OK - I took a hammer and some nails.

Will get it back to you next time I'm in Pa.

14 Aug '85
Greetings from the
AIBS - The talk
went real well - I got
alot of good questions and
comments for the rest of the
week (it was Monday 9:15 AM)
and alot of people showed
up at the poster session.

H. 21 - SEMINOLE SOUVENIRS INC., P.O. BOX 3072, SEMINOLE, FLA. 33542, PH. (813) 392-4591



Post Card

Monday 12 Aug '85 ->
Pat Gensel Had the Baby!!
girl - Catherine (Kate)
8 lb 11 oz - both healthy.
alot more to tell about
AIBS and baby, etc -
will call or write.

The Traverse's + students
435 Deike Bldg.
Geology Dept.
University Park, PA
16802

FLORIDA SUNSHINE STATE
UNION BUILDING
UNIVERSITY OF FLORIDA
GAINESVILLE, FLORIDA



NATURAL COLOR REPRODUCTION (REG. U. S. A. PAT. OFF.)

I. Intro.

Norma Johnson → AIBS 1985 Sainesville
Johnson, Storm, Traversa
(Npu)

The contents of this talk are based on my master's work done at the Penna. State Univ.

The complete results of the project, including the geologic and paleobotanical significance, are given in our poster session Wednesday morning. This talk deals only with the more controversial aspect of the early Silurian palynoflora concerning the affinity of the spore-like bodies.

Slide (1) (field loc's)

~~From the~~ We obtained samples of the Tuscarora Fm. from the Mill Hall and Waggoner's Gap localities.

The paleocurrent during Tuscarora deposition was approx. SE to NW, the source area being to the SE.

Samples from the Waggoners Gap locality are from non-marine strata, which you see are more proximal to the source area. Those from the Mill Hall locality probably range from nonmarine to lagoonal to possibly near-shore marine.

In any case, the spore-like palynoflora from both localities are similar, and their derivation from a non-marine source can be reported with confidence.

Slide (2) (outcrop)

The resistant quartz sandstone of the Tuscarora Fm, as seen here at the Mill Hall locality, makes it a major ridge-former in the Valley and Ridge Province. Our palynological samples were collected from shale interbeds.

The Tuscarora Fm is Early Silurian in age. The first megafossil land plants occur in the middle to Late Silurian. The presence of thick-walled, acid-resistant spore-like tetrads from Early Silurian strata has led to the hypothesis that land plants were present earlier in geologic time than the oldest megafossils would indicate.

I would like to invoke some discussion and consideration of the other types of spore-like bodies that are usually associated with the tetrads, and to postulate possible alternate sources in regard to their affinity.

43

Slide (3) (major points)

I'll center this discussion on the following points:

- * The diverse nature of the palynoflora.
- * The unique morphological character of the palynomorphs, many of which are unmatched in later geologic time.
- * Then I would like to speculate on the affinity of the parent plants based on
 - + the morphology of some of the spore-like bodies,
 - + known occurrences of sporopollenin in algae, and
 - + the subsequent fossil records of anomalous land plants resembling algae and also of aquatic algae with resistant cell walls.

Slide (4) (tetrads/color)

An extended geologic history of land plants has been hypothesized by others based on the occurrence of obligate tetrahedral tetrads such as these in the Early Silurian and possibly in the Upper Ordovician.

These spores are comparable in morphology to spores from modern land plants such as some bryophytes and possibly some lower vasc. plants. They provide extremely valuable evidence for speculation on the origin and phylogeny of the first land plants.

For a more in-depth discussion of this hypothesis, I refer you to papers by Gray, Strother & Traverse, and Pratt & others.

At this point, I would like to discuss some of the other spore-like bodies associated with these kinds of tetrads.

For example, some tetrads very similar to these occur within an outer wall that could be interpreted as a mother cell wall. Still others don't seem to be obligate tetrads, but simply 4 alete monads that are not attached to one another, but which are enclosed together within a common outer wall or membrane.

Further, we find other, even more unusual forms associated in the same flora.

There are several morphotypes of dyads -

-true dyads, which are simply two monads stuck together. Most of these are found enclosed within an outer wall.

-Pseudodyads are generally elongate bodies with an equatorial band or thickening.

Slide (6.) (pseudodyads)

Figures 2 - 6 show some more pseudodyads.

In fig. 2 there is an obvious crosswall between the halves, but the absence of crosswalls or suture lines is the most common case.

Fig. 4 - Pseudodyads are often asymmetrical.

Fig. 1 - a tetrad with the same type of sculpture as the pseudodyads.

Slide (7.) (monads in sacs)

We also find monads with and without a 2nd outer wall.

