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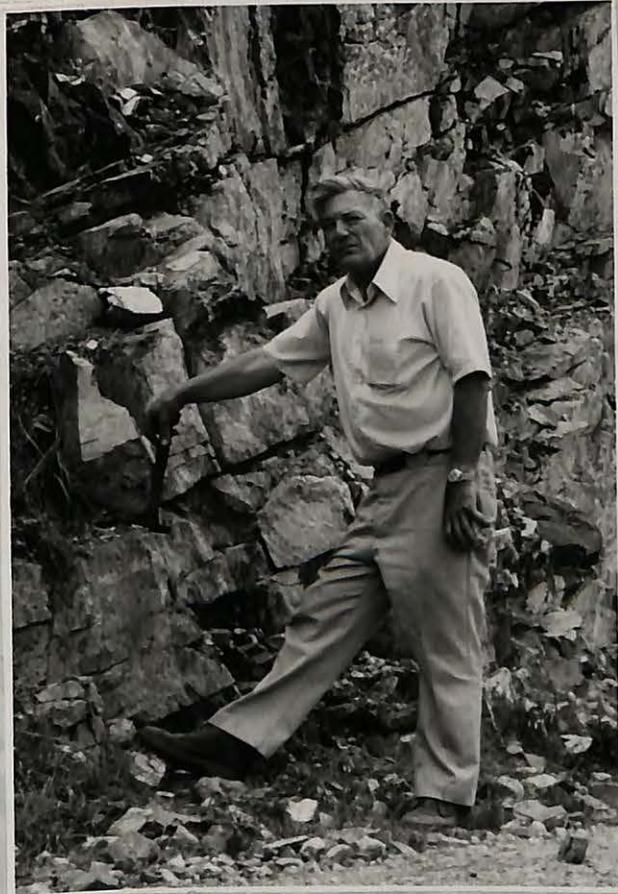
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About the Institute

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.

ES 1975



Elso S. Barghoorn in the field with
rocks of the Fig Tree Group, 1975.



MEMORIAL SERVICE

ELSO S. BARGHOORN
Fisher Professor of Natural History
Harvard University

Place: GEOLOGICAL LECTURE HALL
GEOLOGICAL MUSEUM
HARVARD UNIVERSITY
24 OXFORD STREET
CAMBRIDGE, MASSACHUSETTS

Time: 2:00 P.M. WEDNESDAY, APRIL 25, 1984

Reception (immediately following the service)
in the Hoffman Lounge, 20 Oxford Street

The family requests that memorial contributions be sent to Harvard University, the Elso S. Barghoorn Memorial Fund, for the benefit of graduate student field research and education in paleontology.

Department of Geological Sciences
Harvard University
24 Oxford Street
Cambridge, MA 02138

THE NEW YORK TIMES, WEDNESDAY, FEBRUARY 1, 1984

Elso Barghoorn, Fossil Expert

By WALTER SULLIVAN

Elso S. Barghoorn Jr., whose investigations of plant fossils gradually pushed back estimates of the origin of life to more than 3.4 billion years ago, died in his sleep Friday, according to a Harvard University spokesman. He was 68 years old.

For many years Dr. Barghoorn was Fisher Professor of Natural History at Harvard and curator of the university's plant fossils. After the age of 65 he continued as a part-time faculty member.

In the 1950's Dr. Barghoorn reported the discovery of fossilized colonies of blue-green algae and aquatic fungi near Lake Superior. Their age was determined to be two billion years.

By the mid-1960's he had increased science's estimate of the age of the earliest known fossils by another billion years, based on discoveries in South Africa. In 1977 he and his colleagues reported finding South African fossils 3.4 billion years old.

Since the earth had formed little more than a billion years earlier, and probably required several hundred million years to acquire oceans and atmosphere, the findings meant that life originated soon after a suitable environment appeared.

Elso Sterrenberg Barghoorn was born in New York City and, after graduating from Miami University in Ohio, obtained his doctorate at Harvard in 1941. He taught at Amherst College before joining the Harvard faculty in 1955. His home was in Carlisle, Mass.

In 1941 he married Margaret Alden MacLeod, from whom he was later divorced. In 1953 he married Teresa Joan La Croix. After a second divorce he married Dorothy Dellmer Osgood in 1964. She died in 1982. He is survived by a son, Steven F. Barghoorn of New York City, and a brother, Frederick C. Barghoorn, who is a professor emeritus of political science at Yale.

Harvard University Gazette

February 3, 1984

Discovered Fossils 3.4 Billion Years Old

Renowned Paleobotanist Elso Barghoorn Dies

Professor Elso Sterrenberg Barghoorn Jr.—the discoverer of fossils thought to be more than 3.4 billion years old, the oldest known evidence of life on Earth—died last Friday at his home in Carlisle, Mass. He was 68.

A professor of biology and geology since 1947, Barghoorn held the Fisher Professorship of Natural History, Harvard's oldest science chair, from 1973 and served as Curator of Paleobotanical Collections in the Botanical Museum.

According to a former student and colleague at the University, Associate Professor of Biology Andrew Knoll, "Much of what we know about the first 80 percent of evolutionary history is a direct or indirect result of Elso Barghoorn's research." He added that Barghoorn "just about single-handedly started" the work that has radically revised estimates of when life started on earth.

Knoll said Barghoorn's knowledge "was remarkable not only for its depth, but also for its breadth. His research papers included major contributions to plant anatomy, mycology, coal science, paleoclimatology, the paleontology of land plants, and archeological botany."

In studies conducted jointly in 1965-67 with J. William Schopf, Barghoorn used optical and electron microscopy in finding fossil microorganisms more than 3.4 billion years old in rocks from South Africa.

Along with Stanley Tyler of the University of Wisconsin, Barghoorn had revised theories of when life originated on earth with the discovery in 1954 of fossilized bacteria two billion years old. Earlier the same year, Barghoorn had uncovered the world's oldest known coal deposits near Iron River, Michigan. The coal, of Precambrian origin, was later estimated to be about two billion years old.

During the Apollo Program in the 1960s and 1970s, he served as Principal Investigator for NASA, analyzing Moon rocks for traces of carbon and other signs that life may have existed on the moon.

In 1982, two students working in Barghoorn's lab, Cecilia Lenk and Paul Strother, discovered what Barghoorn termed evidence that sedimentary rocks in the Boston basin—bordering Lynn on the north and the Blue Hills to the south—are at least 600 million years old,

not 250 million years old, as previously estimated.

Colleague Richard Schultes, Edward Jeffrey Professor of Biology, remembers Barghoorn as "an outstanding teacher who shared both his discoveries and the credit for them with his graduate students. He was well known and respected in both geology and biology."

For his work in paleobotany, Barg-

(Continued on page 12)



Elso Barghoorn.

Barghoorn received numerous awards, including the Charles Doolittle Walcott Medal of the National Academy of Sciences in 1972, the Ferdinand Vandeveer Hayden Medal of the Philadelphia Academy of Natural Sciences in 1968, and the Merit Award of the Botanical Society of America in 1967.

Barghoorn also belonged to many professional associations and societies, among them the National Academy of Sciences, the American Academy of Arts and Sciences, the Linnaean Society of London, and the Geological Society of America.

Born in 1915 in New York, Barghoorn received the A.B. from Miami University (Ohio) in 1937, the M.A. in 1938, and the Ph.D. in 1941 from Harvard.

Barghoorn is survived by a son,

Steven F. Barghoorn of New York City, and a brother, Professor Frederick Barghoorn of Yale.

Arrangements for a memorial service at Harvard are yet to be completed.

Elso Barghoorn Jr., 68; honored for findings on the origins of life

By William P. Coughlin
Globe Staff

Dr. Elso Sterrenberg Barghoorn Jr., 68, of Carlisle, the discoverer of fossils estimated to be approximately 3½ billion years old — the oldest known evidence of life on earth — died in his sleep in his Carlisle home Friday.

"Eighty percent of the history of life ... is the result of this man's research," a Harvard colleague and former student, Dr. Andrew Knoll of Belmont, said yesterday. "Dr. Barghoorn just about single-handedly started this work," Knoll said.

Dr. Barghoorn, a professor of both biology and geology at Harvard since 1947, held the Fischer Professor of Natural History Chair, Harvard's oldest science chair.

For the past three years, since he turned 65, rather than retire, Dr. Barghoorn had opted to stay at Harvard as a half-time professor. He had lived in Carlisle for the past 20 years.

Respected internationally as a paleobotanist, he had received numerous honors for his findings about the origins of life on earth — among them the Charles Doolittle Walcott Memorial Medal from the National Academy of Sciences in 1972, for his discovery of fossil traces in South Africa believed to be 3.4 billion years old. He was a member of the American Academy of Arts and Sciences and the National Academy of Sciences.

Before his discovery of the oldest known fossil, Dr. Barghoorn had joined with a colleague, Dr. Stanley Tyler of the University of Wisconsin, to set back the origin of life on earth to at least two billion years — 1800 million years before the earliest dinosaurs, when they found fossilized bacteria that old in Southern Ontario, Canada.

Previously in 1954, he, Dr. Tyler and geologist L.P. Barrett had un-



DR. ELSO S. BARGHOORN JR.
1972 photo

Dr. Barghoorn had applied paleontological research to climatic change in North America as deduced from prehistoric plant life, and it was his theory that so-called Indian Corn — maize — is native here, rather than to Asia as once thought.

In 1982, two students working in Dr. Barghoorn's Harvard laboratory, Cecilia Lenk and postdoctoral fellow Paul Strother, discovered what Dr. Barghoorn said was evidence that sedimentary rocks in the Boston basin — bordering Lynn on the north and the Blue Hills to the south — are at least 600 million years old, not 250 million years old as estimated earlier.

Dr. Barghoorn earned his bachelor of science degree at Miami University in Ohio in 1937 and received his PhD from Harvard in 1941. He then spent two years on the faculty at Amherst.

After a brief return to Amherst following work with the Army in World War II, he was appointed to the Harvard faculty. He was cura-

...to set back THE ORIGIN OF LIFE
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est dinosaurs, when they found fos-
silized bacteria that old in South-
ern Ontario, Canada.

Previously in 1954, he, Dr. Tyler
and geologist L.P. Barrett had un-
covered near Iron River, Mich., the
oldest coal deposit yet discovered.
At the time, this discovery carried
the origins of plant life back to one
billion years. It later turned out
that the coal also was two billion
years old.

Following on the heels of
"Something About Amelia,"
ABC turns its attention to
tape in a TV-movie called
"When She Says No" at 9

KATHLEEN GUNLAN
in "When She Says No"



...HIS NEW YORK HARVARD
1941. He then spent two years on
the faculty at Amherst.

After a brief return to Amherst
following work with the Army in
World War II, he was appointed to
the Harvard faculty. He was cura-
tor of the paleobotanical collections
at Harvard.

Dr. Barghoorn wrote at least
125 scientific papers from his early
work in plant anatomy and later
on the study of marine fungi. "He
wrote these papers at a time when
he was being told there were no
such things," Dr. Knoll said.

In 1965 he married Dorothy (Os-
good) Barghoorn, who died in 1982.
A previous marriage to Teresa
Joan (La Croix) produced two sons,
Jonathan E., who died 20 years
ago, and Steven F. Barghoorn of
New York City.

Besides his son he leaves a
brother, Frederick Barghoorn, a
Yale University professor. Funeral
arrangements are incomplete.

Elso Barghoorn, Fossil Expert

By WALTER SULLIVAN

*NY Times
2/1/84*

Elso S. Barghoorn Jr., whose investigations of plant fossils gradually pushed back estimates of the origin of life to more than 3.4 billion years ago, died in his sleep Friday, according to a Harvard University spokesman. He was 68 years old.

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Elso Sterrenberg Barghoorn was born in New York City and, after graduating from Miami University in Ohio, obtained his doctorate at Harvard in 1941. He taught at Amherst College before joining the Harvard faculty in 1955. His home was in Carlisle, Mass.

In 1941 he married Margaret Alden MacLeod, from whom he was later divorced. In 1953 he married Teresa Joan La Croix. After a second divorce he married Dorothy Dellmer Osgood in 1964. She died in 1982. He is survived by a son, Steven F. Barghoorn of New York City, and a brother, Frederick C. Barghoorn, who is a professor emeritus of political science at Yale.

Your kind expression
of sympathy
is deeply appreciated

and

gratefully acknowledged

by the family of
Dorothy Oregon Barham

Thank you so much for your
kind words and thoughts. I
find it difficult to say more

Elsa

7 August, 1980

Dr. E. S. Barghoorn
Paleobotanical Laboratories
Harvard University
22 Divinity Ave.
Cambridge, MA 02138

Dear Elao:

Enclosed is the promised deal on the proposal---it certainly was amply reviewed, and the overall ratings were so good that the bottom line is hard to believe. Perhaps your counsel, to put it back through, is good, though the natural place for it is Geology, and I fear I am already into them for all the traffic will bear. Perhaps one of the private foundations??

All the best.

Yours very truly,

Alfred Traverse
Professor of Palynology

AT/ey
encl: NSF reviews

23 June, 1980

Dr. Elso S. Barghoorn
Harvard University
Biological Laboratories
16 Divinity Ave.
Cambridge, MA 02138

Dear Elso:

The Traverse-Strother-Barghoorn proposal was not funded (xeroxes enclosed). It was not funded primarily (they say) because

1. it wasn't biological enough
2. your status sounded suspicious
3. we didn't promise success in finding fossils
4. reviewers were suspicious of Paul's support, as he is "untried".

I have never had a turn-down of a proposal which got otherwise such good reviewer "marks"--and the reasons given are puzzling, especially 3!

Comments? I called Paul's mother here to ~~tell~~ tell him the bad news and discovered he's already in UK for 5-IPC. Betty and I leave this week. I am looking forward to completion of my term as President of ICP and expect to be hard to persuade to take on any more such administrative duties. It has been a bear.

Best wishes.

Yours very truly,

Alfred Traverse
Professor of Palynology

AT/et

encl: copy of letter to Beaman

xxx

14 December, 1979

Dr. Elso Barghoorn
Harvard University
Biological Laboratories
16 Divinity Ave.
Cambridge, MA 02138

Dear Elso:

It was fun to talk to you about our joint "project", Paul S. I have conferred with our chairman, C. W. Burnham, about your suggestion of a Penn State proposal to the NSF (Systematic Biology) to support work by Paul here and at Harvard on our "first land plants" project.

Dr. Burnham thinks the proposition is fine, and suggests we might consider a two-year proposal as perhaps being more likely to be funded because what we propose to do might be viewed as difficult to accomplish in one year. In any event, the proposal would provide a decent salary for Paul, and he would have the title at Penn State of "Project Associate".

Paul and I will discuss this next week when he's here, and you will doubtless get a full report from him a bit later.

Happy holidays!

Yours very truly,

Alfred Traverse
Professor of Palynology

AT/et

THE PENNSYLVANIA STATE UNIVERSITY

DEIKE BUILDING

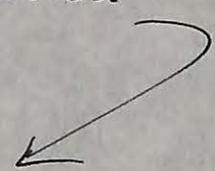
UNIVERSITY PARK, PENNSYLVANIA 16802

College of Earth and Mineral Sciences
Department of Geosciences
Palynological Laboratories

Area Code 814
865-6543
865-2342

July 11, 1974

Dr. Duncan M. Porter
Associate Program Director
Systematic Biology
National Science Foundation
Washington, D.C. 20550

file :
Barghoorn


Dear Dr. Porter:

This is with regard to the proposal by Dr. Elso S. Barghoorn, number 74-21601, which you recently sent me for review. I have been very active over the years in reviewing proposals for NSF, usually either for the geology program or the program in oceanography. However, I hope you will understand my decision to decline to review this proposal. The reason is very simple--Elso Barghoorn was my major professor when I worked on my Ph.D. degree at Harvard quite a few years ago. I believe it would be undesirable for me to be in the position of evaluating Professor Barghoorn's proposal for that reason. I am returning the proposal and other papers herewith.

Hoping that you will understand and assuring that I would be glad to assist in the future, I am with best wishes.

Yours very truly,

Alfred Traverse
Professor of Palynology

AT/vsi
Enclosures: proposal and
other papers

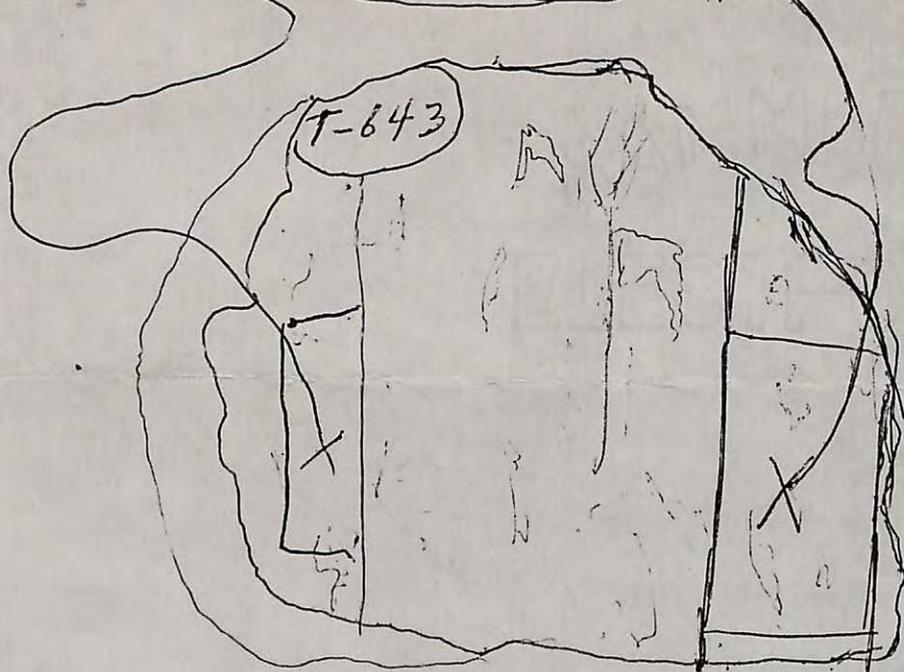
11/21/73 = Received From Else S. Barghoorn,
Professor of Natural History at Harvard,
2 Gun Flint chert samples.

T-643

1 = Large sample

MAKE 1 THIN SECTION ————— No. 1

MAKE 1 THIN SECTION ————— No. 3



DESCRIPTION = LARGE BLK

TOTAL = 4 THIN SECTIONS

COMPLETE: 2/14/74

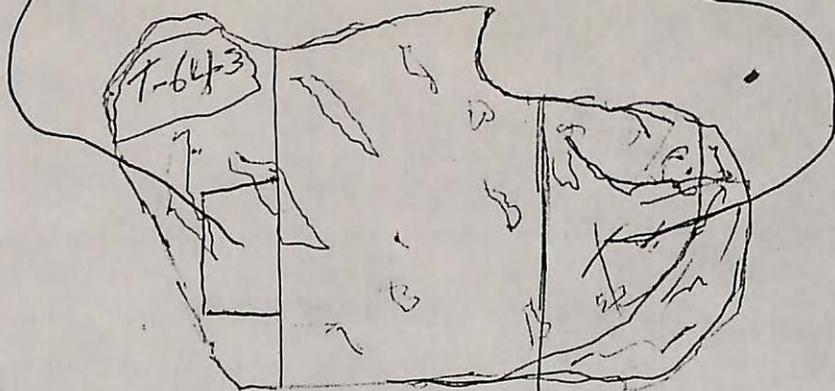
T-643

2 = small sample

MAKE 1 THIN SECTION. — No. 2

MAKE 1 THIN SECTION

No. 4



DISCRIPTION = Small BIK

TOTAL = 2 THIN SECTIONS

Complete: 2/14/74

January 29, 1974

Prof. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts 02138

Dear Elso:

Thanks for yours of 25 January. You are very provident to deduct the cash value of Volumes 1 through 27 of the Catalog of Fossil Spores and Pollen from your taxable income. This is really a valuable gift which you are making to the library. I think that in addition to volumes 1-27 you probably also donated at least one index volume. You should have had two index volumes--that to volumes 1 through 10 and that for volumes 11 through 20. The librarian ordered one of those index volumes, perhaps indicating that for some reason you did not have it, but I am sure you would have received it as a member of the original committee. If you did have it and if you do include it, that would make 29 books altogether. The current going price per volume as you know is \$40. That would make the cash value of the set \$1160. That is to say, that's what we would get for them if we were selling them (and we would have no trouble doing it). However, quite a few, something like 10, of those volumes are actually now out of print, which considerably increases their value, and I saw a set similar to yours (presumably from another member of the committee!) for sale in a bookseller's catalog several months ago for \$1500. So that would seem to be about the shape of it. The minimum value that you could place on it would be \$1160, the maximum would be something like \$1500.

The visit to your laboratory was as much fun for me as it was for anybody else. As far as I can tell, the next event which would normally draw me to Cambridge would be my son's graduation in June, if I can make it. Betty's 25th reunion at Wellesley is approximately the same time, so there is an excellent chance we'll be up there around then. I do find it awfully difficult to mix personal and family business with real business, however. There just aren't enough hours in the days when I'm in Cambridge. One of these days I just may stay in the Holiday Inn and have a completely business visit!

We have made thin sections from the chunks of Gunflint chert,
and they are loaded! Some of the little spheres are sort of "echinate".
Is this a sort you've already seen?

Best wishes, as always, to you and Dorothy.

Cordially,

Alfred Traverse
Professor of Palynology

AT/vsi

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

January 25, 1974

Professor Alfred Traverse
College of Earth and Mineral Sciences
Department of Geosciences
Palynological Laboratories
The Pennsylvania State University
University Park, Pennsylvania 16802

Dear Al:

Thank you for the copy of the letter to our library confirming the continuation of subscription to the catalog. I think it is highly desirable that we keep this up to date.

In connection with my gift of Volumes 1 - 27 could you give me a formal statement of its current cash value. I have given these to the library and feel that they merit a deductible item for income tax purposes. I think all I need is a straightforward description and figure over your signature. I'm sure there is no danger of getting "Watergated".

We enjoyed your all too brief visit just before Christmas and a number of my students would like to get you in a room all by yourself to pump your brains so be prepared the next time you visit, which I hope will be in the not too distant future.

With best wishes,

Sincerely yours,



Else S. Bargheern
Fisher Professor of Natural History

ESB:ddb
cc:1

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

November 15, 1973

Professor Alfred Traverse
The Pennsylvania State University
College of Earth and Mineral Sciences
Palynological Laboratories
Deike Building
University Park, Pennsylvania 16802

Dear Al:

It was good to talk with you over the phone the other day about the many things we discussed. It was a reminder that it has been a long time since we have had a chance to discuss so many things.

Regarding the Gunflint chert samples - I would suggest you thin section the pieces from one or both ends for a few sections of each. Do it yourself or have your best assistant do it. Should be done with a thin diamond-copper wheel and not ground too thin - maybe 40 - 60 μ m. There is no predicting what you will find, but the pieces I sent you look like prime material from the outside.

I am pursuing the matter of the back catalogue volumes and will let you know soon. I want to keep it up but may split the cost between two libraries.

Am still wondering by whom and when the report on my health was issued. Sure glad I didn't know about it when we were living on the beach under the sky and an Acacia tree on the west coast of Australia about two years ago - or in the Namib Desert just two years ago. How strange.

Best regards from Dorothy and me,

Sincerely yours,



Elso S. Barghoorn
Fisher Professor of Natural History

ESB:ddb
cc:1

November 7, 1973

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts 02138

Dear Elso:

Thank you very much for the chunks of Gunflint chert which arrived the other day. I suppose there may be an accompanying letter, but I am grabbing the time while I have it to respond. It certainly doesn't look very promising from the outside, does it? I admire those who had enough persistence to look inside.

The only news I get from Cambridge these days is from my son, Paul, ~~that was~~ who writes that he is having a very difficult time getting into medical school, what with the press on admission of blacks and females. If he had gone to Penn State and accumulated an all A average, which I have no doubt he would have, it actually would have been easier for him. Med schools apparently make almost no allowance for the cut-throat competition at a place like Harvard. Paul has a B average, which is excellent by Harvard standards, but all As are as common as dirt in lesser institutions! I don't suppose you have any influence in some medical school somewhere, do you?

Thanks again for the chert and very best wishes.

Yours very truly,

Alfred Traverse
Professor of Geology & Biology

AT/vsi

October 3, 1973

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts 02138

Dear Elso:

It has been a longtime since I have heard from you, and here I am asking a favor! How are the chances that you could let me have a chunk of representative Pre-Cambrian chert from one of your localities? I would very much like to have a piece to pass around when I give my lecture on Pre-Cambrian plants. In the lecture I get a great deal of mileage, incidentally, out of the time in 1955 or 1956 when you visited me at Shell in Houston with a couple of slides of the Gunflint material. I was really worried at the time about your going off half cocked into the never-never land of Pre-Cambrian life.