This slide shows only those with the 2nd outer wall.

Slide (8.) (diversity)

point

In addition to monads, dyads, and tetrads, there are some very rare trilete spores.

There are also some peculiar forms which appear to be transitional between a dyad and a tetrad.

PAUSE

THIS shows a surprisingly diverse palynoflora considering the age of these deposits.

Slide (9.) (matching tetrads/dyads/monads)

Another interesting feature of this flora is the presence of morphologically similar tetrads and dyads and possibly monads.

Figs. 1 - 3

These tetrads and dyads are smooth-walled and clearly have crosswalls and suture lines between the members.

Other tetrads and dyads share some unique or unusual features.

Figs. 4 - 6

The absence of suture lines and crosswalls between tetrad or dyad members is a feature more common in pseudodyads and less common in tetrads.

Figs. 7 - 9

Another feature that can be matched is the presence of a 2nd outer wall which encloses the entire tetrad or dyad. Some monads have this feature as well.

Still another feature is that of a rugose sculpture on the walls of both tetrads and pseudodyads.

In fact, there doesn't seem to be any type of dyad or pseudodyad without a tetrad counterpart.

HERE is a microfossil flora which as an assemblage, as well as with many of its individual members, is quite unique, enigmatic, and practically unheard of for the rest of geologic time.

The diversity of this palynoflora, as well as the apparent similarities between some of the tetrads and dyads, underscores the importance of reporting entire assemblages of microfossils even when considering only isolated forms such as the tetrads.

Slide ⑩ (color/ palynos in sacs)

At this point, I would like to speculate on the affinity of the parent plants using 3 main criteria:

1. the morphology of some of the spore-like bodies
2. the known occurrences of sporopollenin in algae, and
3. the Silurian and Devonian fossil record of anomalous land plants resembling algae and of aquatic algae with resistant cell walls.

On the 1st criterion, morphology, the question is, . . . "Can anything be said about the affinities of the various members of such an anomalous flora based on morphology?"

I have already referred you to papers for a discussion of the obligate tetrads, and then I pointed out the diversity of the spore-like flora and some possible similarities between the various kinds of tetrads and dyads.

These points of morphology may not provide a clue to the affinity of the parent plants, but the diversity and anomalous nature could suggest that evolutionary convergence to the land plant habit was occurring in the Early Silurian. This will be discussed later.

The last point of morphology to be considered is the frequent occurrence of a monad, dyad, or tetrad that is enclosed within a 2nd outer wall or membrane.

In regard to this outer wall, we concluded that an alternate origin for the tetrads should be considered along with the possible vascular plant or bryophytic origin.

Note →
Gray '85 Phil Trans R. Soc. Lond says
Some bryo. tetrads have 'common outer wall' -
and she lists 2? spp.

The need for such a consideration is based on several factors -

1. These simple membrane coverings can be distinguished morphologically from fern perispores and cavate spores. It's possible that these forms of tetrads are not analogous to any spores from modern embryophytes, with the possible exception of one or two species of bryophytes.
2. The apparent similarity between membrane-enclosed tetrads, dyads, and monads could warrant consideration of all these morphotypes as a whole.
e.g. from the same plant or group of plants
3. The second outer walls could be interpreted as persistent mother cell walls which suggests algal or non-embryophytic affinity.

.....
IN THIS REGARD, non-embryophytic or algal affinity is certainly not concluded, but the evidence strongly suggests that this must be considered along with the other possibilities until more evidence is found.

Slide 110. sppnn in algae

To further investigate the possibility that this 2nd outer wall is a persistent m.c.w., I conducted a literature search on the known occurrences of sppnn in algae. This, of course, is on the assumption that these spore-like bodies are made of sppnn.

The presence of sppnn is confined mostly to the reproductive bodies, that is, spores and pollen, of land plants and to the resting cysts of certain algae. Sppnn is also present in other parts of the life cycle in some green algae.

cell walls; the types of evidence used to determine the presence of sppnn in each, and the part of the life cycle in which it occurs.

Some of these algae are unicellular or occur in small colonies - in these, sppnn is present in the m.c.w.'s as well as in the daughter cells of autocolonies. Myrmecia and Coccomyxa are particularly interesting in that the m.c.w. is persistent.

~~talk~~ It will simply be concluded here that algae do have the metabolic pathways with which to produce sppnn, and thus they may have acid-resistant cell walls which would be more prone to fossilization and ~~then~~ subsequent recovery in palynological macerations.

Little work has been done in this area, so it is possible that sppnn will be found to have a much wider occurrence in the algae than previously expected.

SLIDE 124

3c-anomalous land plants

Last of all, it became most intriguing to me during my present work at the Univ. of North Carolina on fossil thallophytes, that there are many fossil plants from the Silurian and Devonian with highly resistant tissues, and which strongly resemble algae in morphology and anatomy.

The terms 'algae', 'non-embryophyte', and 'thallophyte' are used loosely here to refer to these. These terms may include Paleozoic land plants whose reproductive strategies are unknown.

Most, if not all of these plants are isolated systematically from any ^{extant} ~~known living~~ plants. Further, most seem also to be isolated from each other, or at best may be placed into groups based on superficial similarities.

Most of these plants were almost certainly land plants or emergent aquatics. Even the ones, such as Pachytheca, that appear to have been aquatic, have acid resistant tissues.

We ^{suggested} ~~conclude~~ here that the diversity and anomalous nature of the Early Silurian plant microfossils ^{could} indicates a condition of evolutionary ~~parallelism~~ convergence in the land plant habit. ~~at that time.~~

The subsequent fossil record of a diverse number of anomalous, apparently thallophytic megafossil plants in the later Silurian and Devonian implies a continuation of such convergence by plants which seem to have been evolutionary dead ends or experiments. Many of these plants resembled algae in morphology and anatomy, and yet seem to have been adapted to life on land, ~~at least~~

No Slide

I've discussed the diversity and the anomalous nature of early silurian palynomorphs which could imply evolutionary convergence at that time. I've also suggested that later Silurian and Devonian anomalous plants indicate a continuation of this convergence to the land plant habit. Further, there are indications in both micro- and megafossil floras that an algal or nonembryophytic affinity should be considered.

20

The record from the Sil and Dev show anomalous types of micro- and mega- plant fossils for which there seem to be no modern analogues. In a case such as this, we can only search further into the fossil record before any conclusions can be made as to the affinity of the Early Silurian plant microfossils.

The Silurian is becoming more and more of an exciting place to look in the fossil record for the history of land plants.

Jun 19, 1985

Dr. Traverser,

Our AIBS talk is scheduled for Monday morning - 2nd talk! The posters are in fine shape - ready to go; The talk will take some work. Are there any Silurian funds left that could help me out with the cost of registration and housing? If so, I've enclosed the forms I sent to AIBS, and copies of checks if needed. I'm pretty sure the Biol. department here will provide transportation - a lot of us are going and they have their own vans.

Dr. Hensel is 7+ months now - due Aug. 6. She's looking very well and seems very happy, but she's getting a little nervous about school this fall - she's scheduled to teach Paleobotany, and our semester opens the middle of August!

I hope the semester system is treating you all right, and that you've been able to work in some vacation time.

Sincerely,

Norma Johnson

P.S. Please
Forgive handwritten letter -
my secretary on vacation

efficient to fly to Orlando and rent a car than to fly directly to Gainesville. Call Emmer Travel at 800-874-8487 for your best fare quote and routing information; Emmer Travel is prepared to help you find the least expensive and most convenient way to get to Gainesville.

AMTRAK Rail Passenger Service located in Waldo, approximately 17 miles from the university, also serves Gainesville. For information and reservations, call Emmer Travel.

Local bus service available for a small fee throughout the city of Gainesville with stops conveniently located and identified. Schedules will be available to meeting registrants.

CAMPUS PARKING

Parking on campus is free in designated areas. Please observe parking restrictions to avoid fines and/or towing.

REGISTRATION APPLICATION

36th Annual AIBS Meeting
University of Florida
11-15 August 1985

Make checks payable to: AIBS Registration
Mail to: AIBS Meetings Department
1401 Wilson Boulevard
Arlington, VA 22209

TO BE COMPLETED BY REGISTRANT

FIRST NAME
NORIMIA

INITIAL
G

NAME OF SPOUSE

*Only if registered and not attending scientific session

LAST NAME
JOHNSON

SUFFIX (Jr., etc.)

ATTENDING HOSPITALITY HOUR: SUNDAY, 2-4 P.M.
 yes # no

ADDRESS LINE 1 (department, division, branch)
BIOLOGICAL DEPT., COKER HALL, IOIA

PHONE NUMBER

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UNIV. OF NORTH CAROLINA

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PARTICIPATING SOCIETY MEMBER (e.g., BSA, MSA, etc.)