Best wishes as ever and hoping that you can let me have a chunk of that black stuff, I am

Yours very truly,

Alfred Traverse
Professor of Geology & Biology

AT/vsi

March 16, 1973

How's
Ms. Dorothy O. Barghoorn
Biological Laboratories
Harvard University
16 Divinity Avenue
Cambridge, Massachusetts 02138

Dear Dorothy:

Thanks for your undated letter, which came about two weeks ago, regarding the Catalog of Fossil Spores and Pollen and other matters. I am enclosing the current price list for the Catalog. You and Elso will probably be shocked to see the increase in prices that have been instituted, and I fear the way things are going they have not been the last. If Elso were to renew his previously existing "standing order", you would pay only \$15.00 per volume for the bound volumes (Option D), which is I presume what you want. On the other hand, if Harvard is going to be paying for it, we should get the institutional price of \$35.00 per volume. I will leave that up to your conscience, but the Catalog is an extremely marginal operation financially--almost literally in the poor house--and we extend the personal subscription rate only for those which are truly being paid for by individuals. In other words, in answer to your inquiry, all I need to have from you is a statement that you want a standing order beginning with Volume 27 and that it is a personal order or an institutional order. Your statement about a "purchase order number" lead me to believe that it probably would be interpreted by us as institutional. Right?

Betty and I naturally reciprocate your kind regards. It surely would be good if you could drop in on us in State College sometime. I often think of you both.

It is interesting to hear that Elso is going to Utah this month. I can't help but wonder why. There certainly is an awful lot of palynology to do out there! I have two very good graduate students at the moment, and lots of interesting things going on, especially in the Triassic and Cretaceous.

Ms. Dorothy O. Barghoorn

-2-

March 16, 1973

Glad to hear that you will have an eye out for Paul. Believe it or not he is within little more than a year of being finished! He is extremely busy with affairs of the Harvard student agencies, for which he is in charge of barkeeping arrangements. He makes quite a good deal of money at it, and it's very good experience. As you may know, he has had very serious health problems, beginning last September, which took him in and out of the hospital--I went up to Cambridge to see him following the AASP meetings in Newport. He now is better, but he missed so much work that it seriously hurt his grade performance, a matter about which he is very concerned. He wrote me a while back asking for a recommendation about some subject he could work on in the general area of evolution, in connection with a course he is taking. A paper on the subject must be prepared. He knew that I teach a course in evolution here I guess.

Enough of this rambling. Best wishes to you both.

Yours very truly,

Alfred Traverse
Professor of Geology & Biology

AT/vsi

Enclosure: price list CFSP

Ca. 15-II-73

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

Professor Alfred Traverse
Deike Building
The Pennsylvania State University
University Park, Pennsylvania 16802

Dear Dr. Traverse:

This long overdue letter is to renew Elso's subscription to the Catalog of Fossil Spores and Pollen. He would like to fill in the back issues we do not have and perhaps you have this information on file. We have through Vol. 26 and Translation I & II.

Please charge and send to him at above address. If you wish to have a purchase order number please advise me and at the same time give me a general figure of amount due.

Elso sends his regards. He has not been on any trip further than Washington DC recently, although he will be going to Utah in March. He has a new first year graduate student this year and as I understand it he may renew interest in the Brandon project.

Hope all is well with you folks. We shall keep our eyes open for Paul.

Sincerely,

(Mrs. E. S.)

Dorothy O. Barghoorn

file Elso S. B. -

cc:l

March 15, 1972

Prof. E.S. Barghoorn
Department of Biology
Harvard University
22 Divinity Avenue
Cambridge, Massachusetts 02138

Dear Elso:

I was greatly impressed to receive an actual, hand-written letter from you, and let me hasten to say that I am not and never was upset about the business regarding the job in South Africa! Just amused, that's all.

You certainly seem to have had a wonderful field excursion in the Southern Hemisphere. I should have asked you to keep your eyes out for interesting looking Triassic and Jurassic rocks for palynological study, as that is one of my current big interests. At the moment I find myself simply struggling to keep head above water with graduate students, courses, committees, etc. etc.

Betty and I were greatly amused by your comments about Stephen. Of course, both of us have trouble imagining him being old enough to be in the Peace Corps until I stop to reflect that he was a baby in the summer of 1948 (as I recall), and that makes it quite believable!

I am just completing the course in palynology here. We had 8 students this term, not quite as large or as good a group as last year. One of the students, however, is Julie Van Horn, whom I believe you know from her work in your lab. She is probably the best student in class. I am currently somewhat downcast because the powers that be have decreed that no course of that sort can ever be offered unless there are at least 8 students in it. I have taught palynology for as few as four or five, and it would seem more equitable to me to make it a question of the average number of enrollees. However, this is simply a symptom of the belt tightening being imposed by the state

legislature, and some of it takes very ridiculous forms. How can it save money for me not to teach palynology when I am a tenured member of the faculty anyway?

As to research, I am doing quite a bit with the Triassic, as mentioned above. One of my students, Bob Hunay, is getting his Ph.D. in connection with this work this June and will be palynologist for the Israeli Geological Survey beginning in the fall. I have another man coming in September to do some other Triassic work, or so we think. My other principal iron in the fire continues to be the work with the Black Sea sediments on which I reported at the AASP meetings in Tucson. I really have hardly scratched the surface of the possibilities palynologically of those cores. I just finished writing the palynological part of the AGI Geological Glossary--the Glossary would be a good addition to the Tschudy-Scott volume. I am also supposed to be writing a palynological section for a micropaleontological textbook which some of the people at Woods Hole are getting out. I wish I had never agreed to do that because the time could be better spent writing my own textbook of palynology, something I think I should do. I may take a sabbatical one of these years (I become eligible next year) and go to some nice place such as Bermuda to write the book.

I just got a blurb from the 25th reunion committee asking for contributions in memoriam for those of our classmates who have died since college days and was startled and shocked to find my roommate on the list. He was a bachelor, and his parents had died, and apparently there was nobody to let me know that he had passed away in December. We noticed that we got no Christmas message but didn't think too much of it. I last heard from him in September when he promised that he would drop in on Paul one of these days. His death really makes me feel empty.

Last Saturday I went to Harrisburg in connection with my work for the Harvard Admissions and Scholarships Committee. It is simply astonishing what you have to do to be admitted nowadays. There were people whom we could tell had no chance of admission who were graduating number one in a class of 300, being at the same time president of the senior class and captain of the football team. The committee that assembled in Harrisburg represented a cross-section of professional people from all over central Pennsylvania, and I couldn't help reflect that if Harvard College doesn't enroll a good freshman class, it certainly isn't from the lack of investment of time and money in the process. I'll bet that more effort was put into considering the 40 applicants whom we judged than was invested on the whole class of six or seven thousand to be admitted to Penn State next fall (excluding, of course, the football team!).

Dr. E.S. Barghoorn

-3-

March 15, 1972

Well, I see the clock advancing, and I must get on to other matters such as writing an examination for the palynology course. Good to have heard from you again. Best wishes to Dorothy. Say hello to Paul if you see him.

Yours very truly,

Alfred Traverse
Professor of Geology & Biology

AT/vsi

HARVARD UNIVERSITY
DEPARTMENT OF BIOLOGY
PALEOBOTANICAL LABORATORIES OF THE BOTANICAL MUSEUM
22 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

Cambridge, Mass
March 7, 1972

Dear Al,

Your letter of Dec 1, 1971 has just come before my eyes ^{during} the later stages of digging out of a monumental accumulation of paper which resulted from a four month absence on leave.

Certain of my 1st class mail was not forwarded to me and your letter is a real looper. In fact it is a comedy of errors which embarrasses me.

Dr Haughton, with whom I talked about Edna Plumsteads possible successor asked me in the course of a rather extended interview for suggestions. I had very few to offer. I did, however, provide him with a few names of persons to whom to write for suggestions and one was you. How he got this mixed up I don't know. Possibly his mind was wandering at the moment - he is over 80, and although still remarkably sharp and well preserved I suspect he got it confused in his notes. Actually Haughton is really Honorary Director in fact but out of respect for his long and distinguished service to So African Geology they have kept him felled. He was for many years Director of the Survey.

Sorry for the confabulation - had your letter been

forwarded I would have been able to clarify the whole thing months ago. As it was we didn't leave Africa until late December and didn't return to Cambridge until Feb 8.

The field work in Africa and especially South West Africa was very successful. The Geol Survey there was extremely cooperative and there is about a half a ton of rocks on the way back - including our Australian collections made about the end of the year. We spent about 8 days including Christmas Day living on the beach in the Shark Bay area of West Australia. Came home across the Pacific.

I have not seen Paul since I last wrote or talked with you. I was somewhat shocked to see my bearded son in Ghana in October last. He has been in the Peace Corps there for 18 months. I don't get the fascination with beards - it makes them all look alike.

Drop me a line if you are still speaking to me!

Best regards

Elso

Barthoon

December 1, 1971

Dr. E.S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts 02138

Dear Elso:

W. Waters

I guess the enclosed copy of letter to the people at Whitwaters Rand is self-explanatory. Perhaps we have not been communicating enough lately, or you may know something I don't know. I didn't think I was looking for a job! Actually, at the moment I am trying very hard to decide what to do about an offer to spend sabbatical at Zurich, looking at the lake sediments. It's very tempting, but at the moment I am inclined to turn it down because there just seem to be too many complications in my life to make such a project feasible. At the moment, in addition to the usual overwhelming bustle of activities, I have been saddled with one of the organizational jobs in connection with the 25th reunion of the Harvard class of 1947. Would you believe it possible that I have reached that hoary state? ~~The meeting~~

The meeting at Tucson was a lot of fun as well as a lot of work. I took Betty along with me so that she would share the glory of my presidency! Afterward I did quite a bit of field work in northern Arizona, New Mexico and northwest Texas where I am working on an NSF-sponsored project on the Triassic. Hope you are flourishing.

Best wishes to Dorothy. Say hello to Paul if you see him (the question is, would you recognize him?--he had a full beard the last time I saw him, but God knows what has happened since that).

Yours very truly,

Alfred Traverse
Professor of Geology & Biology

AT/vsi
Enclosure: copy of letter to
Dr. Haughton

September 9, 1970

Professor Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts 02138

Dear Elso:

In view of certain comments of yours during the last year, you will doubtless find it difficult to believe that I have permitted it, but my son, Paul, is a member of the Harvard class of 1974 and is getting ready to embark on what I remember as a glorious adventure. His mother and I are proposing to drive up to Cambridge to deliver Paul to his dormitory on the Yard on Friday, 18 September. It occurred to Betty and me that if you all could have us, we would like to spend that night with you. It would give us a chance to get caught up on the last couple of years since we last saw you and would be much more fun (not to mention less expensive) than staying in a motel. We can bring cots and sleeping bags if it would be useful (in fact, we will have them with us, because we are going to spend a day or two in Betty's brother's studio in New York enroute). Whether you can have us over night or not, however, we do very much want to see you while we are in town and will contact you on arrival. In the meantime presuming that you're in town, I hope that you can drop me a post card to let me know whether you all are amenable.

Looking forward to seeing you, I am

Yours as always,

Alfred Traverse
Professor of Geology & Biology

AT:kc

July 28, 1969

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
16 Divinity Avenue
Cambridge, Massachusetts 02138

Dear Elso:

Was good to hear from you again and to be assured that all is well with you. Regarding the AASP--as you know, when the idea of a separate palynological society was first suggested some years ago I was opposed to it, but it was apparent to me a couple of years ago that circumstances had changed and that there really was some call for such an organization. I believe that developments have borne out my judgment in the matter. We now have nearly 300 members, scattered all over the world and ranging in specialization from a couple of medical doctors who study pollen from the point of view of allergy to folks whose primary interest is in oil field stratigraphy. The first convention at Baton Rouge last year I think was a truly outstanding meeting--I know Bill Evitt agrees with me on this, and we are naturally hoping that the second convention here at Penn State in October will be, if not equally as good, nearly so. Perhaps you will be able to come. It would be very nice if you could. I have recently heard that people like Dettman and Playford from Australia and Jardine from France are planning to attend.

I leave tomorrow for a few days in Baton Rouge attending George Hart's most recent "Short course"--this one on coccoliths and discoasters. Since I know nothing about nannofossils, I cannot help but learn some stuff which will be useful to me in my teaching.

As soon as I get back from Baton Rouge, we (all of the Traversøe) leave for the West--we will end up at Seattle for the International Botanical Congress about 20 August. According to Mamay, I am slated to be his successor as secretary of the Committee on Fossil Plant Nomenclature. I'm afraid Serge may have underestimated the opposition to yours truly, but he feels sure I will be elected. My secretary here in University Park would be delighted should I be defeated! You don't mention whether you

plan to attend the meeting in Seattle specifically, but I presume since you are one of the organizers that can be presumed. The Traverses will be camping in Seattle, and I suppose this will cramp my style a little bit, but it was really the last opportunity for a family camping trip which we have planned for years--last opportunity because Paul incredibly is now a high school senior.

I agree with you about the fascinating aspects of the chemistry of sporopollenin, and I only wish I had time to do some more work in the field.

I didn't know that you were going to be involved on the lunar samples. If I had, it would have been a useful tidbit for a recent TV show they had me do on the possibility of life in meteorites. I, of course, quoted from Staplin's, Nagy's and Timofeev's work and wondered out loud if some of the meteoritic material brought back from the moon might not show similar things.

Betty and I reciprocate the good wishes and look forward to seeing you again whenever possible.

Yours very truly,

Alfred Traverse
Associate Professor of Geology & Biology

AT:kwc

P.S.: I don't plan to attend the Paleontological Convention in Chicago in September for the reason that I will have just returned from Seattle (school starts here on 3 September), and I will be up to my ears in planning for the AASP Convention in October. Truth to tell, I have a very low saturation point for meetings.. A personality defect, no doubt.

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

17 July, 1969

Professor Alfred Traverse
Department of Geology and Geophysics
The Pennsylvania State University
University Park, Pennsylvania 16802

Dear Al:

I suppose a conscience can bother you just so long but this is a brief reply to your "form letter" of June 27, concerning any acceptance to the AASP. I fought the idea of still another society in the daft cult of proliferation of "Scientific Societies", but now that I'm in I guess I will fight for it. Please tell me what I'm fighting for. At any rate it is obviously best for the development of palynology and may bring about more rapport between the academics and the petrol industry.

The pollen exine (chemistry) question is still intriguing (and obviously requires more work). I had hoped to do some further GLG measurements on degradation products of spore-pollenine this spring but there was no time what with other things.

You may not know but I have been involved as a Principal Investigator on the Lunar Sample the past two years, so I am not sure of my schedule here in Cambridge in the period after early September. I do have a committment to give a paper at the North American Paleo. Conf. in Chicago September 5. Will you be there?

Best to you and Betty



Elso S. Barghoorn.

ESB/kh

3/23/69

Dear Al. -

Please classify me above.

Harvard ?? - what do you think of April 9 '69 ?
we are in a shameful situation and it is
not over.

E. S. Barghoorn

March 7, 1969

Dr. E.S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts 02138

Dear Elso:

It is perhaps superfluous to be one's own PR man, but in an effort to leave no stones unturned, I thought it wise to state modestly that graduate students in palynology are being trained here under my direction, and that we would therefore appreciate being grafted into the grapevine along which information about various job opportunities is said to travel.

Also, I would appreciate if if you would consider advising prospective graduate students in palynology who want to sample education elsewhere to keep the possibility of Penn State in mind. We have laboratory and library facilities as good as any, located in the new Deike Building (College of Earth & Mineral Sciences). The personnel and library of the Catalog of Fossil Spores and Pollen and our "palynological data project", as well as the various research projects, make ours a stimulating place palynologically. We now have three full-time professional palynologists (H.T. Ames, R.B. Sanders, A. Traverse), as well as a paleobotanist with a strong collateral interest in palynology (V. Spackman). Spackman and I now both have joint appointments in biology and geology, so graduate students can organize work here toward degrees in palynology-paleobotany in either biology or geology. In terms of flexibility of requirements, this is a very desirable arrangement. For example, a botanically oriented palynologist can now enroll in biology at Penn State and does not need to satisfy the various local requirements for a degree in geology. Yet such a student has available to him at Penn State first class instruction, facilities and contacts in all those area of geology which may be pertinent to his work and interests.

Please keep us in mind.

Yours very truly,

Alfred Traverse
Associate Professor of Geology
Editor
Catalog of Fossil Spores and Pollen

February 24, 1969

Dr. E.S. Barghoorn
Biological Labs.
Harvard University
Cambridge, Massachusetts 02138

Dear Elso:

Under separate cover I have sent a copy of the report on sporopollenin chemistry. I would appreciate comments, of course.

All going well here. Mammy and Schopf have persuaded me to take on the secretaryship of the international committee on fossil plant nomenclature. Mammy insists that it isn't much work, but I am beginning to feel as over-organized as my children are. You know, I think, that I am secretary-treasurer of the AASP (the new palynological society), and that the second annual convention will be held here (ouch) this fall.

☞ Come and see us some time when you want to get away from it all.

Best wishes as ever.

Yours very truly,

Alfred Traverse
Associate Professor of Geology

AT:kwc

YALE UNIVERSITY
NEW HAVEN, CONN. 06520
DEPARTMENT OF BIOLOGY
OSBORN MEMORIAL LABORATORIES

MEMORANDUM

DATE 16 January 1969

TO A1

Here's a copy of Elso's reply to me - it looks encouraging!

Teed

File Bangheover

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

January 7, 1969

Professor T. Delevoryas
Peabody Museum of Natural History
Division of Paleobotany
Yale University
New Haven, Connecticut 06520

Dear Ted:

Please excuse my delay in replying to your letter of December 9. I don't know what has happened to the past month, but it has happened.

I am entirely in agreement with your proposal that a group of us be involved in making any selection or elimination of contributed papers. I certainly don't want to have this responsibility alone and never did. It seems we have actually become a Section on Paleobotany in disguise.

Concerning the logistics of our selective procedure, I am not certain. However, I think that we will have a better idea of the total problem of channelizing the contributed abstracts after a forthcoming meeting of the Program Committee scheduled for early February in Chicago. I have just talked to John Raper about this and he as well as the other Section Chairmen are well aware of the Problem. The projected statistics are somewhat alarming - since it now appears there may be as many as 2,500 abstracts submitted. Of course a number of these will be unaccompanied by the speaker when the meeting takes place.

I'll let you know what comes out of the February meeting as soon as I find out from Raper.

I enjoyed the meetings in Mexico City very much, especially the day I did not go to any papers but went to Puebla!

Sincerely yours,



Elso S. Barghoorn
Professor of Botany

ESB:ddb
cc:l

5-11-68

2 PM

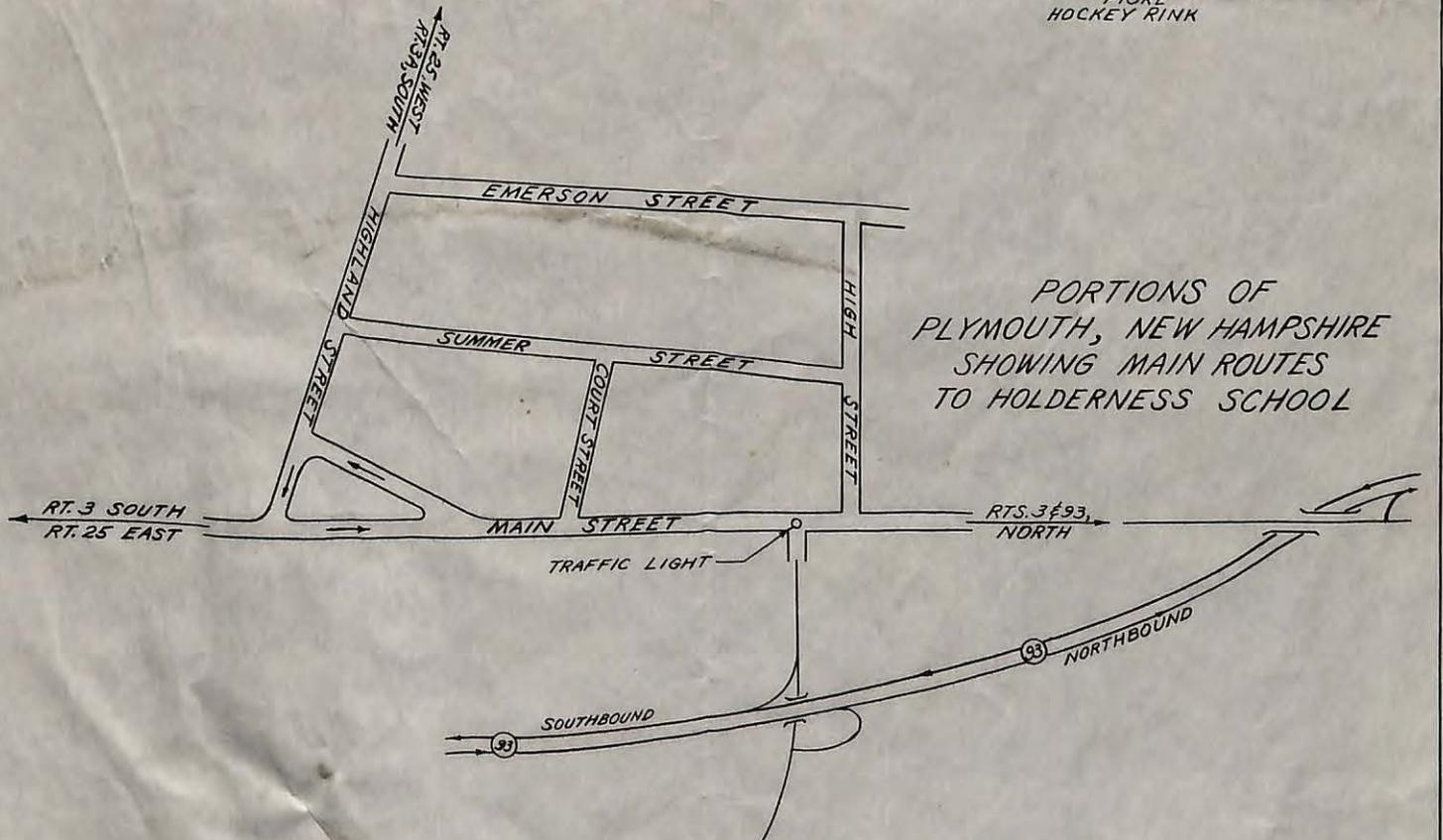
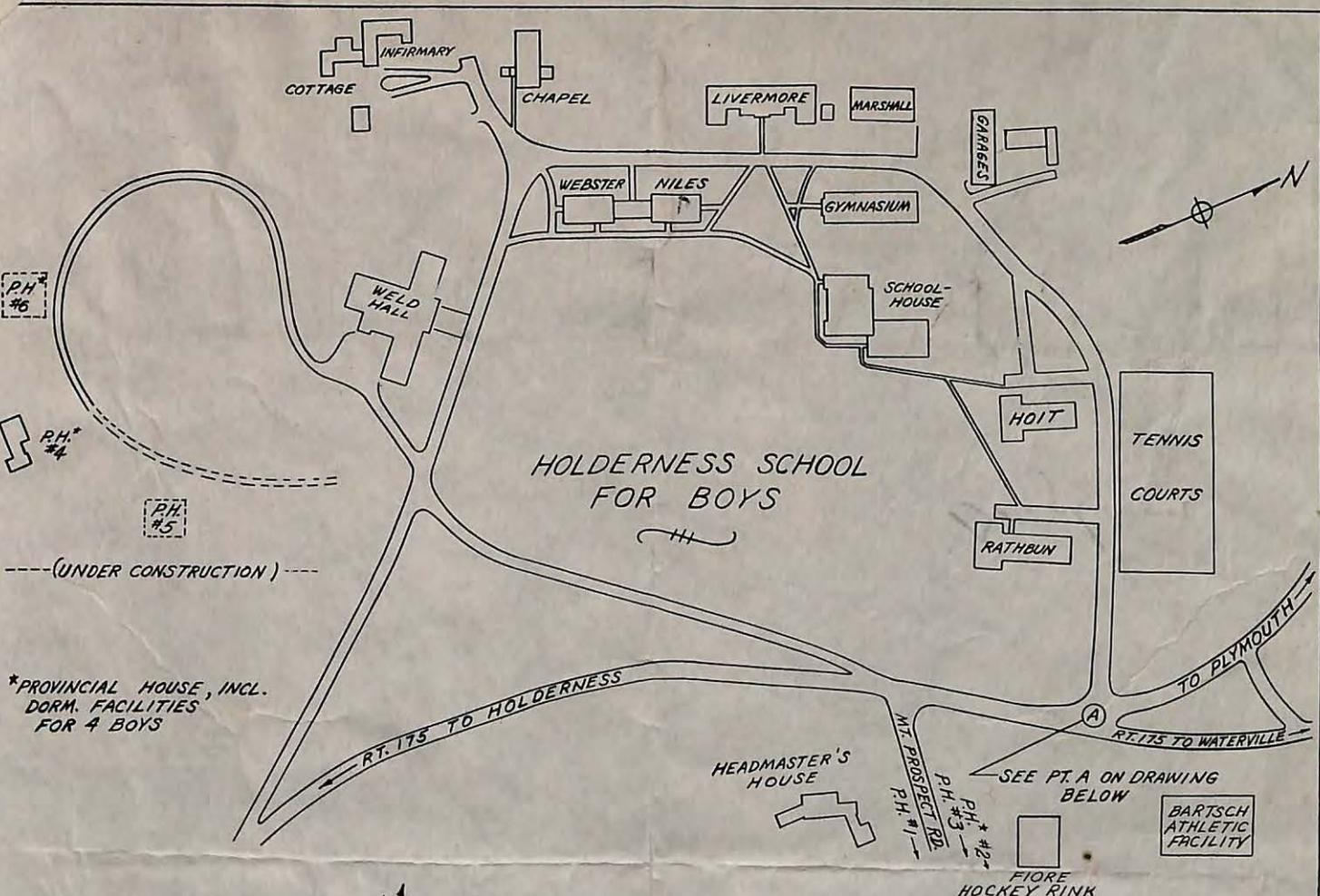
Al -

I left my folder on
the front seat. If you are
going to the banquet please
bring it - if you are not please
give it to some one else to
give to me.

E/so

Banghourn

P.S. could find you after lunch -



HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

April 12, 1968

Professor Alfred Traverse
Deike Building
The Pennsylvania State University
University Park, Pennsylvania 16802

Dear Al:

I was interested in your letter of April 3 and the attached clipping, more about which below.

The complete address you wish is Professor Warren G. Meinschein, Professor of Geochemistry, Department of Geology, University of Indiana, Bloomington. It may be addressed to his old address at Esso Research.

The clipping from the Dallas paper is interesting and also very confusing. There is nothing startling in it except the confusion of the reporter who wrote it. There has long been difference of opinion about the syngeneity of amino acids in rocks and the problem of secondary emplacement. There is really no way to prove this one way or the other simply because you can not date the amino acids themselves. By using every conceivable precaution in the laboratory there is no question but that the amino acids are in the rock. The only alternative source is contamination through geologic processes, that is from organic material penetrating. This seems highly unlikely in the case of cherts.

The report is also misleading in that it confuses the amino acid story with that of the microfossils themselves. Abelson has never doubted the authenticity or age of the Gunflint biota.

It was good to see you on the short visit Christmas week.

Best regards,

Sincerely yours,

Elso
Elso S. Barghoorn
Professor of Botany

ESB:ddb
cc:l

P.S. Could I have a reprint of the paper on jet when available

APR 3 1968

April 3, 1968

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts 02138

Dear Elso:

I wonder if you could help me out by sending me Dr. Meinschein's full name and complete address. I just sent him a letter which was marked return to sender, apparently because I had either his name or address or both wrong. I wanted to ask him for some advice about the work I have been doing with jet.

While I am at it, I thought I would enclose a copy of a clipping I took out of a Dallas newspaper when I was there last week. I am sure you must have heard about Dr. Abelson's startling conclusions, but I thought it might be interesting to you to learn that the subject is considered news worthy, even in Texas!

Best wishes to you as always.

Yours very truly,

Alfred Traverse
Associate Professor of Geology

AT:kc

Enclosure: clipping

bcc

October 30, 1967

To: Drs. Barghoorn, Cross, Grayson, Guannel, Hoffmeister,
Kosanke, Loeblich, Schopf, Stover, Wilson

Dr. E.S. Barghoorn
Department of Biology
Harvard University
Cambridge, Massachusetts 02138

Dear Elso:

Beginning with Volume 28, we are planning to discontinue the Advisory Committee of the Catalog of Fossil Spores and Pollen. The Advisory Committee has served the Catalog faithfully and well, and those of us on the regular staff of the Catalog wish to express our thanks to all of you for a job well done. "CFSP" is now established on a fairly firm, permanent footing at Penn State, and we feel that it is no longer necessary to bother so many people with the various problems connected with publication of the Catalog. We hope that we can still continue to call on you less formally when advice is necessary.

Hoping to see each of you in person before long, I am

Yours very truly,

Alfred Traverse
Editor
Catalog of Fossil Spores and Pollen

AT:kwc

HARVARD UNIVERSITY
DEPARTMENT OF BIOLOGY
PALEOBOTANICAL LABORATORIES OF THE BOTANICAL MUSEUM
22 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

November 2, 1966

Dr. Alfred Traverse,
Editor, Catalog of Fossil Spores and Pollen
Pennsylvania State University
Organic Sediments Laboratory
University Park, Pennsylvania 16802

Dear Al:

Just a note to acknowledge your letter of October 21. I quite agree that eliminating the punch cards from the catalog would be a step in the direction of expediting publication. Anything in this direction would be well taken by subscribers especially the oil industry.

I shall see you in San Francisco.

Best regards.

Sincerely yours,



Elso S. Barghoorn

ESB :ddb
cc:l

THE PENNSYLVANIA STATE UNIVERSITY

ORGANIC SEDIMENTS LABORATORY
UNIVERSITY PARK, PENNSYLVANIA 16802

College of Mineral Industries
Department of Geology and Geophysics

Area Code 814
865-6545
865-6543

October 21, 1966

Dr. Elso S. Barghoorn
Member, Advisory Committee, CFSP
Department of Biology
Harvard University
Cambridge, Massachusetts

Dear Elso:

Though I owe you a proper letter, this one is semi-formal, as between the (new) editor of CFSP and a member of the advisory committee. As a step toward expediting our procedures, I propose to eliminate Option C (punch-cards) of the Catalog effective with Volume 26 (almost ready). Response of the subscribers to a questionnaire has been slow but mostly favorable. Few people (if any) really use the punch feature anyway. Any comment?

See you in San Francisco?

Yours very truly,

Alfred Traverse, Editor
Catalog of Fossil Spores and Pollen

AT:le

HARVARD UNIVERSITY
DEPARTMENT OF BIOLOGY
PALEOBOTANICAL LABORATORIES OF THE BOTANICAL MUSEUM
22 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

August 31, 1966

Dr. Alfred Traverse
Department of Geology
Pennsylvania State University
University Park, Pennsylvania

Dear Al:

I suppose you've long since given up hope ~~of~~ hearing from me but since I've followed your activities and plans indirectly, I know that things have worked out. During the spring I did so much travelling that I fell badly behind in correspondence. However in May while on a trip to give lectures at Juniata College in Pennsylvania, I stopped in for a few minutes to see Bill Spackman and he told me about your appointment at Penn. State. From what he said I think this is an excellent resolution to the shameful situation which developed in Austin. Although I had no chance to see the new building, I did see detailed plans of it and I'm sure you will find the physical lay-out excellent.

It occurred to me that you're perhaps now in Europe after attending the International Conference on Palynology in Utrecht. I should be most interested to hear about the results of the conference.

As soon as you get settled, I'd appreciate knowing how things are.

With best regards to you and Betty,

Sincerely,

E/so Barghoorn

ESB:iab
cc:l

P.S. This sounds awfully formal, as do all dictated letters, so please understand.

E/so

Department of Geology & Geophysics
Pennsylvania State University
University Park, Pennsylvania 16802

17 September, 1966

Dr. Elso S. Barghoorn
Department of Biology
Harvard University
Cambridge, Massachusetts 02138

Dear Elso?

Just got back from the meeting in Utrecht to find your (as always) welcome letter waiting. I don't know just where to begin, but I guess you last heard from me in Austin, so that's perhaps the best place. I came up here from there in mid-June, leaving Betty in Texas to attempt to get our real estate commitments there settled. She finally sold the place in Austin in mid-August and got the one in Houston rented ~~again~~ for various highly technical reasons relating to the tight money situation, a loan could not be floated on that place, although we had at various times, several contracts for its sale). She was then able to join me here with three of the kids. I had brought John (10) with me to alleviate some of the burden for her and to provide me with a chance to get to know him better. I hadn't seen much of him or the others for a while--particularly this last year when I worked fifteen hours a day seven days a week (I often remembered your dictum that virtue is its own reward--and it helped me to keep going!). I spent the summer working on three papers (one for the Conference), all based on one report that Shell finally released from 8 yrs. ago. Also got settled in my new office and lab in this new building. Soon after Betty arrived I took off for Europe.

The Conference was (I thought) very successful. The organizers were disappointed by the turnout (300 registrants). I thought it was unbelievable. I would stand there looking around at the sea of faces and fall to thinking of the days when I was working on my degree and there were perhaps two dozen palynologists in North America, counting everybody who had ever looked at a pollen grain. I guess what the Dutch were talking about was the Eastern delegation--the Russians promised 40 and sent 15. But that's about par for them--or even a bit better than par. I learned much at the Conference. I roomed with Chaloner, and we had some wonderful talks. He is certainly a fine fellow and scientist. An odd coincidence that we would end up rooming together (and it was a coincidence)--he could have been here if he had wanted

it. He tells me that he will be a speaker at the Peabody Museum thing in New Haven next month. I plan to be there, at least for part of the thing. My overall feeling at the end of the Conference was one of being overwhelmed by the present scope of the literature. How can I ever get back on top of it? As new editor of the Catalog, I must, I suppose! That reminds me to mention that I masterminded and carried an exhibition about the Catalog to the Conference. I am currently working quite hard to get the CFSP on a businesslike footing. I think my being here will definitely prove beneficial for that operation at least! Tate Ames was at first very threatened by my presence (or so my pastorally trained sensibilities told me), but I believe that he now realizes that I want to work with him, and that his livelihood, which depends on the Catalog is more insured than threatened by my being here.

After the Conference I rented a car in London and drove up to Whitby to take a look at the Jurassic section around there, with special reference to the classical occurrences of jet. I have been working with a Texas U. grad student on an occurrence of very similar stuff in Utah (of all places). I believe a little paper will come out of this pretty soon. I then drove back to London and spent two days with Chaloner's delightful family and visiting his lab. One fallout thrill that I got was seeing the stuffed remains of Jeremy Bentham at University College. I had heard in great detail about that from Professor Owen at Harvard when I took English history twenty years ago.

Thence back here and greeting my first graduate student, who seems a quite capable person, from N. Y. U. He took a palynology course from Hausser down there. Also am getting squared away to get started on the research project for which I got an NSF grant of \$30,000--a study of palynological facies in the Texas Wilcox. (The grant came through just before I left Texas, and I took considerable un-Christian delight in the shocked disbelief of some of the people down there.) The teaching load is just half of what it was at UT--one course per term. I'll give a seminar in palynology this term, period. Next term, an introduction to palynology. In the spring, historical geology, to be repeated next summer. Then I'll have next fall free. (One teaches only three out of four of the quarters.) As you say, the facilities are grand.

The only possible negative thing that one could say is re the remoteness of the place. I am pretty used to big cities (trying to forget G. and Forks!), but I am sure we'll adjust.

Lapsing back out of sequence--there was much political maneuvering at the I. C. Palynol. regarding the future international organization. I have been too far out of it to understand all the nuances, but there were those who opposed any formal international organization, and those who strongly backed it. I found my sentiments with the latter, who eventually won out. If the committee does what it's supposed to, an international organization affiliated with UNESCO will result. No decision was reached re the next meeting place, in 1970. The Indians wanted it, or at least the Nair crowd did, but everybody except the Indians alleged that that was part of an Indian attempt to "capture" the International Organization, as indeed Nair had tried to do. For my part, I would be delighted if that could be ironed out in time to provide an excuse for me to visit the mysterious East in '70!

Guess that's enough for now. Thanks for your concern. I hope you are well and that we can get together before too long. Yours as ever.

30 April, 1966

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Two pieces of news I wanted to share with you, since you have been such a willing auditor of my troubles--

1. Several months ago I applied for an NSF grant to do some research in the Eocene and Pennsylvanian of Texas re paleobotanical biofacies problems. I regarded it as a "flier", since the approval rate is about 1 in 10. My motive was to try and solidify my position here--that was before I knew that that the ax had already fallen. To my enormous surprise the word came through yesterday that the grant has been approved (something like \$30,000). The reaction of people around here is, under the circumstances, intensely amusing to me.

2. I called Bill yesterday to tell him that I would accept the PSU offer, despite its temporary nature. I will have the grant transferred to Penn State from here--they told me by phone yesterday that this can be done, and I suppose that this makes it pretty likely that a way will be found to make my position at PSU permanent. As Betty says, it is hard to imagine them turning me loose with a couple of years to run on a continuing grant.

I reckon that this makes it almost certain that I'll be able to attend to International Conference on Palynology in Utrecht next summer. I have two papers listed--one based on the old report that Shell just released.

Thanks for your help and sympathy! I suppose that the scars from the incredibly shoddy treatment I have had here will soon heal.

Yours as ever,

14 April, 1966

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Just a flash to let you know that after keeping me in a state of suspended animation for all these months, Penn State labored and brought forth a mouse. I finally called Bill this afternoon, and he told me that he had been trying to get up courage to call me--and let me know that they had encountered insuperable budgetary problems. The best they can offer is a one-year visiting lectureship (this is where I came in), with "a good possibility" that a permanent appointment can be worked out during the year. Although I promised to sleep on the offer a while, Betty and I are disposed to reject it--I just could not take another year of living out of a suitcase and working under that sort of pressure, wondering whom I might not be pleasing who could blackball me.

So--though I have not been intending to go, I guess I had better attend AAPG meetings in St. Louis week after next, with a sandwich board on, or something.

I can't recall whether I informed you or not--the SMU story was much the same. They wanted me but couldn't raise the money. Or so they said.

One ray of good news I got last week--Shell finally gave in on the report I have been trying to pry loose. Will make about three good papers, one of them for the International Pollen Conference next summer in Utrecht. (Pollen and Associated Microfossils in the Water and Surface Sediment of Great Bahama Bank). If I have a place to hang my hat, that is!

Could Brandeis or one of those smaller places around Boston use a triple-threat man who is presently unattached?

Thanks for listening. Yours as ever,

HARVARD UNIVERSITY
DEPARTMENT OF BIOLOGY
PALEOBOTANICAL LABORATORIES OF THE BOTANICAL MUSEUM
22 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

March 9, 1966

Dr. Alfred Traverse
Department of Geology
University of Texas
Austin 12, Texas

Dear Al:

After our brief exchange at Christmas I note that I have been profoundly silent since your last letter and have been very curious to know how your negotiations with Penn. State have gotten along. I haven't talked with Bill for some time so have heard nothing from that end. I did get a call from Southern Methodist University regarding you. Since there was no correspondence I know nothing further. I do hope something works out. If I can do anything to be of assistance please let me know. I won't comment on the Texas situation because I don't understand it. At the time I visited the Department a few years ago there seemed to be a real air of expansion in all directions.

You have certainly had an unfair share of uncertainty in the past few years and I do hope that things will work out satisfactorily. Please give my best regards to Betty and best wishes from us both.

Sincerely yours,



Elso S. Barghoorn
Professor of Botany

ESB:ddb
cc 1

14 March, 1966

Professor Elso S. Barghoorn
Department of Biology
Harvard University
Cambridge, Massachusetts 02138

Dear Elso:

As I was walking from my car to the office this a. m. I happened to be thinking of you, and the thought went through my mind that it had been a long time since I heard from you. Then the counter-thought quickly also came to mind--that you had done something far more important than writing by giving me a good recommendation to S. M. U. (The grapevine sometimes works very efficiently, and I knew about that the same day!)

Where to begin in bringing you up to date--there certainly is no need to bore you with the story that I think I have previously told you anyway--that when I went to graduate school it was a university job that I had in mind (and this year of teaching has deepened the conviction--despite all the disappointments, I have loved it). All the time I was with the Bureau I kept angling in that direction. So also at Shell. But I never had even a really serious nibble except for the final one at California, and that wasn't very serious. Eventually I got fed up with the way things were going at Shell (they have got much worse since then--Mart Schemel, for example, was fired last month without so much as a warning--they persist in their refusal to release any of my stuff for publication). When the opportunity to come to Austin to study philosophy, languages, and theology, with no strings attached, I took this as an indication that since I was apparently unemployable as an academic paleobotanist, perhaps I should explore some additional possibilities. It was never my intention to abandon science, however, and I was hopeful that the additional skills I acquired would make me a more useful and interesting person. I thought I might have to "do" a couple of years in a parish, but my conviction has deepened that that would be a waste of my talents (I am as firmly convinced as ever that Catholic Christianity is a wonderful way of life, but I completely disenchanted with the parish supper, ladies' guilds, and other such guff that take up 90% of the clergyman's time--has nothing to do with Christianity).

During my senior year in seminary Steve Clabaugh wrote me and asked me to come and see him. He hinted broadly that there might be a job available over here. So, in May, I came back and said

how about it. They took me on as visiting lecturer. Although this was clearly a one-year deal, I was nevertheless given the impression that I had an excellent chance to catch on for longer. I could document this if it ever were of interest (why else would I buy a house). During the early fall I got two graduate students to begin doctoral programs in paleobotany, and a third was considering the possibility. Besides that, several people who were to come next year indicated an interest in working with me or in paleobotany. That answered the objection that had been raised that I would not attract graduate students. My elementary course was a great success, and I have a batch of glowing tributes from the students to back up the claim. As late as G. S. A. I still thought all was well. But at Christmas time I wormed the information out that, in fact, I had been axed for next year. This apparently embarrassed Steve C., for he at first denied it. (It would not be politic at the moment, but some day I am going to confront him about this.) They are now telling it around that they never considered me as having a possibility of an appointment. However, one of the few members of the faculty (of senior level, I mean) who has been friendly, Earl Engerson, geochemist, tells me that I should know that that is a lie, and that the budget committee axed me for various reasons, of which the one that is given out publicly--that they need a geophysicist next around here, not a paleobotanist, is only one. I can only guess at what the reasons might be--Ellison said that one is that degrees are in biology, which is stupid. One member of the department has no Ph. D., in biology or bird-watching. One thing I am doggoned sure is not the reason--that I have not done a good job. Considering my handicaps (I have no office, for example), I have done very well indeed.

At this point enter Penn State. I went up there about 1 Feb., gave a seminar which seemed very well received and was told by the chairman of the department that I should hear by the end of the week, but I never did. Bill called three weeks ago and said not to worry, that they were still working on it. But, of course, I do worry about it, because as of 1 June, I am unemployed. (Probably could be the only member of Harvard's 20th reunion class without a job!) After all that has happened, I wouldn't put it past one of the SOB's around here to have written a poison pen. A couple of them are quite capable of such an act--boy have I had a view of the seamier side of university life. (I know you will have a hard time believing this, but one of them--a senior faculty member--actually stacioned himself at registration to tell people not to take my course this term--the graduate course in "plant paleontology" that I am teaching. To my satisfaction, however, I did get the minimum number required for the course to go--4.)

When the Penn State thing didn't develop as fast as it should have, I immediately sat down at the typewriter and banged out letters to every college and university in Texas, and a few in surrounding

territory. S. M. U. seemed seriously interested, and I was in what they had to offer. (All things being equal, I would much prefer to stay in the Southwest--my health and especially Betty's, have been much better down here than up north. Besides, my research interests are now oriented somewhat regionally--I suppose that could be adjusted, however.) I am afraid that I may have made a tactical blunder when they took me to see the Provost up there. He kept throwing questions at me about religion. As I now see it, he was probing to be sure that I wouldn't use S. M. U. as a free platform to propagandize for the Faith. The idea was so far from my mind, that I didn't even realize what he was getting at, and my non-committal answers perhaps intensified his suspicions. As you may know, S. M. U. is no more Methodist than Harvard is Unitarian. It's just a name. If you're so minded, a letter of support to Claude Albritton would probably be helpful. He has in mind getting me a joint appointment between geology and botany, with research facilities in the geology department and teaching duties in their general education program (course: "The Nature of Man--biological, anthropological, philosophical". I would seem to be uniquely suited.) I would develop a program at the graduate level in paleobotany, coal petrography, and palynology.

Texas A & M has also expressed a mild interest by contacting Clabaugh, but I have heard nothing directly. That might be all right, though I don't really think too much of the institution. It is on the way up.

That's about the shape of it, so far. If nothing happens soon, I may find myself running chicken-box suppers and the like next year. I would prefer that only to returning to either government or industrial research. I am really determined to get a teaching job somewhere.

Research-wise, I am still putting finishing touches on things for Shell. Just finished reading proof on a nice piece of work for them on sedimentation of pollen in the Trinity River, Texas. Am now writing one on surface sediment of Galveston-Trinity Bays--would make an excellent paper. But Shell ignores my requests to release even what I did six or more years ago. I am about at the point of giving the gist of some of the really old stuff and letting them sue me if they want to. (They wouldn't get much, that's for sure!) I gave a very non-committal title to the International Palynological Conference for next summer, and I just might do it there. What do you think? I am also working on East Texas lignites (Wilcox group) and that will produce a paper one of these months.

Well, isn't this a fine tale of woe? But you're an old friend, and perhaps you can tolerate a little towel-passing. I really am not discouraged but am very frustrated. I definitely have too much ability to be on the scrap-heap at 40.

I appreciate your continued interest very much

23 December, 1965

Dr. Elso S. Barghoorn
Etc.

Dear Elso:

Got your nice seasonal message and was glad to hear that you didn't have a long bout of it last month. I knew that you were in no shape to travel. You and I have both reached the age after which it is no longer smart to push oneself beyond the limits of endurance. And yet one seems to get about as much as ever done--perhaps more (speaking for myself) because one doesn't waste so much time. For example, I no longer spend any time at all on what used to be one of my great vices--being a sports fan. I have been to two football games in the last fifteen years, and I was dragged to them.

But I didn't exactly write to pass the time of day. In brief, I may be among the jobless come June, and am plenty worried about it. Steve Clabaugh told me when I came here that he could only promise one year, but he gave me (intentionally, or unintentionally, it doesn't matter to me) the impression that if I did a good job I would probably get at least one more year of grace. The impression was apparently faulty. Everybody says I am doing a great job of teaching, I am enjoying it immensely and I am getting along well (despite almost complete lack of facilities) with research--I am trying to come at some of the quite novel things that I did for Shell regarding the relationship between fossil plants and sedimentation environments--in a way that will enable me to get published on this without actually getting sued. They may, in the meantime, release my stuff, or part of it, anyway. Hope so. BUT--I have just found out that there is no item for me in the 66-67 budget. Clabaugh says this doesn't preclude a later effort to get me on for another year, depending on how my paleobotany course goes. But I can tell by various things that have been said that my chances are about 20:1 against, if that good. (For example, two graduate students have asked to work under my direction--one on Penn. plants one on Eocene pollen--and Clabaugh says he thinks I really shouldn't take them. If that doesn't telegraph the push, what does?)

Meanwhile, before all this happened, I had decided that I wasn't really anxious to move to Pennsylvania and told Bill that I would only make the move if they would pay my moving expenses and offer a full professorship. I guess I was supercilious.



(Bradford Bachrach)

MRS. ELSO STERRENBERG BARGHOORN

Miss Dorothy Osgood Bride of Mr. Barghoorn

Wearing her mother's wedding gown of ivory Duchess satin and rosepoint lace, Miss Dorothy Dellmer Osgood was married, yesterday afternoon, to Mr. Elso Sterrenberg Barghoorn of Carlisle. He is the son of Mrs. Elizabeth Brust Barghoorn of New Haven, Conn., and the late Elso Sterrenberg Barghoorn.

The bride, daughter of Mr. and Mrs. A. Neill Osgood of Wellesley Hills, was given in marriage by her father at the 2 o'clock ceremony performed in the Ashley Day Leavitt Chapel of Harvard Church, Brookline, by the Rev. Walter Ralph Van Hoek. Her shoulder-length ivory veil was held by a pearl crown, and she carried a bouquet of roses and stephanotis. A reception followed at the Osgood home.

Mrs. Joan Sexton of Weston was matron of honor. With her bolero jacket dress of yellow silk faille she carried a bouquet of bronze and yellow chrysanthemums to match the wreath of flowers in her hair.

Deborah Jeanne Osgood, niece of the bride, was flower girl. She wore a smocked dress of small flowered print in fall shades with a white collar. She also carried fall flowers and wore a wreath in her hair.

Mrs. Osgood wore almond green crepe with a small white feathered hat for her daughter's wedding. The bridegroom's mother was unable to attend.