AIBS MEMBER
 yes no

REGISTRATION FEES

Advance (before 17 June)

Late (after 17 June)

Regular Registrants	<input type="checkbox"/> \$55.00	<input type="checkbox"/> \$75.00	\$
Students* (full-time)	<input checked="" type="checkbox"/> \$25.00	<input type="checkbox"/> \$40.00	\$ 25.00
Spouse**	<input type="checkbox"/> \$10.00	<input type="checkbox"/> \$10.00	\$

All-participant Caribbean Buffet, 11 August, 6-8 P.M.	(no.) @ \$11.50 ea.	\$
Computers in Bioeducation Workshop, 11 August, 9 A.M.-5 P.M.	(no.) @ \$60.00 ea.	\$

TOTAL AMOUNT (US dollars only) \$ 25.00

Please charge my _____ VISA _____ MasterCard \$25 check enclosed (payable to AIBS)
Card number _____ Expiration date _____ Signature *Norim Johnson*

Since buffet tickets will be very limited or not available at on-site registration, participants are urged to order tickets in advance and enclose full payment with registration application.

Students must enclose status verification from their department chairman or major professor or enclose copy of your valid student ID.

Spouses attending sessions must register separately and pay full registration fee.

ADVANCE UNIVERSITY HOUSING/FOOD SERVICE APPLICATION
36th Annual AIBS Meeting
11-15 August 1985

Please mail this form with payment no later than 30 June 1985 to: AIBS Conference, D.O.C.E., University of Florida, 1938 West University Avenue, Gainesville, FL 32603 Tel. 904/392-1701.

Name Johnson Norma G. Telephone (919) 929-5028
 (Last) (First) (Initial)
 Address 100 Pine Hill Dr. #4, Carrboro NC 27510
 (Street) (City) (State) (Zip)

CAMPUS HOUSING

Office use only: Hall _____ Room _____

I () will () will not be arriving by personal or rental car.

Arrival Date 8/11 Time ? PM Departure Date 8/15 Time _____
 (AM/PM) (AM/PM)

Note: Campus checkout 12 noon Thursday; 15 August (see motel directory)

Circle one: Male Female Couple Family Accompanying Children

Name of accompanying spouse _____ Name _____ Age _____ Sex _____
Linda Raubeson
 (Name of roommate preference, if any)

Roommate who does () does not () smoke.

Special arrangements for handicap _____

Double Room

Triple Room

# Nights	# Persons	Cost/person	Total	# Nights	# Persons	Cost/person	Total
3	_____	× \$36.50	= \$ _____	3	_____	× \$32.00	= \$ _____
<input checked="" type="checkbox"/> 4	<u>1</u>	× \$44.00	= \$ <u>44.00</u>	4	_____	× \$38.00	= \$ _____
5	_____	× \$49.00	= \$ _____	5	_____	× \$43.00	= \$ _____
6	_____	× \$54.50	= \$ _____	6	_____	× \$48.00	= \$ _____

TOTAL HOUSING \$ _____

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	Unit Price	×	Quantity Needed	=	Total Price
Six-Meal Plan	\$21.75		_____		_____
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TOTAL FOOD SERVICE \$ _____

GRAND TOTAL HOUSING AND FOOD SERVICE \$ _____

PAYMENT PLAN

Please charge my VISA MasterCard Check enclosed (payable to University of Florida)

Card number _____ Expiration date _____

Signature _____

Please check the society functions you plan to attend. Tickets will be on sale during AIBS registration.

- | | | |
|---|---|--|
| <input type="checkbox"/> AFS Luncheon, 8/12 | <input checked="" type="checkbox"/> BSA Banquet, 8/14 | <input type="checkbox"/> PSA Reception, 8/11 |
| <input type="checkbox"/> ASPT Banquet, 8/13 | <input type="checkbox"/> IAWA Reception, 8/12 | <input type="checkbox"/> PSA Auction, 8/14 |
| <input type="checkbox"/> ATB Banquet, 8/13 | <input type="checkbox"/> MSA Breakfast, 8/14 | <input type="checkbox"/> PSA Banquet, 8/13 |
| <input checked="" type="checkbox"/> BSA Reception, 8/12 | <input type="checkbox"/> MSA Reception, 8/14 | <input type="checkbox"/> SEB Luncheon, 8/13 |

February 1985

MONDAY MORNING, 12 AUGUST

SESSION 13. Contributed Papers: Paleobotanical Section.
MICHAEL A. CICHAN, University of Michigan, Ann Arbor,
MI 48109 (313/764-0487), presiding.

8:50 G.W. ROTHWELL, Ohio University, Athens, OH.
Introduction.

9:00 J.W. GREEN*, A.H. KNOLL and K. SWETT, Harvard
University, Cambridge, MA and University of Iowa, Iowa
City, IA. Silicified microfossils from the Upper
Proterozoic Limestone-Dolomite Series, central East
Greenland.