Prof. Frederick Charles Barghoorn of New Haven was his brother's best man. The ushers were Mr. Charles Edward Osgood of Boston, brother of the bride, Mr. A. Neill Osgood Jr. of Natick, another brother, and Mr. Charles Louis Gagnebin 3rd, of Cohasset.

The bride was graduated from the Beaver Country Day School and received her B.A.

and M.A. degrees from Mt. Holyoke College. She is a member of the Junior League of Boston.

The bridegroom is a graduate of Miami University and received his M.A. and Ph.D. degrees from Harvard University. He is a professor in the Department of Biology, Field of Botany, Harvard University, and is also curator of Paleo Botanical Collections of the Botanical Museum at Harvard University. He is a Fellow of the Geological Society of America and a Fellow of the American Society of Arts and Sciences.

After a short wedding trip, the couple will live in Carlisle.

HARVARD UNIVERSITY
DEPARTMENT OF BIOLOGY
PALEOBOTANICAL LABORATORIES OF THE BOTANICAL MUSEUM
22 DIVINITY AVENUE
CAMBRIDGE, MASSACHUSETTS 02138

11/12/64

Dear Al and Betty,

Thank you very much for your kind letter of the 7th and your good wishes. I personally feel very fortunate to have finally found the ideal companion and wife and I assure you that Dorothy is an unusual girl and I hope we can meet together sometime before too long.

This has been an unusually busy year and highly productive in terms of research results. Bill Schopf (Jim Schopf's son) is a remarkably productive young graduate student and we have been making some interesting "break-throughs" in PreЄ organic geochemistry. One of our papers should be in Science in a month or so - "Paleobiochemistry of a PreЄ shale". Also I finally got the jumpstart chert paper in press - also in Science. This will have a complete taxonomic discussion of the microorganisms.

How have your ~~sons~~ shaped up? Has Bill Spockman
ever approached you again regarding the situation at
Penn State Univ.?

Please accept best wishes from Dorothy and
me to you both. Enclosed clipping was from the
Boston Herald Nov 1.

Sincerely

Els

P.S. Dorothy's MA was in paleobotany with Miss
Fredda Reed at Mt. Holyoke.

June 13, 1962

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Yours of June 1 was most welcome, and I have made the appropriate changes in the blurb on pollen preparation. I am especially glad to have a more complete statement on both the degradation of pollen in old Canada balsam mounts and the degradation of pollen in lactic acid mounts. After reading what you had to say about the lactic acid preparations, I have decided not to put in anything about their restoration.

I am glad that you are not annoyed with me about failing to put in an appearance yet again. I have romantic tendencies that get me into trouble in planning vacations. Of course, it is not rational for folks in Houston with two week vacations to contemplate trips to Boston by car - or to the Adirondacks either. But the desire to make the trip lingers on. We may make it yet one of these years.

Perhaps we shall be seeing you and Teresa down this way again this summer - that would be very nice indeed.

Glad to hear about Dick Eyde's finishing his thesis. I hope you and he will be able to "do" the rest of the fruits, too. It will be fine if Dick turns into an academic paleobotanist somewhere instead of sharing the various fates of your other students who, one way or another, have not been shedding as much reflected glory on you as you truly deserve!

Best wishes from us all.

Very truly yours,

Alfred Traverse

AT:nw

bc: Dr. Traverse, Dr. Higgs

SHELL DEVELOPMENT COMPANY
Exploration and Production Research Division

BOTANICAL MUSEUM OF HARVARD UNIVERSITY

Oxford Street
Cambridge 38, Massachusetts

June 1, '62

Dear all,

Please excuse a somewhat telegraphic letter, but I am momentarily without secretarial help and wanted to get this off directly to you, Hope you can read it.

Re the balsam mounts. These were made in Spring 1896, a series of native trees + shrubs - fresh pollen. Labels printed "prepared by F.M. Dorey." When I found these some years ago I examined them all and discarded all but 3 slides - viz., Acer Negundo, Quercus imbricaria and Q. prinoides. The latter were the best of some dozens, but are pretty 'awful' at that. In most of them the exine (i.e. ectexine) had deformed and made alveolar extensions often fusing with adjacent grains in grotesque forms. No external sculpture or pattern remaining. Also cytoplasm of grain often extruded from grain and forming extensions of varying shape. In some the grains had become almost emulsified. Have no record of which were in poorest shape. Of the above three species I question whether any one could possibly identify them to genera even if

Feel free to include anything in this or the other letter

he knew their geographic limitations affinity. (possible exception: - students of microfossils from meteorites!)

Concerning the lactic acid slides: These were from herbaceous material with no pretreatment, placed directly in lactic acid and ~~mounted~~, ^{covered}, ^{many} not ringed, ^{others ringed with Clarite} Age varying from 15 to 20 years under these conditions. A very wide range of behavior was observed in response to this treatment. Some whole families of plants showed complete disintegration of exine + contents (no systematic record was kept since these were discarded). Others such as Icacinae, Gramineae etc little effect. Recovery method was to remove ringing if present and on warming table to run - by capillary forces - glycerine jelly in which safranin had been dissolved. If done carefully little movement of pollen grains under cover glass. After glycerine jelly the slides were "cured" for 3 days at 60°C on warming table and ringed with Truf-on 74. The protoplasm seems to have largely disappeared from many of the ^{divers} pollen grains. Results are quite variable in different families, but in general much inferior to acetylation.

Sorry again you can't make it up here for re-union, but I understand your reasons. However, I think I could run my Volkswagen on that 105 proof whiskey (in the tank) for quite a fraction of the way back to Houston.

Best to you and Betty and the family
Sincerely, Elmo

P.S. Dick Kyle completed his thesis on the Brandon Nyssa fruits - plus a monograph of Nyssa can ped morphology - under a general thesis: - Ph.D. '62.

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

May 16, 1962

Dr. Alfred Traverse
Shell Oil Company
P. O. Box 481
Houston 1, Texas

Dear Al:

I note that I am much in arrears in correspondence and have not replied to your last letter, the date of which I hesitate to note.

It is a pity that you did not get to the Tucson meetings. They were both very successful and stimulating and also well attended, although not a single one of the Russian delegation got there. I had a chance to become acquainted with Jean Langenheim and think that she will fit in very well with the group here, although I am not too optimistic about what we will get from her amber collections in the way of a pollen record. We have extensive collections of amber here so it will probably be worth giving the study a real try.

Your comments concerning the deterioration of pollen grains on the glycerine jelly slides is very disturbing. I have not made a systematic study of the older slides but thus far have not run across any such situation. It is possible that residual acid might have something to do with it if the preparations were not thoroughly washed. However, one would suspect that both the material in vials as well as that on slides would react the same way. It may be a combination of oxidation and residual acid. Do you note any systematic distribution of this phenomenon, that is, if it more evident in some families than in others?

Have you firmed up your plans for bringing the family east for reunion? As I told you earlier the offer still holds for the use of our guest house, which is adequate to house all of you.

With best regards.

Sincerely yours,



Elso S. Barghoorn

ESB:sfi

P.S. The algae from the ditch are thriving

May 10, 1962

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Sorry to have missed you in the West last month. There were several reasons why I didn't attend, and I'll perhaps have an opportunity to discuss them with you some day.

Regarding the foray in June which we have discussed previously - the proposed trip to Boston: As the time draws relatively near, the proposition seems more and more improbable. It's just too long a trip to attempt with our brood on a two-week basis, and I do not now see any possibility of getting away for longer. Wonder if I'll ever make it again?

The main purpose of this letter, however, is to inquire as to whether you would object to my quoting you, as a personal communication, on two matters:

1. You mentioned to me some years ago that you were able to restore the lactic acid pollen slides that looked in such sad state in my time around the Harvard labs. Do I remember correctly that the restoration was basically an acetylation? If not, how was it done?

2. In a recent letter you told me that you have observed degradation of pollen in old slides of pollen mounted in canada balsam.

Would you object to my quoting you on these points? I am writing a blurb on preparation of modern pollen for the deal on preparation techniques that Jane Gray is preparing.

Best wishes to Teresa.

Very truly yours,

AT:jr

Alfred Traverse

Shell Development Company
Exploration and Production Research Division

bc: Dr. Traverse ✓
Dr. Higgs

March 5, 1962

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Thanks for the further information re June. It is all pretty "iffy" depending on how things go with the expected addition to the family, and other factors. If we do come, we would be pretty much of a self-contained unit. I mean we have all necessary camping gear, including cots all around, cooking equipment, etc. But, as I say, it is still impossible to make a firm commitment. As I have mentioned previously, I would like to work in the library and herbarium for a few days after the reunion is over.

I have told you all I know about Jean L. - or at least all that is pertinent. I really don't know her very well. Our contact has been through the Paleobotanical Section. Your comments about the fate of pollen exines in amber are interesting. I talked with Durham, who is the amber expert, about this when I was in California in October. He claimed to have seen pollen in the amber, but was unable to produce any sections that proved the point. I have succeeded in dissolving some samples of amber by prolonged refluxing in tetrachloroethane, but recovered no pollen in the residue. The solution you noticed also takes place in glycerin jelly. Some of the slides I made in 1949-1950 are deteriorating badly. Interestingly, though, the material in vials made at the same time is unharmed, suggesting that being on a slide has something to do with the deterioration. Any ideas?

It looks as though I will not make it to either the pollen meeting (SEPM) in San Francisco later this month or the one in Tucson (International Pollen Conference) in April. I particularly hate to miss the latter.

Best wishes.

Very truly yours,


Alfred Traverse

AT:nw

bc: Dr. Traverse
Dr. Higgs

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS
February 22, 1962

Dr. Alfred Traverse
Shell Development Company
P. O. Box 481
Houston 1, Texas

Dear Al:

Thank you for your letter of the 5th. I wish to confirm again my offer to supply your lodging at our place when you come with the family this spring. I will make no promises, however, along gastronomic lines. At any rate, you can rest assured that you'll have a roof over your head. I can't guarantee what the goat population will be but there certainly should be one around to show the children. Teresa just sold two more this weekend and there are five remaining. At #35 a head, goats are not highly profitable animals but you can move them on the goat market in these parts.

I just had a short letter from Don Whitehead enclosing ^{in case} this thesis, rewritten for publication. He made no mention in it of the California situation so I have no idea what is going on.

Your comments re Jean Langenheim I appreciated. I inquired of several people who know her and they recommended her quite readily. I have also endorsed her proposal to the N. S. F. for a grant. It seems to ~~be~~ that the problem she is interested in is very worthwhile even though I sincerely doubt that the palynological aspects will lead anywhere. I suspect the pollen grains "disappear" in amber through chemical reaction. I don't remember whether I ever told you, but some time ^{ago} I ran across some slides of grains mounted in balsam some 65-70 years ago; the grains had largely disappeared in the balsam and were totally unrecognizable. I suspect that amber may behave the same way but it would be worth finding out. The chemical aspects of her problem, I think, have more potential but I am not at all familiar with how much background she has in organic chemistry. Apparently you know her fairly well since she mentioned your assistance in a long letter which she wrote to me some weeks ago. I surmized that she was getting divorced, although she expressed it as a 'separation', and I am a bit curious as to whether her scientific zeal isn't a reflection of this problem. I would appreciate any word you might have on this and would, of course, keep it strictly confidential. Your comments regarding the x-y chromosome set up and your closing sentence are too good not to be used in evaluating research proposals. I would, of course, be scrupulous not to credit them to you.

With best wishes to you.

Sincerely yours,



Elso S. Barghoorn

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS
January 30, 1962

Dr. Alfred F. Traverse
Shell Development Laboratories
P. O. Box 481
Houston 1, Texas

Dear Al:

Thank you very much for your letter of the 19th following my somewhat hurried trip to Houston two weeks ago. Circumstances somehow contrived to prevent me from getting in touch with you again but at least we made some contact through my call to the house. I had been in Panama for something over a month and my trip to Houston was somewhat sandwiched in on the way back here to Cambridge.

Sorry to hear that there is any uncertainty about your attending the meetings in Tucson but you certainly have an excellent reason if you cannot attend. Since you and Betty have both had excellent luck with the first three, I trust that all will go well with number four.

I am very glad that you are planning definitely to attend the reunion in June. Yes, indeed, we have plenty of room for pitching a tent on our place but, better than that, we have a small guest house which can be used more effectively to say nothing of more conveniently. Why don't you just plan on staying with us and we can work out transportation and other details later. An any rate, be assured that you will not have to worry about inconveniencing us for room, etc.

Yes, I was quite shocked at the effects of the weather on the Houston area. After weeks in the humid tropics it was a very brutal transition even to the frozen north up here.

Have you heard anything about how the California situation finally resolved? I have not heard from nor seen Don Whitehead since sometime in early or mid-December. His adventures with the offer make a strange story too, up to the point that I last heard.

Best wishes and regards from us both.

Sincerely,



Elso S. Barghoorn

ESB:sfi

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

November 7, 1961

Dr. Alfred F. Traverse
Shell Development Company
37371 Bellaire Boulevard
Houston 1, Texas

Dear Al:

Thank you very much for letting me know about certain details of your California visit. Much of what you told me about the situation there was new although certainly not all of it. I have been told that all that I have heard about the department there can be multiplied by a factor of 10 and still fall short of what is actually happening. I, of course, shall be much interested in Whitehead's response if he went out for the interview. I have a young professor ^{in my course now} from a teacher's college in California who went through the department and is quite outspoken about matters. However, it was a distinction to have the invitation and I'm glad that you carried it through.

There is a good possibility that in a year or so, a new appointment will be made in the National Museum in Washington, an appointment concerned with Palynology from the standpoint of modern pollen and spores. ~~No relation~~ to stratigraphy. I talked to A. C. Smith who is now director of the Natural History Museum about this and mentioned your name to him and your qualifications of course. Perhaps it would be well to keep the matter confidential but something might well develop from it if you are interested. You might not like the idea, of course, of museum research.

The G. S. A. meetings in Cincinnati were heavily attended but, as usual, there was ^{only} a certain group of the Paleobotanical wing, ~~but~~ ^{and} the same as usually attend. It seems too bad that more of the Paleobotanists in the country cannot become more affiliated with the G. S. A. It would certainly strengthen Paleobotany out of all proportion to the number of individuals involved. However, it is the old position of dichotomy which separates things and, I suppose, it is futile to hope for any change.

Concerning the algae, I shall be on the lookout for them and will give them a good home here. It would be interesting to know why that ditch along the road provides such a remarkable home for that mass of blue-green algae. I suspect chemical analyses of the water would give an explanation. Unfortunately, I did not collect any water for this purpose although I had intended to do it while I was still in Houston. Incidentally, did you examine any of those cultures in the microscope? I think you would find them fascinating to watch. I seem to be getting some success in the precipitating of silica by blue-green algae colonies which were originally isolated from Yellowstone silicious hot waters. However, it

Dr. Alfred E. Traverse

- 2 -

November 7, 1961

is entirely preliminary.

Recently had a note from Bill Chaloner, to whom I had written about other things, and he tells me that he will be at Pennsylvania State University from January to June. I have only met Bill once but shall be interested to renew the acquaintance if I can see sometime during this period.

Incidentally, have you heard anything from Kremp concerning the Tucson conference? There has been a long silence from him as far as my correspondence goes. I presume the conference is going to come off and I have sent two titles. Having been asked to be a member of the original planning committee, I feel somewhat embarrassed to know so little about it.

With best wishes to you and Betty.

Sincerely yours,



Elso S. Barghoorn

ESB:sfi

P.S. The algal cultures have arrived and many thanks! were delayed over weekend & the full bottles are in poor shape (no O₂) but the slud-filled bottles seem to have good viable cultures. Will let you know. That ditch is a remarkable ecological ~~with~~ "niche" despite its unprepossessing aspect

£

COTTON FIBER CONTENT

I am not sure whether it was before or after our pleasant visit with you and Betty this summer but I found a very interesting location for Blue-green algae on a road south of Houston. I studied the material with the microscope I had in hand there and had planned to bring back some cultures. However, I didn't get to it in the last rather hectic week there. I wonder if it is at all possible for you to collect some samples and ship them to me? The location is a ditch extending for several miles on the north side of what is designated on the map as McHard Road. This is farm road #2234. It extends from Alameda Road to Missouri City on U. S. 90A. The ditch containing the algae is a mile or so after leaving Alameda Road proceeding West. It extends for a long distance past some salt works and a few pumping wells. The ditch water is contaminated with brine and some petroleum ⁵³ under the surface. The algae are excessively abundant and there is a rather diverse number of types. If you could sample a few places along the road it would probably represent most of the potential flora. I would like to have the cultures in the living condition and I think they would easily survive if sent by air mail. I appreciate that this is a considerable favor to ask, but would certainly be most grateful if you could help. If there is any expense connected with it, I shall be glad to reimburse you. The air postage will probably be fairly high.

act/61

I hope you are still planning to make your trip east which was delayed because of the visit to California. Let me know what your plans are and we will be very happy to put you up.

With best wishes to you and Betty from us both.

Sincerely yours,



Elso S. Barghoorn

ESB:sfi

May 23, 1961

Dr. Elso S. Barghoorn
Biological Laboratories
16 Divinity Avenue
Cambridge 38, Massachusetts

Dear Elso:

Yours of May 4 awaited my return from a recent combination of trips - one to Claremont, California, where I had a delightful time for a couple of days with Sherwin Carlquist; the other to West Texas, where I got some impression of the complicated flora of that region.

Under the circumstances, why don't we postpone my visit until the fall, tentatively October or November? (I might even be able to make some useful observations about the progress of J. Yovassin's research.)

Regarding this palynological society business, I have heard nothing. But that is not surprising, for the persons who want such a society know that I am heartily opposed to it. The Paleobotanical Section would be ruined by such a development, and there aren't enough palynologists yet to make a going concern of a separate society. Those who are backing the idea ought to look into the history of the Paleontological Society, which had hopes several times as large a membership. Paleopalynologists might perhaps seek section status in S. E. P. M., or something of that sort. I am wondering if John Grayson is behind this rumor you have heard, as he was behind the move several years ago that I succeeded in quashing as secretary of the P. S. B. S. A.

Best wishes, and until we meet again, in Houston or wherever,

Very truly yours,



Alfred Traverse

AT:nw

Shell Development Company
Exploration and Production Research Division

cc. Dr. Traverse ✓
Dr. Higgs

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS
May 4, 1961

Dr. Alfred Traverse
Shell Development Laboratories
3737 Bellaire Boulevard
Houston, Texas

Dear Al:

Hope you'll overlook my long delay in wrighting in reply to your letter of April 3. I had hoped that you might be at the meetings in Denver last week but I found that you did not attend.

I would be delighted to have a visit from you during the summer but I find it a little difficult to suggest a favorable time since my summer is going to be chopped up into a number of trips away from here. I hope to be here during June and perhaps the 1st week or so of July with the exception of a few days from the 14-17th of June when I'll be away. I intend to be in Panama the balance of July and perhaps the 1st week of August. Pending other schedules, I may be in Houston the month of August. Perhaps this won't simplify your plans for a visit but it is about the best I can suggest at the moment. At best, I don't see how I can possibly get to the A. I. B. S. meetings at Purdue late in August. I regret this because I have not attended now for about 5 years but I must say that this is about the most inconvenient part of the year by all odds to hold a National meeting. I'm quite sure that I am not alone in this feeling about the time of the meeting, however, I suppose there is nothing that can be done about it.

While in Denver last week, I heard faint rumblings of a move to set up a separate society covering the field of Palynology. Frankly, I think this would be the most unfortunate possible thing that could happen both to Palynology and the Paleobotanical section of the Botanical Society as well as the International Organization of Paleobotanists. Dick Scott and Estella Leopold share this view completely and it would be highly desirable if somehow the movement could be stopped. Perhaps you know more about this than I do.

I haven't been in Huston since I visited in September at which time I missed you and am not certain I'll be going down this spring. However, if I do I shall let you know in advance and hope that we can get together.

Sincerely yours,



Elso S. Barghoorn

ESB:smf

April 3, 1961

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

It has been too long since we exchanged news and views. Just last night we were showing the kids some transparencies of the field work at Brandon, in which I played such a microscopic part. It gave me something of a jolt to be reminded that I am older now than you were then.

Sometime during the summer I would like to visit you and Harvard - for the first time since 1953! I would like to do some work in the herbarium in connection with identification of specimens of mine and correcting synonymies, etc. The timing does not make a great deal of difference to me, except that I'd like to make it when I would be least in the way and, of course, when you would expect to be in Cambridge. For my part, the only fixed commitment I have for the summer is that I have to be at Purdue at the end of August to preside at the PSBSA meeting.

Best wishes as ever,

Very truly yours,

Alfred Traverse

AT:pjh

bc: Dr. Traverse ✓
Dr. Higgs

Shell Development Company
Exploration and Production Research Division

March 7, 1960

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
22 Divinity Avenue
Cambridge 38, Massachusetts

Dear Elso:

Enclosed with this letter is the list of your papers in my possession. As goes without saying, I'd be delighted to get whatever you are prepared to send in the way of gap-fillers.

Everything goes along on a pretty even plane with us. The winter continues to be unusually cold for Houston. There was a pretty good freeze again last night. Average last frost (to say nothing of freeze) is February 10.

Very truly yours,

Alfred Traverse

AT:pjd

Shell Development Company
Exploration and Production Research Division

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

February 4, 1960

Dr. Alfred Traverse
Shell Development Laboratories
3737 Bellaire Blvd.
Houston, Texas

Dear Al:

First I want to thank you and Betty for the very pleasant evening at your home last week. Hospitality in Houston is such that I feel frustrated when I return home that I cannot readily reciprocate. Perhaps we can rectify that this spring.

I find on checking my reprint list that there is record only of my sending you my papers #36 and #47. I'm sure that you have others, but would appreciate your letting me know what they are. Recently I have been trying to keep a complete list of mailings, something which was not done in the past. A recent reprint, summarizing Patrick Butler's work in most cursory form, I will send off shortly.

Please let me know further developments re the proposed Freeman book. Your news is quite discouraging as of last week.

Best to you both and the family,

Sincerely yours,


Elso S. Barghoorn

P.S. Terah Smiley has written me re
the opening at Arizona. Have you
any suggestions?

January 19, 1960

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

What good news that you'll be here next week. I remember your having said something about the upcoming visit when we saw each other in Pittsburgh. We'll be here and available all week. I hope that we can get together once, or preferably twice. I am thinking of perhaps lunch and an at least semi-professional visit, and your coming out to our house for dinner. As far as which noon and which evening, it doesn't matter much, except that Thursday evening is a little awkward for Betty.

I just returned from a nice visit in Tucson, where Paul Martin, Jane Gray, et al., had me give a seminar lecture, which seemed to go over pretty well. While out there I heard the piece of bad news you mentioned, though with scarcely any details. It is incredible.

Very best wishes for 1960, and looking forward to seeing you.

Very truly yours,


Alfred Traverse

AT:pjd

Shell Development Company
Exploration and Production Research Division

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

January 15, 1960

Dr. Alfred F. Traverse
Shell Development Company
3737 Bellaire Boulevard
Houston 1, Texas

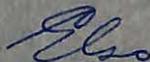
Dear Al:

I plan to be in Houston part or most of the week of January 24, and will be staying at the Shamrock, arriving the 24th. Perhaps we can arrange a time to get together at mutual convenience.

Have you heard the shocking news of the murder and suicide in the death of Hassel de Vries of Groningen, Holland. Perhaps by the time I see you, you will know the details. It seems hard to accept the facts.

Best regards.

Sincerely yours,



Elso S. Barghoorn

ESB-b

MILLERS FALLS
ERASE
COTTON CONTENT

Dr. Elso S. Barghoorn

23 Dec., 1965

At any rate, I never heard any more from him. I expected him to bargain a bit. But, come to think of it, I would not be eager to be sort of Bill's creature, which unless I had an awfully good deal, I would be.

Well, there's the long and the short of it. I am completely committed to a university type job. I think I have always belonged at a university or college, and I greatly regretted having to go to the Bureau of Mines in the first place. If you know of any college job around for a man who can teach (and well!) historical geology, physical geology, paleobotany, palynology, coal petrography, plant anatomy, general botany (not to mention, because it would be best not to, history of philosophy, ethics, literature of the New and Old Testaments, etc.), and do tolerably good research, please keep me in mind.

I'm sure you must think I'm the proverbial bad penny. I am always being told (by Clabaugh, for example) how talented I am, but somehow the right handle on the job ladder has eluded me.

Better get home to dinner. Betty tells me I had best get our Christmas presents wrapped for the kiddoes tonight because tomorrow will be too hectic.

Best wishes as always--especially for
1966,

AL

File correspondence
Barghoorn



KAKABEKIA
UMBELLATA (I)



KAKABEKIA
UMBELLATA (II)

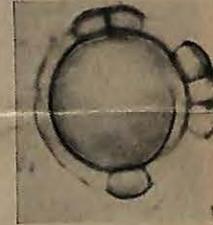


PALEONTOLOGIST BARGHOORN

1,800 million years before the oldest dinosaurs.



EOASTRION
BIFURCATUM



EOSPHAERA
TYLERI

PALEONTOLOGY

Earliest Life

Life on earth began more than 2 billion years ago, but only in a few places are primitive fossils clear enough to give paleontologists any faint clue to what that life was like. Most rocks that date from those early years have been deeply buried for so long and subjected to so much heat and pressure that all organic traces they once contained have been turned to shapeless specks of carbon. One notable exception is a hard, black, ancient rock found near Gunflint Lake in western Ontario, which somehow escaped this rough treatment. In the magazine *Science*, Paleontologist Elso S. Barghoorn* of Harvard and the late Geologist Stanley A. Tyler of the University of Wisconsin describe the remains of microscopic organisms that lived in that "Gunflint chert"—an impure silica—about 2 billion years ago, 1,800 million years before the earliest dinosaurs.

Dim Stirring. From those tiny things, the two men boldly re-created a vast era of prehistory. In that remote period, they say, the region that is now the northwest shore of Lake Superior was covered by a shallow sea or perhaps a chain of lakes. The dry land was devoid of life; the atmosphere may have been unbreathable for most modern creatures. But in shallow pools, say the paleontologists, a dim kind of life was stirring. The bottom was covered with hard hummocks—mounds made of tight-packed vertical columns, a fraction of an inch in diameter, that were created by living matter.

The living parts were on the tips: microscopic threads of algae tangled together, busily depositing silica that

stiffened the columns. The hummocks eventually became the Gunflint chert, which radioactive dating proves to be 2 billion years old.

Drs. Barghoorn and Tyler selected 800 promising samples and ground them to paper thinness. Studied under a microscope, they showed a great variety of organisms. Few of them resemble anything that still lives today, and their discoverers gave them such fanciful scientific names as *Eoastrion* (little dawn star), *Kakabekia* (after a waterfall in Ontario) and *Eosphaera* (dawn sphere).

The water above the hummocks must have teemed with tiny boating things that sank between the silica columns when they died. Those things may have been plants or animals or something in between. Whatever they were, they resembled small stars, or spheres with smaller spheres sticking to their outside walls. The most elaborate form had a bulbous base, a stalk and a ribbed cap. Its discoverers do not know whether it was sedentary like a mushroom or swam like a miniature jellyfish.

Ancient Atmosphere. By analyzing organic matter extracted from Gunflint chert, Dr. Barghoorn got some idea of how the primitive organisms lived. The carbon in them contains a relatively small proportion of carbon 13 (a rare, stable isotope of carbon), showing that it was probably extracted by photosynthesis from carbon dioxide in the air. Modern plants grow in this manner, but Professor Barghoorn is not sure that earth had its present atmosphere that long ago. The Gunflint chert also contains minerals, such as pyrite (iron sulphide), that are deposited from solutions containing no oxygen. He suspects that these minerals may have been deposited while the earth's atmosphere was in a transition state, just beginning to accumulate the oxygen that was being released by the photosyntheses of slow-living, primitive plants.

* Brother of Yale's Frederick C. Barghoorn, professor of political science, who was jailed briefly in Russia in 1963 on trumped-up spy charges.

August 5, 1958

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

It was great to get such a quick opinion from you re the "lignite" I sent you. A bit more about the sample in question. It came, as I believe I mentioned in the earlier dope, from a Pleistocene borehole. It was about the first sample that the C-14 boys ran here some time ago. Instead of 30,000 yrs., I should have given you the date "more than 30,000 yrs.," as there is a chance it is considerably older. It is essentially "dead." We are having the sample rerun, and if the result is substantially different, I'll let you know. As I understand the geologists' interpretation, there is an excellent chance that this oak wood is from a log that was not transported very far to the location from which it was ~~located~~ collected.

In a proverbial nutshell, what is going on in Tulsa is that the Jersey boys there have become very interested in botanical nomenclature as it affects palynology. Since none of them is a botanist, they have had a merry time trying to make some sense out of the International Code of Botanical Nomenclature. As you know, that honored volume is extremely ambiguous and even contradictory at a few points. Furthermore, the Jersey group (Funkhouser has become the nomenclature hound) felt that some revisions in the code were called for. They called a conference of certain of us southwestern palynologists, which met in Tulsa in June to discuss the Jersey proposals, which Funkhouser intends to make as formal proposals to the Montreal Congress. (He will also give a paper on them at Bloomington.) The conference consisted of Hoffmeister, Evi~~t~~, Funkhouser, Wilson, Cross, Leopold, Schemel, and me. Schemel, Cross, and I talked the Jersey folks out of some of their more extreme notions, such as obligatory suffixes for pollen names. A residue of four proposals ~~were~~ left, none of which seems more than ordinary to me. Three of them simply improve the language of the Code without changing it really. (Jim Schopf takes violent exception to this, saying that the Code is grand as it is, but how can he question that different interpretations of the language is possible. The people in Tulsa aren't idiots, and they were confused. I don't see why the Code shouldn't be clearly written.) The fourth proposal is more of a hot potato, requiring of Latin diagnoses for fossil plants. I am for it, what with Japanese papers coming out. There was also some discussion of the question of the Russian publications in the thirties--Naumova, et al. Whether they are valid (and hence predate seeds of important spore names) is really difficult to establish--because of the ambiguity of the Code.

Dr. Elso S. Barghoorn

2

By the way, Cross has a grand setup in Tulsa. They are opening all sorts of doors for him. He may even get a whole floor in one of the buildings on the Pan-Am campus.

I agree with you in hoping that the Bloomington affair will live up to expectations. I have put a great deal of effort into making the meeting a success.

See you in Indiana.

Yours,



Alfred Traverse

AT:pjd

Shell Development Company
Exploration and Production Research Division

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

Aug 3, '59

Dear Al,

Like so many things "once put off,
never done", but I trust this letter
will rectify my silence. I certainly
want to thank you and Betty for the
very pleasant evening in Houston. Please
remember you have a standing invitation
when you come up this way, so that I
hope to return your hospitality.

Your current memo regarding the
Polakoff. Section meetings arrived today
and I would appreciate it if you could
check and let me know, on the en-
closed post card, whether or not I
asked for reservations for the luncheon

on the 25th. I am not certain now
that I will be there on that day since
several things have come up which make
it desirable for me to return to Cambridge
early - i.e. earlier than I had planned.

I am afraid there is going to be too
much going on in Montreal at the same
or nearly the same time and I
foresee much confusion - the city alone
is difficult to get around in.

Hoping to hear from you and I trust
you will have a good trip East.

Sincerely,
E. C.

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

July 18, 1958.

Dr. Alfred Traverse
Shell Development Corporation
3737 Bellaire Boulevard
Houston 25, Texas

Dear Al:

Surprise, surprise, a quick answer to your letter of July 2 for which I thank you and also for the enclosure of the program for the coming meetings in Bloomington, Indiana. I quite agree with you that it is a most impressive set of papers, most of which, I hope, will live up, at least in part, to their titles.

I was very glad to have even the short visit with you which we had in Houston last month, but agree that we were both a bit tired.

I should very much like to hear from you at first hand on what is going on in Tulsa. Apparently Tulsa will become the palynology capital of the world. Incidentally, Funkhouser, whom I think is at Carter, or rather, New Jersey Production, made two or three phone calls to Reed Rollins regarding nomenclatural matters priority, etc., in connection with phyllomials for fossil, pollen and spores. I am not quite clear as to what he is all upset about.

Now regarding your sample of wood from 65 miles off Sabine Pass, I find to my surprise that it is oak, although on the species I would not hazard a guess. It is not distinctly ring-porous and hence this would suggest that it might be one of the live oaks. However, the distortion is quite considerable due to tangential compression so that little more than a generic identification is possible. Although the wood has a lignite like appearance, I feel sure it would not pass for a lignite on the basis of rank in coalification. Like so much wood that is recovered from marine sediments, it is what you might call prematurely black for its degree of chemical alteration. This is something I don't understand but feel that it is in some way related to the marine environment. How certain is the date of 30,000 years? Sounds a little bit too much like a round number.

The continuous centrifuge which I mentioned in my talk at the Humble Laboratories was developed for separation of blood corpuscles by a Turkish doctor whom I met in Erdtmann's laboratory

*As instrument
is patented
in Sweden*

in Stockholm last fall. I have a reprint describing this instrument but cannot find it. The Turkish doctor's name is Selahaddin Rastgeldi. I am sure you can reach him by means of a letter to Professor Erdtmann since I do not have the address. It was not developed for use with sea water, but as you note in your letter, it might well be adaptable for sorting out the plankton from sea water. It is a most ingenious instrument.

I still plan to go to the Bloomington Meetings and will be looking forward to seeing you there.

Sincerely yours,



Elso S. Barghoorn

ESB:rgm

July 2, 1958

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

It was too bad that my trip to Tulsa had to coincide with yours here. That one evening we had together was a little unsatisfactory in that we both were pretty tired. Fisk had invited me to visit the Humble lab, while you were here, and I would have liked to do it. And I would have liked to have heard more about what you are doing.

The trip to Tulsa was illuminating. The Jersey people under Hoffmeister have quite a setup, and Cross is quickly getting organized with a lab that will rival our combined pollen labs here. In fact, the Pan American people seem to have embraced palynology with something approaching abandon. They are even talking about giving Aureal an entire floor of one of their smaller buildings, which would be quite a deal.

Under separate cover I am sending you a little sample of what looks like a reasonable facsimile of lignite. It is a piece of wood from the drillsite for the Neptune well, 65 miles off Sabine Pass, La.-Tex. Water depth: 90 ft. The wood is Pleistocene, C-14 dated at 30,000 years. It was brought up from 200 ft. below the bottom of the Gulf. The question (of academic interest to me personally) is: what kind of wood is it? I have no facilities for making sections, or a wood reference collection, so thought you might be willing as a personal favor to give me a determination. (In seven years, I believe this is the first time I have pulled this on you!)

One of our palynologists, C. Gutjahr, heard you talk at Humble and has been telling me about a continuous centrifuge for sea-water, etc., that you mentioned having seen. Can you supply me with more information?

Hoping to see you in Bloomington, I am

Yours,

AT

Alfred Traverse

BOTANICAL MUSEUM OF HARVARD UNIVERSITY

Oxford Street
Cambridge 38, Massachusetts

June 10, 58

Dear Al,

I plan to be in Houston the week
of the 16th, arriving Monday afternoon.
I am not certain of the schedule for the
week, but would much like to see you
if you are in town. I hope all is well
with you and yours,

Best regards +

Hastily,

Elis (Barbours)

% Dr. Milton Williams

Humble off. CA5-4411

M.W. phone: JA9-0697

Plaza Hotel JA9-3161

November 26, 1957

Dr. Elso S. Barghoorn
c/o American Express
11 Rue Scribe
Paris, France

Dear Elso:

Glad to get Teresa's letter of the 18th and the enclosed check. Unfortunately, you seem to be one of a large group of members who don't know whether they're affiliate or regular members. As a regular member, you owed \$1 (assessment), not \$2 (assessment plus dues). I am returning the \$1 herewith.

You're having a grand tour. I was in Stockholm two years ago to the day and enjoyed myself very much. Professor Hesselund of the Geology Department at the University was very nice to me, and I also had a good time at Bromma, though Erdtman is not the easiest guy to deal with I've met. He certainly has a marvelous setup there. I don't think there's anything like it in North America, as to spaciousness and general facilities, despite our supposed wealth. To be sure, Chevrolet is a bigger car than Volvo!

We certainly reciprocate the good wishes. We will look forward to hearing about the trip in more detail during the coming years. Please thank Teresa for her letter. Best wishes to you both.

Very truly yours,


Alfred Traverse

AT:hmp

Enclosure

Shell Development Company
Exploration and Production Research Division

November 18, 1957

Dear Al:

I am enclosing a check for the assessment and dues. We were glad to here that the Meetings were so successful. As for ourselves, we are having a very profitable and enjoyable trip. I am writing the present note from Stockholm where we have been for several days. The change has been very good for Elso, as he was much burdened with administrative work last year plus professional duties, and pending the remarriage of the first Mrs. Barghoorn, there were many problems to be worked out.

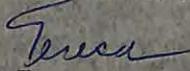
Knowing how much you like to travel, I am sure that you will understand how stimulating we are finding this trip. I myself have a project which I have found most engrossing. I have been visiting European secondary schools with a view to making a comparative and evaluative survey of science and mathematics courses. I have made some rather interesting discoveries, particularly with regard to the age at which mathematics is started and the views of teaching science.

Sputnik has created quite a stir over here, and our prestige is at a new low. Little Rock also didn't help things.

Please give our best regards to Betty and the children, and I for one certainly hope that in your travels in the second half of the year that you will make a trip to Cambridge.

With warm personal regards from Elso and myself,

Sincerely,


Teresa



C-O American Express
11 Rue Scribe
Paris, France

Ribadassella, Spain
Oct 2, 1957

Dear Al,

Your letter reached me in Paris the day before I left for several weeks in Spain, and I have put off answering it, among other letters, since we have been travelling more or less constantly. I plan to return to Paris the end of this week, and since my schedule will be rather close ^{there or}, I am taking advantage of a leisurely overnight stop here to catch up on correspondence. I plan to go to Stockholm in early October and a week or so in Copenhagen on the way back to Paris. Have been asked by Dr Cady to be the G.S.A representative at the Conference on Coal Petrography in Paris Oct 28-30 and will be back there later in the month.

I am glad the Palo Alto meetings were successful and certainly wish I could have been there, but it was not practicable. You certainly did a real job on the field program + the formal program of papers.

We had a fine trip over on the Mauretania, with only one day of weather and reached Paris on the 13th. Left on the 16th for a trip through southern France and Spain. Spain is a most fascinating country and so unlike my anticipations based on

is a country of extreme contrasts - socially, economically
geographically - and perhaps most of all geologically. The
deputy director of the Geological & Mining Institute in
Madrid equipped me with geological maps of the
country and some interesting information on plant-
fossiliferous continental deposits. These are unexpectedly
few in number & area considering the size of the
country. However, the geology of Spain is remarkably
complex, owing I think, in good part to the late
Tertiary orogeny - (vide, the Pyrenees). Today went
through the major Carboniferous exposures in the
wild and rugged mountains south of Oviedo on the
north coast. Metamorphism here resembles that in
Penns., and results in similar facies alterations
including anthracite and semi anthracitic coals.

Lest I get into a long epilogue on my views
of Spain, I must end here. The country interests me
so much that I want to return for a longer stay.
Perhaps my knowledge of Spanish, limited as it is,
has helped make the country so interesting. The people,
however, are intrinsically more friendly than in either
France or Portugal.

Best wishes to you both from me.

Sincerely,

Ess. Barham

P.S. Can you find this village on the map. It is about 150
kilometers west of Santander - on the coast of the B. of Biscay

September 6, 1957

Professor Elso S. Barghoorn
c/o American Express
Rue Scribe
Paris, France

Dear Elso:

Hope this finds you before your return. You should have a fine experience. Sometimes I wish I could make a living traveling, I enjoy it so much,

The meetings, I think I can say with all modesty, were very successful. The field trip was even better than advertized. We had a good time and learned a lot in the four days. There were 20 participants, not counting John Hall of Minnesota, who found out that I will hold up a group ten minutes for the benefit of stragglers but not 30 minutes. He meandered onto the scene in Berkeley when we were 15 miles down the pike. We even found a new Weaverville locality--seeds and fruits. Dick Scott said it was a very fine discovery and MacGinitie was also excited. Mac proved an excellent guide and made a fine impression on us all. I am very fond indeed of him. He and I spent a week together before the trip, getting ready for it--we made the whole 1,000 mile trip in advance.

The sessions in Palo Alto were also good. The paleobotanical luncheon was, to my complete astonishment, oversubscribed. Fifty tickets were printed and sold by Stanford and fifteen persons were turned away. Our meeting soon was jammed for all sessions (50-60 people).

I was disappointed by the actions of the business meeting. My proposal for a palynological committee was talked to death, largely thanks to Grayson. He somehow resents the paleobotanical section, for reasons I can't quite fathom. However, John had not a word to say about his questionnaire and its results. Everyone had expected him to talk, and his failure to do so made the latter part of the pollen conference pretty flat.

The B.S.A. is seriously considering abolishing all sections. I think we must keep a close eye on that situation. If the proposal goes through, we would have to reorganize in some way. In order to be sure of well informed representation for us, I recommended that the secretary represent the section on the B.S.A. Council. I should have had someone else make the proposal. It was defeated.

Professor Elso S. Barghoorn

2

But, all in all, I have a good feeling about the meetings, knowing I have done something of value for our profession.

All best wishes and regards to both of you.

Very truly yours,



Alfred Traverse

AT:ml

Shell Development Company
Exploration and Production Research

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

August 22, 1957

Dr. Alfred Traverse
Exploration and Research
Shell Development Company
3737 Bellaire Boulevard
Houston 25, Texas

Dear Al:

This is a brief letter since I am literally pressed for time before we leave. I was hoping to see you in Houston early last week, but Betty told me, when I called, that you had already gone to California. I had not expected to come to Houston so late in the summer, but it was still not late enough to combine it with the AIBS meetings.

I was particularly interested in discussing with you matters which might come up at the Paleobotanical Section meeting. I shall be much interested to learn what did transpire and shall welcome news from you when you return.

I had planned to spend three weeks in England the first part of my stay, but have changed my itinerary and will go to England later. As it is, my forwarding address until September 25 will be care of American Express, Rue Scribe, Paris. I plan to spend a good bit of time in Holland and Germany, but have not set my itinerary exactly yet.

Best wishes and regards.

Sincerely yours,



Elso S. Barghoorn

ESB/s

July 1, 1957

Professor Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Thanks for the commendation on the form letter. Grayson has just been here for a visit and leaves me somewhat confused about the matter. On the one hand he seems more or less gleeful that he has had an overwhelmingly favorable response to his questionnaire. On the other hand, he insists that he is not promoting the creation of a new society but only is seeking to find the common mind on the issue. I have talked with him about it for hours and have reread his original circular and find that while he didn't say directly that creation of a new society was a motive, I still think that it is and was, and furthermore I think that opposition to the paleobotanical section, or more correctly to some of the people in same, is at least in part the source of motivation. This is probably uncharitable, but I stubbornly think it is accurate.

It is too bad that you can't make Stanford. You would have enjoyed the field trip, I know. The people in the all day Tertiary program are expecting some sort of a defense of the "Barghoorn curves" in the discussion periods, and it would be good if you could be there. A. is still refusing to have anything to do with the meeting, inasmuch as nearly everybody in attendance will be an idiot beneath his dignity. Finally, your voice in the business meeting re these various proposals about our future would be important. But I understand your reluctance to travel so far.

The P. & S. Catalog is hung up financially though your fine work at Humble brought them around. Shell had supported the project from the first. Grayson has made the perhaps reasonable criticism that Magnolia would be more likely to support the catalog if it were organized under, say, A. G. I. auspices, so that the money wouldn't be given directly to Penn State. He says that the Magnolia people fear that should anything happen to Spackman or Kremp the project might be claimed by Penn State and be killed. Were it organized under an independent clearing house, and if Spackman were to take a job at say, U. S. Steel, the project could be transferred elsewhere without complication, insuring the permanence of the project, an essential factor in Magnolia's opinion. I see their point, but I say that it would be better to have the project under the present arrangement than not to have it at all. Maybe, though, Spackman ought to consider trying to get it set up under some independent auspices.

About the curves: friend A. wrote recently in a very insulting manner giving data on a flora in Nevada on which he is working and which has

100% genera native to the region. He ended with the query: "I suppose this is a recent flora--hmm?" I wonder if he had the courage to write you directly about the same flora?

We were quite disappointed to miss the trip to New England that we had planned, but I guess we might as well face it: automobile trips to N. E. in a two week vacation with small children are in the realm of fantasy only.

Very truly yours,



Alfred Traverse

AT:ml

Shell Development Company
Exploration and Research Division

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

June 26, 1957

Dr. Alfred Traverse
Shell Development Company
3737 Bellaire Boulevard
Houston 25, Texas

Dear Al:

Your recent form letter of June 10 to the members of the Paleobotanical Section prompts me to write to you about two matters. First, I should like to concur with you in the content of your letter to the Section. All things considered, I think that the present status quo with some minor deviations is much better than the ill considered setting up of a new society at this time. Palynology is in no sense a science of its own since it is used for such a wide variety of approaches to problems in other sciences. Moreover, it would lose its botanical roots if the subject is set up independently. If you wish to quote me directly as above at the Stanford meetings, please feel free to do so inasmuch as I do not see that it will be possible for me to attend in late August. This is the chief subject of this letter, since I indicated when I last wrote you, that I was still undecided. In view of my schedule set up for the summer including several weeks in the field the early part of July and preparations for going to Europe in early September, I think that it would be impracticable as well as extravagant for me to attempt to get out to the West Coast. I very much regret this since I have consecutively missed so many meetings. I sincerely hope that my colleagues in other institutions do not think I am attempting to withdraw or boycott the annual meetings although it certainly must seem this way from a distance.

At the St. Louis meetings of the A. A. P. G. as I think I told you I had a long talk with Kramp about the pollen index. I also strongly supported the index to the Humble group for financial support. Kramp suggested that I be a member of the editorial group to be consulted for policy on the direction of the project, that is, the direction of intent in policy. This, plus a shortly subsequent letter to Bill Spackman, have remained without answer and I wonder whether you have any further information on the status of the whole affair, which I have consistently regarded as a worthwhile endeavor.

June 26, 1957

I think that we are having a summer fully as hot as Houston this year. June has averaged a bit over 100 degrees above the normal average thus far with many days at 90 or touching 90 and high humidity. Despite the humidity it has been one of the driest months in many years. This is the first month I have really appreciated air conditioning since I moved into our new building.

It seems that Axelrod crawled pretty far out on a limb in that paper in the Journal of Paleontology. This spring Jack Wolfe and I made a statistical survey of about 60 western American floras both with regard to the percentage of native versus exotic genera and to the changes in relationship between entire margin and non-entire margin leaves. The curves are quite striking and with few exceptions in degree of slope in the early Tertiary they fully corroborate the earlier curves which were published some years ago. I shall send you a print of a negative taken from the final curve. I am hoping to get this written up this summer if time permits.

I hope all is well with you and the family.

Sincerely yours,



Elso S. Barghoorn

ESB:pg

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

April 26, 1957

Dr. Alfred Traverse
Shell Development Laboratories
3737 Bellaire Boulevard
Houston 25, Texas

Dear Al:

Your recent card prompts me to the unhappy thought that I failed to thank you for your hospitality during my visit to Houston in early March. The time since has gone by so fast that I can hardly believe the term is drawing to a close.

The St. Louis meetings of the A.A.P.G. were very worth attending and I'm glad I went although I decided at the last minute. Too bad you could not have attended, I noted that you had preliminarily registered.

About the California meetings, I am still not decided. We plan to leave for a somewhat extended visit in early September, and it becomes a matter of time as well as total costs how to budget for the latter part of the summer. Also I'm determined to do what I can on my share of the Elementary Paleontology textbook which Romer, Whittington and I are attempting to put together. This, with a few manuscripts and keeping the papers moving across my desk promise for a full summer.

I did what I could to sell Humble the value of Kremp's proposed index and hope it had some effect. If this project doesn't come through with impressive results and reasonable speed, I somewhat suspect that the A. P. I. will move in on it - that is, ^{the} the whole area, not Kremp's project per se. I had a long talk with Kremp in St. Louis, but have not heard from him since my return.

Best regards.

Sincerely,

Elso S. Barghoorn

ESB:BW

P.S.

Have had Texas weather up here the past week - without the rain, above 80° on 4 days and high 88°. Flowering shrubs very poor this year owing to excessive cold in January. This killed all but a relatively few Forsythia flower buds.

Feb 27 '57

or al -

Plan to ~~arrive~~ ^{arrive} Houston on ~~Wed~~ ^{Sunday} March 3
on Eastern Flight # 507. Will contact you
on Monday & set time for visits to your
lab.

Looking forward to the visit and glad
you will be in town.

Too bad about Hooker's.

Best regards

Sen

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

Feb 13 '57

Dear Al,

Enclosed the ballot-questionnaire.

Owing to various commitments
and activities here as well as
working out a schedule in Houston
I shall not be down until
the week of March 4. Will you
be in Houston at that time?

Owing to plans to be in Europe
and very possibly in India next
fall & winter I shall not be
able to attend the meetings in
Stanford in the autumn - a rather

late summer. This will mean the
4 the meeting missed and it will
begin to appear I am boycotting
the meetings!