9:15 NORMA G. JOHNSON*, PAUL K. STROTHER and ALFRED
TRAVERSE. University of North Carolina, Chapel Hill,
NC, Boston University, Boston, MA, and Pennsylvania
State University, University Park, PA. Indications of
an algal affinity for some Early Silurian plant
microfossils from central Pennsylvania.

9:30 S.P. STUBBLEFIELD. The Ohio State University,
Columbus, OH. White rot in an Upper Pennsylvanian
progymnosperm.

9:45 DIANE M. ERWIN. Ohio University, Athens, OH.
Morphology and anatomy of distinctive branching systems
from the Upper Devonian of West Virginia.

10:00 WILSON A. TAYLOR. The Ohio State University, Columbus,
OH. Spore and thallus ultrastructure of the enigmatic
alga Protosalvinia.

10:15 RECESS

10:30 BARBARA A. ROY* and LAWRENCE C. MATTEN. Southern
Illinois University, Carbondale, IL. Notes on
Lycopogonia callicyrta from the New Albany Shale.

10:45 STEPHEN E. SCHECKLER. Virginia Polytechnic University
and State University, Blacksburg, VA. Seed plant
diversity in the Late Devonian (Famennian).

11:00 GREGORY J. RETALLACK. University of Oregon, Eugene,
OR. Reconstructions of Scottish, Early Carboniferous,
seed ferns.

11:15 GAR W. ROTHWELL* and ANDREW C. SCOTT. Ohio University,
Athens, OH and Chelsea College, University of London,
London, U.K. Ecology of the Lower Carboniferous plant
remains from Oxroad Bay, East Lothian, Scotland.

11:30 E.M.V. (VASU) NAMBU DIRI. University of Regina, Regina, Saskatchewan, Canada. Paleoecology of Late Quaternary lacustrine sediments from southern Manitoba, Canada.

SESSION 66. Poster Session: Paleobotanical Section.

9:00- JAY H. JONES. ARCO OIL AND GAS CO, Plano, TX. A comparative chemical assessment of modern and fossil cuticle.
12:00

NORMA G. JOHNSON* and ALFRED TRAVERSE. University of North Carolina, Chapel Hill, NC and Pennsylvania State University, University Park, PA. Early Silurian plant microfossils of central Pennsylvania: Biological and geological significance.

WEDNESDAY AFTERNOON, 14 AUGUST

SESSION 75. Contributed Papers: Paleobotanical Section.
CHARLES P. DAGHLIAN, Dartmouth College, Dartmouth, NH 03755 (603/646-7337), presiding.

2:00 ROBYN J. BURNHAM. University of Washington, Seattle, WA. Deposition and preservation of plants in a modern paratropical basin.

2:15 ROBERT A. GASTALDO*, STEVEN M. MCCARROLL AND DONALD P. DOUGLASS. Auburn University, Auburn, AL. Intertributary plant accumulating environments of the lower delta plain, Mobile Delta, Alabama.

2:30 GARY E. DOLPH. Indiana University, Kokomo, IN. Leaf margin variation in Indiana.

2:45 RECESS.

3:00 INFORMAL PRESENTATIONS.

4:00 BUSINESS MEETING: Paleobotanical Section.

9 July, 1985

Norma Johnson
Coker Hall 010A
University of North Carolina
Chapel Hill, NC 27514

Dear Norma:

Sure good to hear from you, but I could tell that you have cash-flow problems before I opened the letter (see enclosure)! With handwriting like yours, who needs a secretary? (But I suppose you do miss her when shen's gone--I sure miss mine when she's gone, especially as she's also the clean-towel lady and bed-maker.)*

Well, no, the \$ from the Silurian budget had to be expended by 30 June, and the last few tiny dregs were.

However, as the ~~expedition~~ will help spread our fame a little, I'd like to make a small contribution--and I enclose a personal check for \$25 to cover the registration. Best I can do at the moment.

Let me critique the MS if it would help.

Regards to Dr. G. She apparently had amniocentesis, as she says "it's a girl".

All the best.