Please let me know if you
will be 'on deck' in early March

Sincerely yours,

Elso

Barghaan

52
Wis. 53
Maine 54
E. Can. 55
Stone 56
Stamp. 57

January 16, 1957

Professor Elso S. Barghoorn
Biological Laboratories
Harvard University
16 Divinity Avenue
Cambridge 38, Massachusetts

Dear Elso:

Thanks for yours of the 11th. Never apologize for your handwriting. It is eminently legible. For one, I deprecate the trend to indiscriminate use of the typewriter. For instance, in going through the old Paleobotanical Section records, I found the handwritten squibs several times as interesting as the similar things in typewriting.

I am not able to determine the year in which Koppe submitted that title. I remember that he was already with Spackman in 1953, so I'd guess it was somewhat before then, but can't be sure. Koppe is an extremely versatile fellow in his own way, and he has dabbled in a great variety of things. For example, he worked for Eastman Kodak at one time, and it is from him that Spackman acquires much of his knowledgeability about color photography, etc. I suggest you write him if you're interested in more information about whatever he did in the Gunflint (Mr. E. F. Koppe, same address as Spackman).

As far as I know, I'll be here in early February, though it would be good to let me know the exact dates as soon as you can, so that I can arrange my schedule to assure that I'll be around. My assistant and I will take a trip to some of the herbaria in this region at about that time.

Best wishes to you and Teresa. Betty's mother is here with us for a short visit and is much enjoying our warm weather.

Yours truly,


Alfred Traverse

P. S. Just found the Koppe paper in the preliminary program for the 1952 (Cornell) meeting. It is also listed in the general program for that meeting, although in my personal copy I notice that I have the title crossed out, suggesting that the paper was cancelled.

AT:pjd

Shell Development Company
Exploration and Production Research Division

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

Jan 11 '57

Dear Al,

I have ^{been} putting off for some time writing you in response to your interesting letter of Dec 20. Also I endorse the suggestion to publish a note on your slide making procedure - it may do some good in discouraging workers from discarding slides and help preserve "types". Regarding the choice of Kreyer's alternatives I selected the one which I think has the greatest potential use and could be encouraging to one entering the field - i.e. students who have yet had little experience in pollen morphology. However, it is probably much as in the utility of keys to identification of higher plants - the more you know, the more useful the key!

Your communication today re Kopper's proposed talk somewhat flabbergasts me. What year was this sent in? It is not dated. Also was an abstract ever submitted. Kopper's

institutional address on the form is given as Univ of Wisconsin.
None of this makes any sense and it is not funny if it is
supposed to be a joke (no reference to you!). Do you have
any explanation for it? Tyler and I are working on a
monograph of the Gneiss "flora" and it will be some time
before we are ready for publication.

I find that I shall be in Houston probably in early
February but haven't decided just when. It should be about
the 6th or thereabout. Will you be there? I very much
want to spend some time with you if we can arrange
it - no mad dash such as developed in June last year.

Have just dictated a batch of letters but wanted to get
this off before the week-end stenographic delay - hence the
long hand

Best to you and Betty

Sincerely,

Elsie

December 20, 1956

Professor Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Thank you for yours of December 12. With this small encouragement I think I'll prepare a paleontological note for the Journal of Paleontology on the method. I expect your difficulty finding the grains using the method is due to one of two factors: (1) My x marks on the Brandon slides are a little too large. (2) Some of the plus and minus factors may be in error. I am inclined to discount the latter possibility because I checked all of them carefully.

What you heard about the Germans is in large part true, though the non-existence of many of the type specimens is due rather to loss in the war. It is quite true, however, that the Krefeld laboratories, as recently as when I was there in '55 did not have "type" slides of the items they were using in their work; I mean example slides of the things they were identifying in routine work. I caused consternation by asking to see slides of this or that pollen form that they were talking about. None existed. This is a little different from nomenclatural types, however, and Potonie at least now believes in preserving the type specimens for new species. To me the best practice certainly seems to be preservation of all slides. How the Krefeld people propose to check results I can't say.

I differ from you about the alternatives for the Catalog of Fossil Pollen and Spores. The reason is my observation that the people who have punched card files of pollen types (e.g. Iversen et al) just don't use the punched card feature and admit it. I intend to get the cheapest version for my own copy and will have the laboratory buy the punched card set, so that we will be equipped for all emergencies. The reason that Kremp used one of my things was probably tacit recognition of the part that I have had in developing the idea for the project. Currently, the big problem is financial. The Catalog will take something like \$60,000, over a four year span. Subscriptions will be purely nominal and bear no relation to the true cost of the Catalog.

I had been tentatively planning a swing to the North in May and June, combining my vacation with a visit to you. I am planning some field excursions for late February, March and April but should have that pretty well out of the way by June. According to your letter, June would be o.k.

Professor Barghoorn

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Also I should point out that if there is anything specific that needs attention I can come to Cambridge for a couple of days anytime you like. Perhaps I should do so to discuss various aspects of this Catalog and other matters of mutual interest.

You probably know that I am secretary of the Paleobotanical Section for the ensuing triennium. With the serious heart attack of Professor Hoskins I am de facto chairman as well and have the responsibility for getting together the program for the Stanford meetings next August. I have asked Professor Chaney to be program chairman, with no idea that he would accept but am delighted to report that he has. Now it is essential that we get a large attendance if the rapport between Western and Eastern paleobotanists that I hope can come out of this meeting is to materialize. Chaney and his people and I will arrange a field trip and a symposium in addition to the regular session for papers. Chaney says he is sure Eastern paleobotanists won't come, and I am determined to prove him wrong. I am sorry that you won't be available. You are fast becoming a stranger to the Section, as this will be the fifth straight meeting you have missed!

All best wishes of the season and for 1957 to you and Teresa.

Yours very truly,



Alfred Traverse

AT:rlg

Shell Development Company
Exploration and Production Research Division

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

December 12, 1956

Dr. Alfred F. Traverse
Shell Development Laboratory
3737 Bellaire Boulevard
Houston 25, Texas

Dear Al:

As I wrote you the Brandon type slides arrived in good shape and have proven very interesting to examine in connection with pollen and spores from other Tertiary deposits. Regarding your specific question in the memorandum of November 20th, I cannot very well give a concise answer because I have had some difficulty in locating the individual pollen grains by use of your system. This is probably a mechanical difficulty on my part rather than a fundamental error in the method. By sheer logic the technique is foolproof and I would recommend that you publish a note on it. Certainly, some solution to the problem of locating type specimens of such objects as pollen should be in the literature especially so since I have been informed that the procedure in the German ~~Brown~~ ^{Schulz} work has been to designate the photographed specimen as the type and the slides and their contained grains washed clean for use in preparations of further slides. Am I correct on this or have I been misinformed?

I heartily endorse Kremp's new project and am so writing to him. He was very partial to the Harvard tradition to make use of one of your preparations as a specimen sample. Unfortunately, I think the most expensive group of his various options is the only one practicable.

Best regards.

Sincerely,

Elso

Elso S. Barghoorn

ESB:bw

PS. How do you like Miami? It is a good locale for meetings during northern winters -
Best wishes to Betty from us and hopes that Shell may make possible a visit from you to Cambridge before long.
Plan to be in Europe next year for 6 months or so but shall be in Cambridge until well into the summer.
ESB.

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

November 14, 1956

Dr. Alfred F. Traverse
Shell Development Corporation
3737 Bellaire Boulevard
Houston, Texas

Dear Al:

A note to thank you for the return of the Brandon lignite types which arrived yesterday in perfect shape. I very much appreciated your calling me last week and renew my invitation for you to come east for a visit here.

The type slides are curated in beautiful order and I can find most of the individual grains by use of the paper arrows. A few words on the correction factor to be employed with the new Zeiss stands would be very useful to have, however, I have not made an attempt to do this as yet although I find your reference marks plainly defined on the reversed side of each slide.

Have had some brief communication with Dr. Max Blumer of your organization. He has been doing some work in which I am most interested as I have told him. Please remember me to Dr. Hubbard if you see him.

Best regards,

Elso S. Barghoorn

Elso S. Barghoorn

ESB:bw

November 14, 1956

Professor E. S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Here are the sheets listing the precise locations for the Brandon types and other illustrated specimens. I suggest that a copy of this list be placed with the slides and the other copies filed. Since you will presumably have received the slides by now, you will have noted that I checked the location of each fossil and marked same with a small arrow of gummed paper. The numbers written on the arrows are the BT catalog numbers. It would perhaps be a good idea to keep a copy of R. I. 5151 with the slides, marking in this copy the corrections given in the lists.

One by-product of sending the slides to you has been the perfection of my "x" method for location of items on a slide. The technique of giving + and - readings from the "x" seems infallible to me. I have also been delighted to find the location of the items is unchanged after more than six years.

With very best wishes as ever,

Yours very truly,

Alfred Traverse

AT:rlg

Enclosure

Shell Development Company
Exploration and Production Research Division

List of illustrated type specimens **A** and other illustrated specimens for Pollen Analysis of the Brandon Lignite of Vermont, ~~U. S. B. N. Report of Investigations 5151, 1955,~~ by A. Traverse, with exact locations of specimens on slides deposited in paleobotanical collections, Harvard University.

Note:

Each type slide has a small "x" scratched on the undersurface. The locations given here are the distances in mm. and tenths of mm. from these "x" marks. To find a microfossil, focus on the "x", then rack up to focus in the plane of the fossil and move the required distance from the "x". In practice it is best to take a reading on the mechanical stage for the "x", then compute on paper the location of the fossil. A gummed paper marker stuck to the cover-slide is also provided to aid in locating the fossils.

This modification of the technique described on pages 35-36 of B. I. 5151 was necessitated by the discovery that unfortunately the horizontal scales on some mechanical stages run from right to left and others from left to right. Direct conversion of the readings given in B. I. 5151 to a microscope other than the one used in preparation of that monograph is not easily accomplished if the scales run in opposite directions.

However, the data given in B. I. 5151 are accurate, and the distances from "x" given below were computed simply by subtracting the location (loc.) readings from the reference (ref., i.e., "x") readings.

Errata:

Several typographical errors are in the location data given in B. I. 5151. These are:

- p. 42, line 3, should read: BT-9: Figure 9 (19)...
- p. 47, line 14, should read: ...Prep 4b. Slide 4.
- p. 53, line 39, should read: ...Prep 5b. Slide 3.
- p. 56, line 33, should read: BT-37: Figure 10 (70)...
- p. 59, line 34, should read: BT-43: Figure 11 (79)...
- p. 75, line 8, should read: ...Prep ~~5a~~ B. Slide 1.

Figure Number in RI 5151	Holotype (or other specimen) Number	Slide Number	Distance of fossil from "x" mark on slide, in mm.	Vertical Scale (+ means up from "x"; - means down from "x")	Horizontal Scale (+ means to left from "x"; - means to right from "x")
8(1), p. 31	HT-1	5A6-2	+ 6.3	- 2.4	
8(2), p. 38	HT-2	5A6-2	+ 5.15	-19.55	
8(4), p. 38	HT-3	4B-4	+ 4.2	-26.8	
8(5), p. 38	HT-4	110-4	+ 2.9	-13.2	
8(6), p. 38	HT-5	4B-1	- 2.35	+ 1.75	
8(9), p. 38	HT-6	6A-2	+ 3.1	-23.5	
8(11), p. 38	HT-7	5A6-3	- 3.55	+ 7.9	
8(13), p. 38	HT-8	5A3-1	+ 1.8	+ 9.0	
8(14), p. 38	HT-8'	108-3	-10.2	-12.7	
9(19), p. 43	HT-9	4A-1	+ 2.6	+23.9	
9(20), p. 43	HT-10	110-3	+ 6.3	+ 1.15	
9(24), p. 43	HT-11	101-3	- 7.7	-14.5	
9(25), p. 43	HT-12	5A6-2	+ 4.6	-10.3	
9(27), p. 43	HT-13	7A-1	+ 7.0	-10.8	
9(29), p. 43	HT-14	5A6-3	- 3.0	+ 3.1	
9(31), p. 43	HT-15	5A6-2	+ 8.1	+ 4.95	
9(33), p. 43	HT-16	HT-2	+ .2	+ .5	
9(35), p. 46	HT-17	6A-1	+ 9.9	-11.9	
10(37), p. 48	HT-18	4B-4	+ 1.1	- 5.9	
10(39), p. 48	HT-19	4A-1	- 5.3	+ 3.8	
10(41), p. 48	HT-20	5A6-1	- 4.7	- 6.3	
10(42), p. 48	HT-21	108-1	- 3.9	-10.6	
10(43), p. 48	HT-22	4B-3	+ 5.6	-14.7	
10(44), p. 48	HT-23	5A6-1	- .6	-21.7	
10(45), p. 48	HT-24	4B-1	- 2.95	+17.1	
10(46), p. 48	HT-25	5A6-1	- 1.0	-20.5	
10(47), p. 48	HT-26	4B-1	+ 7.55	- 6.6	
10(50), p. 48	HT-27	Slide B-1	+ 8.85	-14.50	
10(52), p. 48	HT-28	110-3	+ 2.8	+15.9	
10(53), p. 48	HT-29	3B-2	+ 1.9	- 0.9	
10(55), p. 48	HT-30	Slide A 1-4	+ 8.0	+ 1.7	
10(57), p. 48	HT-31	4B-1	- 0.15	-18.55	
10(59), p. 48	HT-32	6A-1	+ 1.6	+11.5	
10(60), p. 48	HT-33	3B-3	- 7.2	+18.65	
10(62), p. 48	HT-33'	4B-1	- 3.15	-11.2	
10(64), p. 48	HT-34	3B-1	-10.9	0	
10(65), p. 48	HT-35	4B-1	- 6.35	- 1.0	
10(67), p. 48	HT-36	2A-3	+ 2.4	-11.75	
10(69), p. 48	HT-37	5A6-3	- 4.5	-14.7	
10(70), p. 48	HT-37'	5A6-1	+ 5.3	+ 7.0	
11(72), p. 58	HT-38	4B-4	-10.2	+24.7	
11(73), p. 58	HT-39	5A6-1	+ 7.6	-21.0	
11(74), p. 58	HT-40	2B-2	- 1.0	+ 6.10	
11(75), p. 58	HT-41	5A6-3	+ 6.5	+23.6	
11(76), p. 58	HT-42	7A-3	- 7.5	-15.3	

(cont'd)

<u>Figure Number in HI 5151</u>	<u>Holotype (or other specimen) Number</u>	<u>Slide Number</u>	<u>Distance of fossil from "x" mark on slide, in mm.</u>	<u>Vertical Scale (+ means up from "x"; - means down from "x")</u>	<u>Horizontal Scale (+ means to left from "x"; - means to right from "x")</u>
11(79), p. 58	HT-43	110-2	-10.4		-17.5
11(81), p. 58	HT-44	6A-1	- 3.6		- 7.4
11(83), p. 58	HT-45	7A-1	+ 4.0		+ 1.3
11(84), p. 58	HT-45'	2A-1	+ 2.3		-19.4
11(86), p. 58	HT-46	5A6-2	+ 9.6		+ 6.55
11(88), p. 58	HT-47	5A6-3	- 3.5		+ 6.6
11(90), p. 58	HT-48	5A6-1	- .7		-18.6
11(91), p. 58	HT-48'	5A6-2	+ 3.6		- 4.55
11(93), p. 58	HT-49	2B-1	+ 4.9		+ 8.6
11(94), p. 58	HT-49'	5A6-1	+ 6.3		-15.8
11(99), p. 58	HT-50	6A-1	- 1.2		-16.3
11(96), p. 58	HT-50'	108-3	+ 4.85		-21.1
12(102), p. 65	HT-70	110-7	- 1.0		-12.0
12(104), p. 65	HT-51	5A6-1	- 1.1		- 8.8
12(106), p. 65	HT-52	5A6-2	+ 7.2		-18.1
12(108), p. 65	HT-53	5A6-1	- 1.0		-12.5
12(111), p. 65	HT-54	4B-4	+ 6.25		-10.1
12(113), p. 65	HT-55	5A6-1	+ 6.3		+ 0.6
12(114), p. 65	HT-55'	5A6-2	- .9		- 7.3
12(116), p. 65	HT-56	5A6-2	+ 8.5		-13.4
12(118), p. 65	HT-57	3B-4	- 7.9		-11.7
12(120), p. 65	HT-58	4A-1	+ 1.1		-15.05
12(121), p. 65	HT-58'	4B-4	+ 6.2		+ 2.05
12(122), p. 65	HT-59	5A6-1	- 2.95		-13.7
13(126), p. 72	HT-60	6A-1	+ 1.8		- 5.5
13(128), p. 72	HT-61	4B-4	+ 6.7		+ 1.5
13(130), p. 72	HT-62	7A-3	+ 4.4		-19.6
13(132), p. 72	HT-63	4B-3	+ 7.9		-10.8
13(134), p. 72	HT-64	811c B-2	+ 4.2		+ 2.85
13(135), p. 72	HT-65	7A-2	+ 4.6		+ 5.5
13(136), p. 72	HT-66	811c B-1	- 9.3		+ 3.2
13(137), p. 72	HT-67	5A6-2	+ 6.2		- 6.3
13(138), p. 72	HT-68	5A6-1	+ 2.8		-19.9
13(139), p. 72	HT-69	5A6-1	- 9.95		-15.95
13(140), p. 72	HT-71	3C-1	0		- 9.5
13(141), p. 72	HT-72	5A6-2	+ 4.7		+ 6.1
13(142), p. 72	HT-73	5A6-2	+ 8.2		+ 4.7
13(143), p. 72	HT-74	6A-2	+ 2.9		-12.75
13(144), p. 72	HT-75	4B-2	- .35		-19.3
13(145), p. 72	HT-76	811c B-2	- 8.2		-12.8
13(146), p. 72	HT-76'	811c A1-1	+ 6.4		- 7.0
13(147), p. 72	HT-77	811c B-2	+ 3.85		-25.1
13(148), p. 72	HT-78	811c B-2	- 4.45		-20.7
13(149), p. 72	HT-85'?	811c C-2	+ 2.7		+ 4.3
13(150), p. 72	HT-37"	6A-1	+ 8.8		-11.8

List of illustrated type specimens ~~and~~ other illustrated specimens for Pollen Analysis of the Brandon Lignite of Vermont, ~~see~~ U. S. G. N. Report of Investigations 5151, 1959, by A. Traverse, with exact locations of specimens on slides deposited in paleobotanical collections, Harvard University.

Note:

Each type slide has a small "x" scratched on the undersurface. The locations given here are the distances in mm. and tenths of mm. from these "x" marks. To find a microfossil, focus on the "x", then rack up to focus in the plane of the fossil and move the required distance from the "x". In practice it is best to take a reading on the mechanical stage for the "x", then compute on paper the location of the fossil. A gummed paper marker stuck to the cover-slide is also provided to aid in locating the fossils.

This modification of the technique described on pages 35-36 of R. I. 5151 was necessitated by the discovery that unfortunately the horizontal scales on some mechanical stages run from right to left and others from left to right. Direct conversion of the readings given in R. I. 5151 to a microscope other than the one used in preparation of that monograph is not easily accomplished if the scales run in opposite directions.

However, the data given in R. I. 5151 are accurate, and the distances from "x" given below were computed simply by subtracting the location (loc.) readings from the reference (ref., i.e., "x") readings.

Errors:

Several typographical errors are in the location data given in R. I. 5151. These are:

- p. 42, line 3, should read: BT-9; Figure 9 (19)...
- p. 47, line 14, should read: ...Prep 4B. Slide 4.
- p. 53, line 35, should read: ...Prep 3B. Slide 3.
- p. 56, line 33, should read: BT-37; Figure 10 (70)...
- p. 59, line 34, should read: BT-43; Figure 11 (79)...
- p. 75, line 8, should read: ...Prep ~~6~~^N B. Slide 1.

Figure Number in XI 5151	Holotype (or other specimen) Number	Slide Number	Distance of fossil from "x" mark on slide, in mm.	Vertical Scale (+ means up from "x"; - means down from "x")	Horizontal Scale (+ means to left from "x"; - means to right from "x")
8(1), p. 38	HT-1	945-2	+ 6.3	- 2.4	
8(2), p. 38	HT-2	945-2	+ 5.15	-19.55	
8(4), p. 38	HT-3	48-4	+ 4.2	-25.8	
8(5), p. 38	HT-4	110-4	+ 2.9	-13.2	
8(6), p. 38	HT-5	48-1	+ 2.35	+ 1.75	
8(9), p. 38	HT-6	62-2	+ 3.1	-23.5	
8(11), p. 38	HT-7	946-3	+ 3.55	+ 7.9	
8(13), p. 38	HT-8	943-1	+ 1.8	+ 5.0	
8(14), p. 38	HT-8'	108-3	-10.2	-12.7	
9(19), p. 43	HT-9	42-1	+ 2.6	-23.9	
9(20), p. 43	HT-10	110-3	+ 6.3	+ 1.15	
9(21), p. 43	HT-11	102-3	- 7.7	-14.5	
9(25), p. 43	HT-12	946-2	+ 4.6	-10.3	
9(27), p. 43	HT-13	7A-1	+ 7.8	-10.8	
9(29), p. 43	HT-14	946-3	+ 3.0	+ 3.1	
9(31), p. 43	HT-15	946-2	+ 8.1	+ 4.95	
9(33), p. 43	HT-16	20-2	+ .2	+ .5	
9(35), p. 46	HT-17	62-1	+ 9.9	-11.9	
10(37), p. 48	HT-18	48-4	+ 1.1	- 5.9	
10(39), p. 48	HT-19	42-1	- 2.3	+ 3.8	
10(41), p. 48	HT-20	946-1	- 4.7	- 6.3	
10(42), p. 48	HT-21	108-1	- 3.9	-10.6	
10(43), p. 48	HT-22	48-3	+ 2.6	-14.7	
10(44), p. 48	HT-23	946-1	- .6	-21.7	
10(45), p. 48	HT-24	48-1	+ 2.95	+17.1	
10(46), p. 48	HT-25	946-1	- 1.0	-20.5	
10(47), p. 48	HT-26	48-1	+ 7.55	- 6.6	
10(50), p. 48	HT-27	Slide B-1	+ 8.85	-14.50	
10(51), p. 48	HT-28	110-3	+ 2.8	-15.9	
10(53), p. 48	HT-29	38-2	+ 1.9	- 0.9	
10(55), p. 48	HT-30	Slide A 1-4	+ 8.0	+ 1.7	
10(57), p. 48	HT-31	48-1	+ 0.15	-18.55	
10(59), p. 48	HT-32	62-1	+ 1.6	+11.5	
10(60), p. 48	HT-33	38-3	- 7.2	-18.65	
10(61), p. 48	HT-33'	48-1	- 3.15	-11.2	
10(64), p. 48	HT-34	38-1	-10.9	0	
10(65), p. 48	HT-35	48-1	- 6.35	- 1.0	
10(67), p. 48	HT-36	22-3	+ 2.4	-11.75	
10(69), p. 48	HT-37	946-3	- 4.5	-16.7	
10(70), p. 48	HT-37'	946-1	+ 5.3	+ 7.0	
11(72), p. 58	HT-38	48-4	-10.2	-24.7	
11(73), p. 58	HT-39	946-1	- 7.6	-21.0	
11(74), p. 58	HT-40	20-2	- 1.0	+ 6.10	
11(75), p. 58	HT-41	946-3	+ 6.3	-23.6	
11(76), p. 58	HT-42	7A-3	- 7.5	-15.3	

<u>Figure Number in NE 5151</u>	<u>Holotype (or other specimen) Number</u>	<u>Slide Number</u>	<u>Distance of fossil from "x" mark on slide, in mm.</u>	
			<u>Vertical Scale (+ means up from "x"; - means down from "x")</u>	<u>Horizontal Scale (+ means to left from "x"; - means to right from "x")</u>
11(79), p. 58	HT-43	110-2	-10.4	-17.5
11(81), p. 58	HT-44	6A-1	- 3.6	- 7.4
11(83), p. 58	HT-45	7A-1	+ 4.0	+ 1.3
11(84), p. 58	HT-45'	2A-1	+ 2.3	-19.4
11(86), p. 58	HT-46	5A6-2	+ 9.6	+ 8.55
11(88), p. 58	HT-47	5A6-3	- 3.5	+ 6.6
11(90), p. 58	HT-48	5A6-1	- .7	-18.6
11(91), p. 58	HT-48'	5A6-2	+ 3.6	- 4.55
11(93), p. 58	HT-49	2B-1	+ 4.9	+ 8.6
11(94), p. 58	HT-49'	5A6-1	+ 6.3	-15.8
11(95), p. 58	HT-50	6A-1	- 1.2	-16.3
11(96), p. 58	HT-50'	10B-3	+ 4.85	-21.1
12(102), p. 65	HT-70	110-7	+ 1.0	-12.0
12(104), p. 65	HT-51	5A6-1	- 1.1	- 8.8
12(106), p. 65	HT-52	5A6-2	+ 7.2	-18.1
12(108), p. 65	HT-53	5A6-1	- 1.0	-12.5
12(111), p. 65	HT-54	4B-4	+ 6.25	-10.1
12(113), p. 65	HT-55	5A6-1	+ 6.3	+ 0.6
12(114), p. 65	HT-55'	5A6-2	- .9	- 7.3
12(116), p. 65	HT-56	5A6-2	+ 8.5	-13.4
12(118), p. 65	HT-57	3B-4	- 7.9	-11.7
12(120), p. 65	HT-58	4A-1	+ 1.1	-15.05
12(121), p. 65	HT-58'	4B-4	+ 6.2	+ 2.05
12(122), p. 65	HT-59	5A6-1	- 2.95	-13.7
13(126), p. 72	HT-60	6A-1	+ 1.8	- 5.5
13(128), p. 72	HT-61	4B-4	+ 6.7	+ 1.5
13(130), p. 72	HT-62	7A-3	+ 4.4	-19.6
13(132), p. 72	HT-63	4B-3	+ 7.9	-10.8
13(134), p. 72	HT-64	Slide B-2	+ 4.2	+ 2.85
13(135), p. 72	HT-65	7A-2	+ 4.6	+ 5.5
13(136), p. 72	HT-66	Slide B-1	- 9.3	+ 3.2
13(137), p. 72	HT-67	5A6-2	+ 6.2	- 6.3
13(138), p. 72	HT-68	5A6-1	+ 2.8	-19.9
13(139), p. 72	HT-69	5A6-1	- 9.95	-15.95
13(140), p. 72	HT-71	3C-1	0	- 9.5
13(141), p. 72	HT-72	5A6-2	+ 4.7	+ 6.1
13(142), p. 72	HT-73	5A6-2	+ 8.2	+ 4.7
13(143), p. 72	HT-74	6A-2	+ 2.9	-12.75
13(144), p. 72	HT-75	4B-2	- .35	-19.3
13(145), p. 72	HT-76	Slide B-2	- 8.2	-12.8
13(146), p. 72	HT-76'	Slide A1-1	+ 6.4	- 7.0
13(147), p. 72	HT-77	Slide B-2	-3.85	-25.1
13(148), p. 72	HT-78	Slide B-2	- 4.45	-23.7
13(149), p. 72	HT-85'?	Slide C-2	+ 2.7	+ 4.3
13(150), p. 72	HT-87'	6A-1	+ 8.8	-11.8

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

October 26, 1956

Dr. Alfred Traverse
Shell Development Company
Bellaire Boulevard
Houston, Texas

Dear Al:

Sorry to have missed you at Storrs but I was hoping that you might have found it possible to come up to Cambridge before leaving for Houston. I came back the day before Scott arrived here and he stayed for about three weeks. His flora becomes more and more interesting as his identifications come in.

Several people have asked me about the types of the Brandon Lignite pollen and spore study. As I recall you have the slides on a sort of permanent loan basis from the paleobotanical collections here. Unless you have immediate or continuing need for reference to the figured type specimens, I am wondering whether you might not send them back here for permanent record and reference. Several people here and others who will be here would very much like to examine them. I am particularly interested in comparing some of the Brandon forms with genera in the Miocene Kirkwood formation from New Jersey about which I think I told you something last spring.

I have not been in Houston since my visit in June and am not sure when I shall get down again. After some hesitation I decided not to go to the Minneapolis meetings so will not see you there if you plan to attend. There have been simply just too many meetings to keep up with.

I hope all goes well with you and Betty and would appreciate a few words from you.

Sincerely yours,



Elso S. Barghoorn

ESB:bw

Bangham, P.S.

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

June 26 '56

Dear Al,

I certainly enjoyed my all-too-brief visit in Houston last week and the luncheon and dinner with you. Sorry that things were so rushed on Thursday because I would ^{have} very much enjoyed seeing your new house. The trip up to Dallas was not on my original agenda, but was very worthwhile though it cut my time short in Houston.

At lunch on Thursday Edwards expressed interest in our pre Cambrian plant studies and I would like to send him a reprint. Could you discreetly find out and send me his full name.

title et.?

I distinctly remember the Normandy (or
is it Normandie) and the fine dinner
with you and Betty

Best regards to both,

Elio

Borghese, E. S.

WUAA015 NL PD WUX CAMBRIDGE MASS JUN 18 / VIA HOU OFC WU /
56

DR ALFRED TRAVERSE

SHELL DEV

PLAN TO BE IN HOUSTON ON THE NINETEENTH FOR REMAINDER OF WEEK STOP
HOPE WE CAN GET TOGETHER STOP STAYING AT SHAMROCK

ELSO

8-18

May 10, 1956

Dr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Thanks for the congratulatory message. I had entertained some hope that you would be able to make the pollen conference at Oberlin and, hence, to talk with me in person. I deduce from your letter that you are not going to be present. The program looks pretty good, despite the overbalance toward the Pleistocene side. Nearly all of the oil company palynologists will be there, so the extra-program sessions should be good.

I am very interested in the Kirkwood lignite and would indeed like to have a slide or two, and/or some of the material. Same goes for the Virginia material. There is certainly no lack of interesting problems, is there? But time is not so abundant. I agree with you that it would be a fine thing for more students to be working on these problems with you. In the years since I was a graduate student the economic picture has completely changed, so that there is now a waiting market for graduates in palynology. One would expect that the demand would soon be reflected in an increase in the number of students of the subject.

At the moment I am still partly occupied with getting set up here. I now have an assistant, however, and I am also beginning to get rolling on the research program. Since I have been pretty much out of palynology since June, 1951, I am devoting much of my thinking to deciding what avenues I should now follow. I think that it would be good to take a crack at the Recent sediments of this region, as a starter, in a reconnaissance fashion. (I have been doing quite a bit of collecting of plants, to familiarize myself with the local flora and to refresh my knowledge of systematic botany). There is an abundant supply here of cores of Recent sediments from riverine, deltaic and other situations. Most of these cores have been studied rather exhaustively by other techniques, which is of course all to the good.

It would be very profitable for me to have a chance to discuss some of my plans with you and to get suggestions from you about problems that I might tackle. Perhaps I shall be able to come up to Cambridge for a few days later this year. The exact time will depend on your convenience, the progress of the setting up here and arrangements for other trips. There no doubt will be a temptation to combine the trip with visits to Kremp, Spackman, and others and perhaps with my annual vacation as well.

Thanks again for your letter and best wishes to all the Barghoorns.

Yours very truly,



Alfred Traverse

AFT:rlw

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

May 4, 1956

Dr. Alfred Traverse
Shell Development Company
Exploration and Production Research
3737 Bellaire Boulevard
Houston 25, Texas

Dear Al:

Thank you very much for the announcement of the birth of the latest addition to the family. Also, my hearty congratulations to you and Betty. Receiving your announcement has led me to realize that I did not reply to your last letter of some weeks ago. At least the letter was not filed and I find no carbon to a letter of subsequent date.

Since I wrote to you in February, I received some lignite secured in well cuttings from a boring made near the north-central coast of New Jersey. The lignite is interbedded with marine and other non-marine sediments in the Miocene Kirkwood formation which is apparently well dated Middle Miocene or at least in the Miocene section as based upon marine invertebrate fauna. The material is light brown in color, much like the Brandon lignite in texture, and abounds in pollen grains. A total of 21 genera were very quickly identified including a number of forms exotic to this part of New Jersey ~~back to this portion of the Atlantic coast~~ including such as *Gordonia*, *Cyrilla*, *Serilla*, *Symplocos*, a genus of the Sapotaceae resembling *Manilkara*, *Engelhardtia*, *Pterocarya*, and several others. The presence of *Ephedra* is of interest. In some respects the assemblage resembles the Brandon lignite but has a number of elements which are more in keeping with the modern existing vegetation in the area in comparison with the Brandon relation to the current flora of New England. That is to say, it is more modern in aspect and indeed seems to lend support to the idea that the Brandon lignite is older in terms of its deviation from the existing flora. The material is definitely worth a more intensive study which I should like to devote to it sometime during the summer. So far it is the only sediment occurring in eastern America which seems to give a relatively significant clue as to the age of the Brandon deposit. I shall be glad to send you a slide or two of this material if you are interested.

Another curious sample of lignite has been sent to me by a professor of geology at Virginia Polytechnic Institute. It occurs ^{overlying} ~~as~~ rocks of lower Cambrian age at a fairly high elevation

May 4, 1956

in southwestern Virginia. The lignite is likewise brown in color and very copiously rich in pollen and spores. It bears no resemblance to the Brandon deposit or, indeed, do the pollen and spores bear any resemblance to the existing flora. I would regard it as probably early Tertiary and possibly Upper Cretaceous. Certain of the fern spores resemble those described from Upper Cretaceous sediments of Europe. The lignite from this locality is 18 feet in thickness and represents still another one of these curious stratigraphic anomalies in terms of existing topographic development. I only wish I had a few more capable students to turn this sort of material over to.

Betty commented that you had already moved but, unfortunately, I left the note at home so shall send you this letter via your office address.

I hope that everything is working out well with you and we both send you our best wishes.

Sincerely yours,



Elso S. Barghoorn

ESB/jcf

P.S.

Defective amplifier in dictaphone, hence the correction.

February 21, 1956

Professor Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Thanks for the nice letter of a week ago. I still have pangs of regret that your visit coincided with the hectic reunion of the Traverse family in Houston so that I was so preoccupied and fatigued during your time here. Since you left I have thought of countless things I'd have liked to discuss.

The thesis does not please me entirely, but then it probably never would have. If I were to do it over again now, having had a chance to show it to Iversen, Faegri, Erdtman, and all, I would change quite a number of things. Of course, the arrangement of the plates, and some other idiosyncrasies of makeup, were insisted on by the Bureau of Mines editorial office, and I was powerless to overrule them. I consider myself lucky that I was able to talk them out of some even more drastic forms of butchery that were discussed.

We have bought a new house in Spring Branch, in the northwestern part of the suburban area. We do not plan to move in there for two or three weeks, but I have already planted magnolia, figs, pecan, and several citrus (grafted on Poncirus trifoliata stock, a frost-resistant rutaceous thing). I think you will like the place.

I am enclosing a supply of the cards I had prepared in lieu of reprints of the monograph. (I am not permitted by regulation to obtain more copies.) All that need be done is for the interested person to fill in his name and address and send the card to Pittsburgh. Each applicant is supposed to be limited to one copy, but I doubt that they examine the records to see whether a copy has already been sent to an applicant. Sorry about this rather odd method of distributing the paper.

Best regards to you and Teresa, as ever.

Very truly yours,


Alfred Traverse

AT:hmp

Shell Development Company
Exploration and Production Research

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

February 13, 1956

Dr. Alfred F. Traverse
Shell Development Laboratories
Bellaire Boulevard
Houston, Texas

Dear Al:

It seems that ever since my return to Cambridge in January I have been struggling up hill to get things caught up to date. However, the correspondence pile has finally been whittled down and I am not going to put off any longer writing to you.

It was very thoughtful of you to leave the copy of your thesis at the hotel. It was on top of the television set when I came in that evening. Next morning, quite early, I left for Miami, Florida, where we spent two days and then I returned directly to Boston. By good fortune I hit the weather almost perfect the entire trip but it was a grim change to come back here with snow on the ground and quite cold.

You did an excellent job on your thesis revision and the paper makes a very sound contribution. The plates came out quite well as far as I can see although your rearranging certain of the figures somewhat confused me at first. We all got a big charge out of the designation of specific names. You certainly had a field day with nomenclature.

I trust that you have finally gotten settled somewhat and are busily engaged in house hunting. There seems to be no shortage of places to choose from around Houston though I dare say you are not finding what you want without some effort.

How may I acquire a half-dozen or so additional copies of your thesis. Do I write to the Bureau of Mines in Washington and if so, what is the cost of the individual papers? Several others here have asked me the same question.

Best wishes to you and Betty and I hope that all goes well.

Sincerely yours,


Elso S. Barghoorn

ESB/jcf

*P.S. This letter was dictated on Feb 6 - seems I will be needing additional
servitand help. The reprint from Microphotology arrived - many thanks.
Dick Scott is on here for 3 weeks - will leave end of this week.*

January 30, 1956

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Under separate cover I am sending you a photostatic copy of the paper by Christensen about which I have told you on several occasions. It turned out that the copy of the journal containing the article had another on the alleged Nordic remains in Minnesota which I wanted to keep, so I am sending you a copy of Christensen's article rather than the whole journal number.

Do not give up in disgust on first glance at the paper - the English summary begins on page 55. (Iversen told me that Margaret Bryan became a very proficient Danish speaker, so perhaps you could get a translation of the whole thing from her.)

Very truly yours,


Alfred Traverse

AT:hmp

Shell Development Company
Exploration and Production Research

The Biological Laboratories
Harvard University
Cambridge, Massachusetts

November 30, 1955

Dr. Alfred F. Traverse
c/o J. O. Emeis
B. P. M., 30 Carel van Bylandtlaan
The Hague, Holland

Dear Al:

I trust this letter reaches you, because I had some difficulty deciphering your return address in Holland. I have greatly enjoyed your recent letters and envy you the opportunity of traveling about Europe as you are apparently doing. Professor Florin in a letter which I have received today, commented that he had met you in Stockholm. I presume you have spent time with Erdtman at Bromma. I greatly enjoyed a brief visit I made there back in 1950.

I was much interested in your discussion of the work by Christer and must admit that I had not known of it. I would be much interested to hear from him. I understand that Iversen will be coming to this country shortly, for a visit down at Yale. I shall look forward to getting him up here if I can persuade him.

The New Orleans meetings were worthwhile, though not as heavily attended as had been hoped for. I, of course, had a chance to renew personal contact with a large number of my friends from Humble Oil who had come over from Houston. I shall probably be going down to Houston sometime in January. Is there any possibility that you will be back by then. I would much appreciate hearing further of your travels and adventures. Best wishes

Sincerely yours,



Elso S. Barghoorn

ESB/jmr

P.S.

*Excuse the slip - too many letters to sign at
one time. Any chance visiting here on your way back?*

E.

you could make a good case for it

Dr. Elso S. BARGHOORN,
Biological Laboratories,
Harvard University,
C A M B R I D G E 38,
Mass., U.S.A.

The Hague, December 7th, 1955.

Dear Elso:

Thanks for yours of 30 November. You needn't have worried about the address: it was quite adequate. As you may guess, this is not the first comment I've had on my penmanship, so I'm not at all sensitive.

Christensen gave me a copy, one of few remaining, of his paper. I shall see that you get it when I return home, if he has not by that time supplied you with one. I have heard he is very poor about handling correspondence, so I got one of the two or three copies he still had, thinking that a bird in the hand ...

My plan at present is to fly home on or about the 3rd of January. That should put me in Houston about the 10th or so. Betty and I have been separated now since September, and it is high time that we got a place to live in Houston. So, I think I shall postpone the visit to Cambridge, though I agree that it would be desirable for me to go up sometime in 1956. Perhaps I did not tell you in previous letters that we sold our house in Denver, and Betty and the children have been living alternately with her and my parents since that time.

Best wishes of the season.

Sincerely yours,

RT

A. Traverse,
c/o N.V. DE B.P.M.,
GA/Pal.Lab.,
30, C.v. Bylandtlaan,
The Hague, Holland.

October 4, 1955

Dr. Else S. Bargheern
Biological Laboratories
Harvard University
Cambridge 38, Mass.

Dear Else:

Thought you might be interested in the text of my presentation at East Lansing, which I enclose in mimeographed form.

Drove by the Humble labk the other day - certainly is handsome, I must say. We shall be looking forward to an opportunity for visiting you formally there!

I am still batching it here, waiting for a decision on whether I go to Europe now or later.

Very truly yours,

Alfred Traverse

AT:hmp

Enclosure

Shell Development Company
Exploration and Production Research

Encl 25 Sept. 1955

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

Sept 14, '55

Dear Al,

This is a personal letter and I hope it does not have to reach you through 'channels' - this is the only address I have for you since you left Grand Forks.

Your letter reached here while I was up in northern Ontario with Stanley Tyler collecting in our pre-C deposit north of Lake Superior. In many ways I think you have made a wise decision in accepting the offer from Shell. The opening, as they outlined it to me, seemed a natural fit for your interests and training and the Shell Laboratories have a lot of top notch talent in Houston.

As I think I told you I was with Humble Oil this summer working at the new Research Center, with their geochemistry group. You shall probably be interested in visiting the Center when you get settled. It is on Buffalo Speedway near the corner of W. Alabama

not too far from Shell Development Co., which as I recall
is on Bellair Blvd. Humble Oil & Ref., as you will probably
be told, is the largest domestic producer of petroleum in the
states - a fact which I did not know until I went to
Houston this summer. They made my visit there a very
pleasant experience scientifically and otherwise and I was
much impressed by the intellectual calibre of the research
staff.

I think you will find living conditions in Houston
much better than your initial reactions probably were. Between
an air-conditioned apartment and air cond. laboratory I
found little to complain about when I was at work or at
home. Automobiles in the hot hours of the day were about
the only bad discomfort, but the steady Gulf breeze mitigates
things greatly even on the worst days. Partly a matter of acclim-
atation. The winters there should be delightful.

I shall be associated with Humble during the coming
year and will be in Houston from time to time. Do you
plan to be in New Orleans in Nov? If so shall see you
there. I had planned to give a paper on our pe & coal
but didn't get the abstract in on time. Sorry to have
missed you at C. Lansing.
Best regards & hospitality,
Elio

Building 20
Federal Center
Denver 2, Colorado

March 21, 1955

Through Chief, Branch of Coal Technology

Dr. Elso S. Barghoorn
Harvard University
The Biological Laboratories
15 Divinity Avenue
Cambridge 38, Mass.

Dear Elso:

Thanks for the news of the differential thermal analysis meeting. I think the technique has interesting possibilities for fuel work, and I very much regret that Herb Glass is not, as you may know he is not, free to get in there and begin to make some sense of it. I gained a lot of respect for his keenness (if not his laboratory methods) when I spent two days with him last fall.

This letter, plus my change of address notice, will answer the question about our move. We have bought a house (or a mortgage, depending on the way you look at it) and have been living in a motel since March 1, waiting for the present occupant of our house to depart. I am hard at work drawing specifications for my new laboratory here, trying to get the furniture and so forth that will best answer my needs and most nearly come within my budget.

Dick Scott should make an excellent man for the U. S. G. S. wood job. I am looking forward to his advent on the scene. Miss Leopold's appointment was a little surprising, since I had thought her a Pleistocene person exclusively. But I am sure Preston Cloud wouldn't have hired her unless he was pretty sure of her qualifications. Denver will be one of the big paleobotanical centers if this keeps up.

AT/dw

I agree entirely with your comments about the publication of my monograph. However, there are other considerations. One of these is that the Bureau of Mines has heavily supported the revision of the work, the other is speed of publication. With any luck at all, the thing should be out by summer. It is approved for publication by the reviewers and is being worked over by the editorial office now. It will come out as a Report of Investigation, offset printed, with the plates, however, half-toned--this latter a special concession to me.

Best wishes to Terry, who, I note, is back on the firing line (or is there another tib?).

Yours truly

Alfred Traverse
Head, Fuels Microscopy Lab.
Branch of Coal Technology

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

March 15, 1955

Dr. Alfred Traverse
United States Department of the Interior
Bureau of Mines
Region III
Box LL, University Station
Grand Forks, North Dakota

Dear Al:

Thank you for your letter of the 16th, which came while I was in Chicago. It is unfortunate that you were unable to attend the session on differential thermal analysis. After three papers on the subject and an extemporaneous and delightful speech by Herbert Glass, the whole subject began to partake of the divining rod.

When are you moving to Denver? Dick Scott will be there probably in June. Apparently I gave you the wrong impression about the nature of Scott's research. It is not the opening dealing with pollen and spore work, but rather the new position set up in the P and S branch of the Survey and comprising the whole field of interpretation of fossil woods, primarily post-Paleozoic. The palynological opening has been filled by the selection of Estella Leopold, a student of Sears.

Regarding the A.G.I. Newsletter, this can be secured for one dollar a year from the American Geological Institute, 2101 Constitution Avenue, Washington 25, D.C. The current editor is Dr. Charles B. Hunt.

In some ways it is unfortunate to publish the Brandon work outside the G.S.A. Memoirs, since it would make an exceptionally effective contribution in the Memoir series. If I may say so, I think it would also add more dignity to the contribution. However, this is a matter for your own choice.

Best wishes to you and Betty.

Sincerely,



Elso S. Barghoorn

ESB/tlb

Region V
Box LL, University Station
Grand Forks, North Dakota

December 28, 1954

ATR MAIL

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

The decision explained in the letter to Siever, of which a copy is enclosed, was very difficult. I do not at all like the idea of backing out of a commitment. Perhaps your experiences with the moving of laboratories will evoke sympathy. I hope so.

I especially regret that I shall miss the D.T.A. symposium, which I played a small part in organizing. It could and should prove very worthwhile. I particularly hope that some agreement will be reached on the absolute essentiality of standardization of D.T.A. methods, and of calibration of D.T.A. curves so that the curves will have absolute meaning and units of measurement, permitting more ready comparison of results of different investigators.

Very truly yours,


Alfred Traverse
Coal Technologist

Enclosure

ATraverse:vh

cc: East
Volin
Lankford
Traverse
File 625.1
C File

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

December 17, 1954

Dr. Alfred F. Traverse
U. S. Department of the Interior
Bureau of Mines
Region V, Box LL
University Station
Grand Forks, North Dakota

Dear Al:

Thank you very much for your letter of the 2nd and the copy of the letter to Hoffmeister. Sorry that you will be unable to attend the meeting in New York but can well realize your reasons. I want to congratulate you on your success in making a move in the right direction; namely, to Denver. It is beginning to look more and more as though Denver will be somewhat of a research center in the geological sciences in the near future. Will you be at Denver or at Golden?

The program for the Chicago meeting in February is complete. Unfortunately, we were squeezed into the last day of the meetings, Thursday, the 17th. Hence, it has been suggested and I think wisely that we hold the business meeting on Wednesday morning and the dinner on Wednesday night.

The death of Pat Butler was a great shock to many of us and it was such a senseless accident. His occasion of being in Alaska, however, had nothing to do with his paleobotanical research. It was more or less a summer job and he was attached to an Army group studying edible and medicinal plants of Alaska in connection with survival. Most unfortunately, he had not yet started to write any of his thesis, although he had all his data and was set for spending this year writing.

Will look forward to seeing you in Chicago,

Sincerely yours,



Elso S. Barghoorn

ESB/jc

Region V
Box 11, University Station
Grand Forks, North Dakota

December 2, 1954

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Enclosed copy of letter to Hoffmeister is self-explanatory.

News of the transfer to Denver is probably a surprise. It grew out of a conference I had with Dr. Fieldner in Pittsburgh during the recent Bureau-sponsored conference on coal-microscopy. It had become apparent to me that because of the rather specialized and limited aims of this laboratory, I had not much opportunity for development here. Yet I thought that there is a good argument for the Bureau to have a fuels-microscopy laboratory for Western fuels rather than to center all the microscopic work in Pittsburgh, where the natural emphasis of the station is on the Eastern fuels. My superiors here, Dr. Fieldner, and all the other concerned authorities in the Bureau were enthusiastic about the idea, so it is now going through. If the laboratory is established with the degree of independence and status that is indicated, I have no doubt that this is a wonderful thing for me and my professional development. For example, I am anticipating that in this new setup something can be done to provide assistance for me, an essential for improving my efficiency.

I can fill you in on the details at the February meeting of the coal group in Chicago. I am still planning to give my paper there.

Just read in the Alumni Bulletin the obituary of Pat Butler. I was naturally shocked by the news. Paleobotany can be dangerous.

Very truly yours,

AT

Alfred Traverse
Coal Technologist

ATraverse:vh

Enclosure

cc: Region V
Lankford
Traverse
File 625.1 C File

L.P. Barrett - Ishpeming
P.O. Bldg.
A.E.C. Rep

Re: "Hard Coal"

From dump iron prospect shaft
north of Ishpeming

From May 21 or May 22

Date Line - Iron River (A)

6 mi N Iron River

Pre-Cambrian coal

In Ottawa Natl. Forest

Traverse - St. Baraborn
\$2000 from A.P.S.