Yours very truly,

Alfred Traverse
Professor of Palynology

AT/et
encl: check for \$25

*(It's always nice to be appreciated--et)

*This will be
pre-typed*

JOHNSON, NORMA G.*, AND ALFRED TRAVERSE. Departments of Biology and Geosciences, The Pennsylvania State University, University Park, PA 16802. - Early Silurian plant microfossils of central Pennsylvania: biological and geological significance. The Early Silurian Tuscarora Formation in central Pennsylvania has yielded a diverse and predominantly land-derived palynoflora. The presence of spore-like bodies probably indicates presence of land plants. The morphology of the spore-like bodies indicates that at least some of these land plants were more closely allied with the algae than with the embryophytes. The simple membrane coverings of the Silurian monads, dyads, and tetrads are distinguished from fern perispores and from the outer exine of cavate spores. Similar microfossil assemblages have been reported from other localities, and together these assemblages show potential for correlation of rock strata previously regarded as prevailingly unfossiliferous. Palynological variations within the geologic section at Mill Hall, Pennsylvania, are probably depositionally controlled and may contribute to understanding the complex depositional relationships within the Tuscarora Formation, which vary from braided-fluvial to possibly deltaic, lagoonal, and beach, to (atypically) nearshore marine. Population studies of assemblages of spore-like bodies (monads, dyads, and tetrads), leiospheres, nonacanthomorphic acritarchs and other palynomorphs provide data for biological, stratigraphic, and paleoecological investigations.

D. Traverse

1/24/85

Dr. Genzel read this and says all is OK.

I'm thinking about giving a talk, too, stressing the 'algal' nature of the outer membranes, etc. Dr. Genzel will check the abstract, etc. Would it be OK to put Johnson & Traverse as authors w/out you seeing the abstract now (I will send it in a couple of days)?

Will call you Theo ~ 8PM. (cheap rate)!

Norma J.

317 Coker Hall
Univ. of N. Carolina
Chapel Hill, NC 27514
December 5, 1984

Dr. A. Traverse
435 Deike Bldg.
Penn State U
University Park, PA 16802

Dear Dr. Traverse:

Here are the review sheets and photocopies of the manuscript pages with proposed changes in black, and with actual changes in red.

Overall the reviewers made some very helpful suggestions which I think improved the manuscript. A few of the suggestions were superfluous, or else reflected the fact that the reviewer had not yet read the next sentence or the next few paragraphs. I feel good about all the changes made, but will withhold sending the corrected manuscript in to RPP until I hear from you.

Further comments on manuscript pages:

- p. 3: prevailingly is in the dictionary
- p. 11: right, some were not palyniferous and so were not compared to Cramer's
- p. 11: reworded to make meaning clear
- p. 17: The author prefers to use the first person.
- p. 21: yes, it is still a synonymy list because it includes every synonym, but just not every reference that was ever made to each synonym
- p. 22: it's not a diagnosis, it's a description;
so that's ok to say "no pylomes," etc., right???
- p. 25: Is this so? I could have two species, but I don't like it. Let someone else who NEEDS a division there (I doubt that they will) make it themselves. I saw no need to divide them.
- p. 28: some discussion of ways to get dyads is necessary.
Why not via abortion?: because that phenomenon is mostly significant for megaspores, not for microspores (I doubt these things are megaspores!)
- p. 43: good suggestion; does not change or reduce meaning of discussion to delete the history of definitions. (appropriate deletions made in references cited).
- p. 56: D&S, '64 should not be (and isn't) listed in ref's cited;
D&S, '63 is found in text on p. 23.

The things you may most want to check over are the taxonomy items on pp. 22 and 25. The rest (I think) is AOK.

Also enclosed are some warty tubule photos of different sizes, hopefully you can get one to fit. Keep the rest if you want, I have the negatives.

Wishing you and Mrs. Traverse a MERRY MERRY MERRY CHRISTMAS!

Best wishes,

Norma G.
Norma G. Johnson

Editorial Office "Review of Palaeobotany and Palynology"
 P.O. Box 1930
 1000 BX Amsterdam (The Netherlands)

The attached paper has been submitted for publication in REVIEW OF PALAEOBOTANY AND PALYNOLOGY, please be so kind as to review it and recommend acceptance or rejection. Kindly consider the points listed below which seem appropriate to this manuscript. Please make all possible comments on this sheet, using the reverse side if necessary and/or supplementary sheets, additional comments and/or corrections may be marked on the manuscript, preferably in red pencil. In case of need, please feel free to consult a colleague. The comments given on the check list will be passed on to the author(s) anonymously. Please return this list in duplicate, together with the manuscript, to the Editorial Office; the third copy is for your own file. If you are not in a position to complete the review within three weeks, please notify the Editorial Office or return the manuscript directly to us.

Author: Norma G. Johnson

Title: Early Silurian Palynomorphs from the Tuscarora Formation in Central Pennsylvania and their Paleobotanical and Geological Significance

1. Is the subject suitable for publication in this journal? Yes
2. Are interpretations and conclusions sound and justified by data? Yes
3. Is this a new and original contribution? Yes
4. Are the organization and length satisfactory? Yes
5. Is it clearly presented? There are some areas that can be tightened up a bit relative to style. The author should move away from using the personal pronouns in the text. Several other style areas are suggested.
6. Can you suggest brief additions that will increase the value of this paper for an international audience?
No
7. Is the abstract informative?
Yes
8. Are the illustrations and tables all necessary and acceptable?
Yes
9. Does the title of this paper sufficiently clearly reflect its contents?
Yes
10. Are the references adequate and are they all necessary?
Yes, but some are not as recent as they might be. See comments in text.
11. Is the paper (a) acceptable for publication in its present form?
with minor revision?
~~only with major revision?~~
(b) unacceptable?
12. Please list any other general comments or specific suggestions on the reverse side or on separate sheets (in duplicate please). The perispore discussion (p. 43) needs to be deleted or modified using more recent literature sources.

Editorial Office "Review of Palaeobotany and Palynology"

P.O. Box 1930,

1000 BX Amsterdam (The Netherlands)

The attached paper has been submitted for publication in REVIEW OF PALAEOBOTANY AND PALYNOLOGY, please be so kind as to review it and recommend acceptance or rejection. Kindly consider the points listed below which seem appropriate to this manuscript. Please make all possible comments on this sheet, using the reverse side if necessary and/or supplementary sheets, additional comments and/or corrections may be marked on the manuscript, preferably in red pencil. In case of need, please feel free to consult a colleague. The comments given on the check list will be passed on to the author(s) anonymously. Please return this list in duplicate, together with the manuscript, to the Editorial Office; the third copy is for your own file. If you are not in a position to complete the review within three weeks, please notify the Editorial Office or return the manuscript directly to us.

This paper arrived while I was out of Ithaca on vacation -- hence the apparent delay in returning the comments.

Author:

Orma G. Johnson

Title:

Early Silurian Palynomorphs from the Tascara Formation in Central Penn. and their Palaeobotanical and Geological Significance

1. Is the subject suitable for publication in this journal? YES
2. Are interpretations and conclusions sound and justified by data? YES
3. Is this a new and original contribution? YES - and they are in an area that is just beginning to develop. Therefore all possible detail is needed to develop the subject.
4. Are the organization and length satisfactory? YES, except where noted below
5. Is it clearly presented? YES
6. Can you suggest brief additions that will increase the value of this paper for an international audience?
NO - it is long enough now
7. Is the abstract informative? YES
8. Are the illustrations and tables all necessary and acceptable? Useful. The photocopies imply that the original photographs are suitable
9. Does the title of this paper sufficiently clearly reflect its contents? YES
10. Are the references adequate and are they all necessary? YES
11. Is the paper (a) acceptable for publication in its present form?
with minor revision? XXXX
only with major revision?
(b) unacceptable?
12. Please list any other general comments or specific suggestions on the reverse side or on separate sheets (in duplicate please).

COMMENTS:

Page 11. End of full paragraph. Could the writer add words such as the following: "and their identification_s agrees with those of Cramer." after "and chitinozoans" and before the period? If my additional words describe the situation correctly, I suggest the sentence be rewritten to include the statement.

Page 12, line 6 change "that" to "these"

Page 22, line 4 Change "that" to "than"

Page 26. Downie and Sargeant are listed here for 1964.
Literature cited gives Downie and Sargeant 1963
I cannot find D & S 1963 in the text
Find the error and correct

Page 41. lines 16 to 20.

"For that reason I conducted -----" reads like a dissertation that was not modified for publication. Change it.

Also, the order of study given in this sentence is not followed in succeeding paragraphs. The reader expects the occurrence of sporopollenin in extant and fossil algae to come first rather than "The significance of membrane -----".

Change either the introductory paragraph or the order of the succeeding paragraphs.

Page 42, lines 5-6 from bottom. delete one use of the word "possible"

Page 46, line 5 from bottom - correct the spelling. See ms.

Page 58, line 18. correct the spelling. see ms.

Editor-in-Chief:

W. Punt
University of Utrecht
Lab. of Palaeobotany & Palynology
Heidelberglaan 2
3584CS Utrecht (De Uithof)
The Netherlands

Mrs. Norma G. Johnson
Department of Biology
Coker Hall 010A
The University of North Carolina
Chapel Hill, N.C. 27514
USA

Our ref.

JO

Your ref.

Amsterdam, November 8, 1984

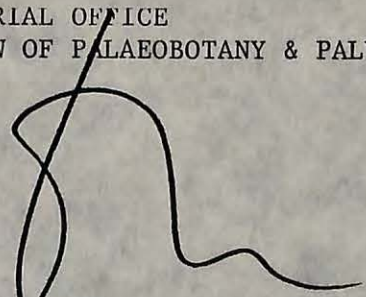
Dear Mrs. Johnson:

Your manuscript "Early Silurian palynomorphs from the Tuscarora Formation in central Pennsylvania and their paleobotanical and geological significance" has been reviewed by members of the editorial board and by Dr. Punt. I am pleased to say that it has been favourably received and with your attention to a few points raised we shall be glad to publish it in our journal. Two review reports are enclosed herewith and a couple of marked pages are being sent to you separately. I shall be glad to hear of any changes which you may wish to make, e.g., deletion of the perispore discussion on page 43?

With kind regards,

Yours sincerely,

EDITORIAL OFFICE
REVIEW OF PALAEOBOTANY & PALYNOLOGY


J. Ottevanger

13 December, 1984

Ms. Norma G. Johnson
317 Coker Hall
University of North Carolina
Chapel Hill, NC 27514

Dear Norma:

Warty tubules photos came--great prints!--whopped one of 'em up immediately to replace the one that was vandalized--will keep others for future repairs.

I note the larger package from you has arrived--will get at it very soon, but comps for Ron and Martin and finals for 423 and 427 are on top of the pile at the moment.

Best to you for the holidays!

Yours very truly,

Alfred Traverse
Professor of Palynology

AT/et

12-5-84

Oops - Came upstairs from putting
the manuscript pages in the mail slot
and these photos were still on my
desk. (If you set this 1st copy
of corrections and change to RPP
manuscript follow soon).

JLW

15 November, 1984

Norma G. Johnson
Department of Biology
University of North Carolina
Chapel Hill, NC 27514

Dear Norma:

Have you heard anything directly about your manuscript? I still haven't heard "boo" here, and would like to know (just had a request for a reprint of it from Italy).

Best.

Yours very truly,

Alfred Traverse
Professor of Palynology

AT/et

14 September, 1984

Ms. Norma Johnson
Department of Biology
University of North Carolina
Chapel Hill, NC 27514

Dear Norma:

The poster went well and was well received. There were, finally, 70 posters!

I learned several lessons from the ~~exper~~ience:

1. One cannot count on "8' x 4'" being actually that large. The boards at Calgary had structural supports in the corners that made the boards actually 7' x 3.5'. (Fortunately, the poster next to ours was cancelled, and I expanded into that space.)

2. Poster materials should be mounted on thin board or heavy paper. Our board was too heavy, and to my astonishment there was no way the larger pieces would stay up with thumb-tacks--I had to use white (as they say in PA) "duck" tape to supplement the tacks, and even then had trouble.

3. Poster materials should be produced in pieces no bigger than, say, 15 x 18", so that they can be carried in a suitcase. Betty bought me a huge artist's carrier for ours, but I had a hell of a time with it--one pilot on a commuter flight put it in the cockpit behind his seat!

A gentlemen named G. Kent Colbath, a former student of Jane Gray now at Smithsonian (!--she was not there), spent much time at the poster. He was pretty unfriendly and made a number of condescending remarks, but he more or less devoured your thesis.


A man named Neil Burgess, a doctoral student of John Richardson (London), was very interested and discussed everything and then sat on the floor reading your thesis by the hour.

I mention these two only because they are of special interest--many ~~can~~ be. Unfortunately I was sick (sore throat and later laryngitis) for the whole conference. Still am only 75%.

We miss your cheerful face. All the best.

Yours very truly,

AT/et
encl: note


Alfred Traverse
Professor of Palynology

EDITORIAL OFFICE
P.O. Box 1930
1000 BX AMSTERDAM
THE NETHERLANDS

Prof. A. Traverse
The Pennsylvania State Univ.
College of Earth and Mineral
Sciences
Deike Building
University Park, PA 16802
USA

Amsterdam, 2-7-84

Dear Sir,

We acknowledge with thanks receipt of the manuscript: "Early silurian palynomorphs from the Tuscarora formation in Central Pennsylvania and their paleobotanical and geological significance" by N.G. Johnson".

The decision of the Editorial Board of the journal, concerning publication of your contribution will be communicated to you as soon as possible.

On account of absences of editors and referees during the holiday and field work season, delays in obtaining decisions may arise. Every effort will be made to keep these to a minimum.

Your sincerely

EDITORIAL OFFICE
REVIEW OF PALAEOBOTANY
AND PALYNOLOGY


A.V. Stunt

27 June, 1984

Ms. Norma G. Johnson
Department of Biology
University of North Carolina
Chapel Hill, NC 27514

Dear Norma:

Here's your name plate--maybe you can use it in Chapel Hill?

We are going to miss you very much.

Best.

Yours very truly,

Alfred Traverse
Professor of Palynology

AT/et
encl