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

June 10, 1954

Dr. Alfred Traverse
U. S. Department of the Interior
Bureau of Mines
Region V, Box LL
University Station
Grank Forks, North Dakota

Dear Al:

I was much interested in your recent communication and very much delighted that you succeeded in finally tracking down the supposed stone fly egg cases. I would never in the world have supposed that these actually were remains of dino-flagellates. One thing that is not clear, however, from Thompson's letter is what the geographic location of the North Carolina material means in relation to the present distribution of the species. In other words, can we make any paleo-ecological interpretation out of this new information.

The form for filing with the Appointment Office has been sent in. I shall, of course, personally keep you advised of any good openings which I know of.

The program for the Coal Committee meeting next year which Ray Siever recently sent me looks very good. I have made a few additional suggestions which I hope will work out but I have not yet heard from Siever about them.

We are not yet certain about what time during the summer we will be going out to Michigan. Somewhat unfortunately I agreed to give a paper at the Coal Research Meetings in New Hampshire in August. The date of the meetings is scheduled as August 23rd which makes it a bit awkward for me. It is probable that we will leave here around August 1st and make the swing up to Michigan and Ontario before I have to return here to prepare this paper for the New Hampshire meetings. I will know better shortly when I get the schedule of Tyler and Barrett more definitely arranged, since Barrett is supervising the excavation in Michigan. Our chief problem is to get at it as soon as possible when ground water is low enough to make digging feasible.

Dr. Alfred Traverse

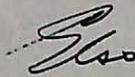
-2-

June 10, 1954

I will let you know as soon as I am certain about this and also let you know whether it might be possible for us to make a brief visit to Grand Forks.

With best wishes to you and Betty,

Sincerely yours,



Elso S. Barghoorn

ESB/jc

Region V
Box LL, University Station
Grand Forks, North Dakota

December 3, 1952

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Elso:

The people in charge of such things here tell me that the simplest way for the Jeffrey coal samples to be sent is for them to be mailed to me. Then we can send back the amount of the postage in stamps. Of course, this windfall is much appreciated.

I look forward to receiving the collection of various species of Alangium polliniferous material, which will be worked up here. Also, material of Carya cordiformis (Wang) K. Koch would be much appreciated. You probably remember that Dr. Dahl pointed out that my C. cordiformis pollen is abnormally small. Of course, I shall provide you with glycerin-jelly material and/or (it's up to you) slides, when ready.

I am covering paleobotany and coal petrography in one lecture for the elementary biology course this Friday, and have been asked to do the same at a Sigma Xi lecture next month. This is my idea of a challenging assignment.

Best to all.

Very truly yours,


ALFRED TRAVERSE
Coal Technologist

cc Region V
Dr. Traverse ✓
File

Region V
Box LL, University Station
Grand Forks, North Dakota

June 17, 1954

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

From what I can find out from the literature, it would be unwise to draw paleoecologic conclusions as to temperature from the occurrence of Peridinium in our deposit, and in the Carolina "Bays". The same goes for Botryococcus, which has even been recorded from Siberian lakes. As far as I'm concerned, the association of Manilkara, Persea, Alangium, etc., makes anything further along that line pretty close to gilding the lily anyway. But the interpretation of the sedimentary history of the silt is much aided by the new identifications.

As I wrote earlier, the monograph is all finished and is being typed here. It will be submitted as a Bureau of Mines manuscript, with the usual internal review and so forth - then to Aldrich again. I surely hope that G.S.A. accepts it. It's obvious to me that I could go on revising and re-revising the thing for twenty years, and there are probably things in it I'll wish in ten years I could change. But I think it's in good shape for publication right now.

We insist that you plan to visit Grand Forks, an easy day's drive from your site in Michigan, if it's the one near Ironwood that you once mentioned. If you think the deposit would be of interest to me, I would like to drive over to have a look. It could easily be arranged, since the site is within this region of the Bureau of Mines.

You can review the revised manuscript when you come out, and it will not then be too late to effect changes in it.

I enclose a couple of blurbs that may be of mild interest.

Regards to Terry.

Very truly yours,

Alfred Traverse
Coal Technologist

Enc.

ATraverse:vh

cc: JDLankford

Region V

ATraverse

File 625.1

C File

Region V
Box LL, University Station
Grand Forks, North Dakota

June 2, 1954

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso,

Here is a copy of a letter that will surely interest you. Rufus Thompson is the recognized American authority on dinoflagellates.

That about nails down the monograph, which is now very nearly ready for typing.

Very truly yours,



Alfred Traverse
Coal Technologist

ATraverse:dm
Enclosure

cc: Region V
Lankford
✓ Traverse
File 625.1
C File

Region V
Box LL, University Station
Grand Forks, North Dakota

April 22, 1954

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Mass.

Dear Elso:

Thanks for your letter of April 15, with the comment about the Botryococcus question, and other matters. Although I wish I were near enough to talk these things over in person, I am not, and I hope you will be tolerant of the flood of letters from Grand Forks and that you can find time to answer my queries and comment on my ideas, even if briefly.

The news about maceration of the Mahogany Marker member is interesting. Would you be willing to outline the technique in a subsequent letter? It would be helpful to me here.

I am going ahead with the idea of presenting a paper to the Paleobotanical Section on Botryococcus, with specific information about the Brandon lignite occurrence. The oral presentation will presumably be in the nature of an abstract of a longer paper, which will be submitted for publication. I was very happy to have some encouragement on this. It would probably be profitable for me to have correspondence with Bradley, if he would be willing and interested.

I think that it would be a good thing for my development to take in the program at New Hampton, and I hope it can be arranged. I am hoping to be able to arrange a collecting trip in the Southeast prior to the paleobotanical meetings and after the Gordon Conference, if I go. (How does one get invited to attend?)

Three items have come up relative to the Brandon problem that will interest you:

1. I sent material of the "stonefly-eggs" to J. F. Hanson, of U. of Mass., a Plecoptera expert. He knew they aren't stonefly eggs, but for some time could suggest no more. After he had shown

the preparation to a number of different people, R. E. Torrey gave him what Hanson felt to be a positive identification: he said the thing is a peridinium (flagellate), almost identical with some modern members of the genus Ceratium. I am still looking into this but it seems convincing. Some of that group are said to have a "horny" covering, though others have nothing harder than cellulose in their hides. Hanson said the agreement of my microfossil with Torrey's Ceratium material is so close that it is practically beyond doubt -- even down to minor features of sculpturing!

2. I have been in correspondence with Murray F. Buell, of Rutgers. He has done considerable work on the bays of Carolina, and some of his descriptions are of situations startlingly like that at Brandon. See, for instance, his paper, "Jerome Bog, a Feet-Filled "Carolina Bay." Bull. Torr. Bot. Club, vol. 73, No. 1, pp. 24-33, 1946. I also enclose a copy of his most recent letter to me. The pollen analyses by Frey in the papers to which Buell refers in this letter are very interesting -- I note that Frey lists occurrence of flagellates (!) as well as many of the pollen types found in the Brandon microflora. (No Cyrilla, -- but it might be in his "unidentified" groups) Pine pollen, of course, is far more abundant in Frey's cores than in the Brandon material.

3. (And most urgent) I have the manuscript of the revised monograph well along toward completion. The local administrative authorities do not approve having the manuscript typed by the stenographic staff here. Presuming that the G.S.A. is going to publish it, do you have any idea where I can get money to have it typed privately? The alternatives to getting a grant of some sort for the purpose seem to be: a. Try to get Cloud's staff to type it, with the idea of submitting it for U.S.G.S. publication. b. Have it typed privately at my expense (unpleasant thought).

Re my paper for the next Coal Committee meetings: I plan to present some work on the properties of the petrographic components of North Dakota lignite, in technological application. That's the gist of it, though I might develop that along one of several different lines, depending on what happens between now and next winter.

We join in wishing both of you a happy spring in your Lexington lair.

Very truly yours,

AT
Alfred Traverse
Coal Technologist

Enclosure

ATraverse:vp

cc: Region V

Lankford

File 625.1

C File

Traverse

Region V
Box LL, University Station
Grand Forks, North Dakota

March 19, 1954

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso,

What would you think of the idea of my presenting a paper on the Botryococcus occurrence? I have been looking into the extensive literature on this and think that because of the connections of Botryococcus with the boghead coal picture, with the origin of oil shale, and with problems of sedimentation, that such a short paper might be interesting. But I would like your approval before I go any further with the idea. Perhaps you could comment in one letter about this and the other questions I raised relative to the meetings.

Best wishes to Terry.

Very truly yours,

AT

Alfred Traverse
Coal Technologist

ATraverse:dm

cc: Region V
Lankford
File 625.1
C File
✓Traverse

Region V
Box LL, University Station
Grand Forks, North Dakota

March 11, 1954

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Elso,

The enclosed negatives turned up the other day. I had forgotten all about having them. They were taken at Brandon in the summer of 1949, as you will probably remember.

Very truly yours,

AT

Alfred Traverse
Coal Technologist

ATraverse:dm
Enclosures

cc: ~~Region V~~
~~Lankford~~
✓ Traverse
File 625.1
C File

Region V
Box LL, University Station
Grand Forks, North Dakota

March 5, 1954

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso,

Ray Siever should make a good program chairman for the Coal Committee, and I am ready to help him in whatever way he may wish. If it is possible to get Ray on the S.E.G. program committee, that would seem ideal to me. It would be a big help in avoiding confusions about the arrangements for our meetings, and would also have an over-all healthy effect.

Thanks for the comments re Botryococcus braunii and related matters. I have sent preparations of the "eggs" to an expert on the Flecoptera, Hansen, at the University of Massachusetts. It will be interesting to hear what he has to say.

We were pleased to have your congratulations on the recent addition. Everything is going along very well with Betty and her. I should add that one of the few radio programs Betty heard while she was in the hospital was Lowell Thomas' news program in which he talked about your pre-Cambrian fossils. She was greatly thrilled, and I basked in the reflected glory of being able to claim that I had handled and examined the preparations.

Are you planning on being back from Paris in time to attend the Gainesville meetings? If so, would you consider combining same with an en route collecting (and so forth) trip in the Southeast with me? This is a selfish request, because I know you already are well acquainted with the region, and I would profit greatly from such a trip through doing it with you.

Very truly yours,


Alfred Traverse
Coal Technologist

ATraverse:dm
cc: Region V
Lankford
✓ Traverse
File 625.1
C File

Region III
Box LL, University Station
Grand Forks, North Dakota

February 16, 1954

Dr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

You were very thoughtful to get off a pre-moving note to me. I especially appreciate the commendation for my small contribution of ideas for the program of this year's Coal Group meeting. I am very sad about my inability to make the meetings this time, and I hope I shall not miss another one for some years!

I am nearly all packed for the move -- an even bigger job than I had guessed. Everything looks quite rosy for the new setup at the Denver Federal Center, although I am having many pangs at leaving my very nice quarters here and the good relations I have built up at the biology and geology departments at the University of North Dakota. The Bureau of Mines building at the Federal Center is adequate but is not a physically attractive laboratory such as we have in Grand Forks. The Denver building was not designed as a laboratory, of course.

I am delighted to hear that Dick Scott will be a colleague (five buildings down the road) in Denver. I liked him very much in the short time I have had with him. (I shall also enjoy being able to renew my ribbing of him and his wife about Bloomington, Indiana.) You say he accepted "...the opening...". I am presuming you mean the palynological opening. He will have a fine place to work. The Survey has a spacious new building, with a great library and most other facilities to match. I hope that I may be able to be of some help to him after he and I get settled down there.

I don't see the A.G.I. Newsletter. Would you be willing to drop a post card some day telling me how to get it? I am not surprised that H. has patented micropaleontology, as there are patents on all sorts of biological techniques. It would surprise me, though, if so general a patent could be made to stick.

A. Traverse:vh

cc: J. H. East, Jr.
A. Traverse
File 625.1
C File

Re the status of the Brandon pollen monograph: I submitted it for necessary Bureau approval in December. The Bureau has expressed some interest in publishing it. Since the work of completing it was heavily supported by the Bureau, this seems reasonable to me. Dr. Aldrich writes that he would not object to this, in fact, would encourage it. If the Bureau should decide against publication, Dr. Aldrich says his offer still goes, although he emphasizes that there would be a considerable time lag. I hope you will think this is satisfactory.

Very truly yours,

AT

Alfred Traverse
Coal Technologist

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

February 11, 1955

Dr. Alfred F. Traverse
U. S. Department of the Interior
Bureau of Mines
Region V, Box LL, University Station
Grand Forks, North Dakota

Dear Al:

With the Chicago meetings now imminent, I discover that I have not replied to your last letter. I am certainly sorry that you found it not possible to come to the Coal Committee meetings, although I can well realize and appreciate the reasons.

I want to thank you personally for the interest which you showed in getting together our program. The choice of the D.T.A. topic for a symposium was an excellent one and I hope the various questions which you have raised will be thoroughly aired. They have likewise puzzled me since this technique has been used for comparative results.

I hope that all is going well with you and the anticipated move is working out quite satisfactorily. I am sure you will appreciate the change. Did I tell you that Dick Scott has accepted the opening with the Geological Survey and will be stationed in Denver.

Sincerely yours,



Elso S. Barghoorn

ESB/jc

P.S. Have you seen the latest AGI Newsletter. Hoffmeister has patented micropaleontology, literally. What is the status of your thesis in the Memoir series?

E.

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS
April 15, 1954

Dr. Alfred Traverse
Box LL, University Station
Grand Forks, North Dakota

Dear Al:

I am afraid that our correspondence has become almost completely one-sided, however, I shall do my best briefly to cover all questions you have asked since your letter of March 5. First, I was very sorry to hear about the trouble which Martha had, and hope that it is completely cured. I must confess that I had never heard of either of these disorders in their Latin phraseology. The coincidence with Spackman's baby is one of those remarkable circumstances.

First, with regard to the Botryococcus question, since you wrote about it I have made some macerations of the so-called Mahogany Marker member of the Mahogany Ledge of the Green River oil shale. The acid released promptly from the rock masses of organic matter, which, instead of sinking, immediately floated to the surface. These showed in slides the remains of organic entities, most probably those of oil or hydrocarbon-producing algae. I have had so little time to follow this further, but shall in the near future, as soon as possible. It is possible that this Botryococcus complex- whatever it is, has much to do with oil shale formation. The amount of oil in the Green River can certainly not be accounted for on the basis of pollen grains or spores of higher plants. I might say also that I have seen oil shales from the carboniferous of New Brunswick which, lithologically are so similar in appearance and color and weight to the Green River, that one could easily confuse them in a collection; hence the further possibility that oil shale may result from a rather special set of environmental conditions featured by great growths of algae of this type. At any rate, I certainly do think that a complete review of the question would be very much in order. Dr. Wilmont Bradley, Chief Geologist of the Survey would also, I am sure, be greatly interested

*I hope it offers
re-reading you
better than this
is for the botanical
meetings, not the
Coal Commission
Program 7.*

in it. I shall see him next week when I am going down to Washington for a couple of days, and will talk to him about it. AS you may recall, he did the original work on the Green River shale in the early 'twenties.

I approached Siever some time ago through ~~Okey~~ Rove of S.E.G., and of course directly, and he agreed to accept the chairmanship of the Program Committee. I am not sure if it will be possible to have him also put on as a member of the S. E. G. Program Committee, since it turns out that he is not a member of the S.E.G.

AFTER long consideration, I finally decided not to go to Paris this summer, but to try to do some house-cleaning projects long delayed and incomplete here. Also, if our grant from G.S.A. comes through, I shall be up in Michigan part of the summer to dig up our pre-Cambrian coal deposit. This, plus a commitment to give a talk at the Hampton, New Hampshire, meeting, plus trying to get still organized in the new building is quite enough for one summer for me. Regarding the new building, I think you will find that we have a most exceptional set-up with all these things finally together. At the moment, it is rather confused because of moving from two buildings and of course what with new equipment pouring in and everything else happening at once. We are in no position at the moment to be doing any constructive research, but I hope to start shortly. Now with regard to your recent letter, I am not sure how to answer your question of establishing a dossier at the appointment office. In some ways, I don't think it is worthwhile. However, one never knows what may come in via the alumni. In general, the better openings come through via professional colleagues, having observed your published research, or having heard about it through other sources. On the other hand, it would do no harm to have on file a permanent record of your curriculum vitae.

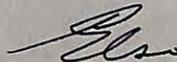
I felt at the time, and I still feel, that it was unfortunate not to accept the opening at Denver. Professionally, you would have been a few years in a far stronger position, at least that is my personal opinion. However, that is water over the dam, and, perhaps in the long run your decision may have been the wiser. Crystal-gazing is not one of my fortes. Academic openings are of course bound to suddenly increase in a matter of years, as enrollments increase. We are still in somewhat of a lull, though the currents seem to be changing,

particularly since the Korean War ended.

This has turned out to be far more than a note,
but I will have to end here.

With best regards to you and Betty from us both.

Sincerely yours,



Elso S. Barghoorn

ESB/dw

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

February 25, 1954

Dr. Alfred Traverse
Box LL
University Station
Grand Forks, North Dakota

Dear Al:

SL
Att
on
Martha
Jan
I just read your
letter regards to
"flask"
Betty

I was quite interested in your letter of February 8th and the comments in the attached copy of the letter from Miss Cookson. Her material certainly seems to be identical with your Bt-78 and it looks all right to me. As far as the ecological reinterpretation is concerned, your comments are more or less what I had visualized previously. In fact, the heavy silt layer I had thought of as accumulating in a sluggish stream at some distance from any standing vegetation and that, of course, would account for the extraordinarily high percentage of oak pollen, also the greater paucity of seeds and fruits, since in addition, of course, we had considered the probability of flowing water because of the presence of the questionable stone fly egg cases. The new identification pretty well fills in the picture.

Regarding the next meeting of the Coal Committee, I have asked Ray Siever to be Chairman of the Program Committee. He has just written me accepting this and has suggested that two additional members be added; namely, Walter Searight and you. I hope that you will be able to join him in drawing up a good program for the coming meetings which, I now gather, are to be in Chicago next February. Doubtless you will be hearing from him very soon.

I note from the papers that you are also enjoying a most unusually warm February for which we have no complaints here. The winter as a whole will probably be one of the warmest on record here, although January itself was a bit colder than normal.

Best wishes to you and the family.

Sincerely yours,

Elso S. Barghoorn

ESB/jc

P.S. Hugh McKinstry tells me it may be possible to add Ray Siever directly to the S&G Program Committee - if as I don't see that it would affect the status of you & Searight as co-members of our own committee. McKinstry is very favorably inclined toward us I am glad to say.

Region V
Box LL, University Station
Grand Forks, North Dakota

February 8, 1954

Dr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
16 Divinity Avenue
Cambridge, Massachusetts

Dear Elso,

Enclosed is a copy of a letter to Miss Cookson re Botryococcus Braunii and my Pt-78. It looks to me as if this is a positive identification of Pt-78, as a colonial alga of the B. Braunii type. This may mean that our interpretation of the silt will need reexamination. Perhaps the abundance of anemophilous pollen in association with abundant colonial alga could mean a phase of deeper, more open water and less swampy conditions than applied during the accumulation of the lignite proper?

Very truly yours,


Alfred Traverse
Coal Technologist

ATraverse:dm
Enclosure

cc: Region V
Lankford
✓Traverse
File 625.1
C File

Region V
Box LL, University Station
Grand Forks, North Dakota

January 27, 1954

Dr. Elso S. Barghorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Enclosed are the two negatives that I borrowed last year. Except for the pollen negatives (which are on loan from you), I have no other Brandon photographic material that belongs in Cambridge. The approach of moving day on Divinity Avenue must be exciting.

No very startling ideas on the program chairmanship for the Coal Committee have come to mind. Looking through the list of members, I note that a very few people have shouldered the bulk of the jobs, at least since I have been a member of the Committee. Perhaps it is time to have another take a whack at it: say Ray Siever or Dr. Macquebard.

Attached is a clipping from a recent newspaper that may interest you.

Very truly yours,


Alfred Traverse
Coal Technologist

ATraverse:dm
Enclosures

cc: Region V
Lankford
Traverse
File 625.1
C File

Lignite Research Laboratory
Grand Forks, North Dakota

14 January, 1954

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Enclosed is a copy of the sad violin music to P. E. Cloud. This has been the most difficult decision I have ever had to make. My thinking (and I might add, Betty's) has been geared to the possibility of moving to Denver for some time, and this is really a let-down. Yet, I think it was the only possible decision under the circumstances, and I can only hope that you will understand and sympathize.

Dr. Cloud wrote a few days ago definitely offering me the job, but saying that there would likely be almost no budget for equipment until year after next and that he wouldn't guarantee anything in that line except that he would try to do what he could for me. He said that it would be impossible to get me an "11" and listed a number of reasons, the most important one seemed to be that scientists shouldn't worry about such things. In this day of \$150 rents (common enough for houses out in this country), that is so unrealistic as to be almost fatuous. In brief, I was forced to the conclusion that I am better off where I am.

May I take this opportunity to remind you about writing Dr. Libby re that C-14 measurement for me? I reiterate what I told you--that we could arrange to pay for the job if that would help.

Best wishes to Terry.

Yours as ever,

P. S. I am still available!--should anything come up. As you know, my long run ambition is an academic job. The job in Texas would have been a dandy, except for being in Texas.

THE BIOLOGICAL LABORATORIES
HARVARD UNIVERSITY CAMBRIDGE 38 MASSACHUSETTS

Dear Al,

P.S. - Don't bring any more cold with you - was
- down to 6° in Lexington this AM. I guess you
- had nearer -20

your letter of the 14th arrived today
(18th)

I have reserved a room for you at
the Faculty club for nights of Dec 28
through Jan 1.

Certainly glad you got approval and will
look forward to seeing you

Edw

December 18, 1953

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

RECEIVED

DEC 7 - 1953

U. S. Bureau of Mines
Grand Forks, North Dakota

December 2, 1953

Dr. Alfred Traverse
U. S. Department of the Interior
Bureau of Mines
Region V
Box LL, University Station
Grand Forks, North Dakota

Dear Al:

Thank you very much for your note of November 27 and the list of the names of pollen grains which you went over with Mr. Schweinfurth's help earlier in the month. I should prefer a longer attempt at an answer to your earlier letter and shall let that go until I find more time.

The selection of specific names seems quite well balanced and, as far as I can see, if you grant me ignorance of taxonomic procedure, is impeccable, in so far as the Latin and Greek formulation of specific binomials is concerned. Construction of the genus *Silta*, however, somewhat disturbs me and I wonder whether or not it is a well chosen name. Don't let me discourage you on this choice but perhaps it might be worth thinking about further. Also the designation *Quadrigugum* -- this might be a surprise move in cornering many other forms of unidentified tetrad pollen grains but is it actually a good move in the long run? This is merely an idea to think over before the final step of publication.

Will write you further soon about the content of your other letter which raises a number of questions which require considerable thought.

I was certainly glad that you could find the time and the means to come here for the meetings in Toronto and certainly hope also that you will find it possible to be here in Boston the time of the Christmas meetings. Perhaps at that time we can go over the final considerations of the Brandon pollen nomenclature and also a number of other matters.

With best wishes to you and yours,

Sincerely,



Elso S. Barghoorn

ESB/jc

Region V
Box LL, University Station
Grand Forks, North Dakota

December 14, 1953

Dr. E. S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Mr. Schweinfurth and Dr. Hill very generously checked my name-list for inaccuracies and turned up a few minor mistakes in punctuation, etc. Mr. S. shares your dislike of Silta. He suggests changing it to Silteria and would apparently be satisfied with that. My motive in creating this genus name, as well as Quadrijugum, is that the two forms are rather well characterized, and I felt they should be named if all the other distinct forms are to be named.

My paper for the Boston meetings was approved, and I shall be on hand - probably will arrive on the "New England States" Monday morning, December 28. I would have liked to arrive Sunday, but that would necessitate leaving here Christmas day, an unpopular idea. I am planning to stay around Cambridge for a day or two after the meetings, in order to discuss with you the nomenclature and anything else that may need discussing. I hope that Terry will let me have a bit of your time, despite its being a vacation week.

See you on the 28th.

Very truly yours,


Alfred Traverse
Coal Technologist

ATraverse:vh

cc: J. D. Lankford
Region V
Alfred Traverse
File 625.1
C File

Region V
Box LL, University Station
Grand Forks, North Dakota

November 27, 1953

Dr. Elso S. Barger
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Here is the working list of the pollen names that I compiled with Mr. Schweinfurth's help. Any comments?

Very truly yours,


Alfred Traverse
Coal Technologist

ATraverse:dm
Enclosure

cc: Region V
Lankford
✓ Traverse
File 625.1
C. File

Region V
Box LL, University Station
Grand Forks, North Dakota

November 18, 1953

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso,

Had an enjoyable and profitable time of it, both in Cambridge and in Toronto. This I owe very largely to you, and I appreciate all the time you were able to spend with me. The meetings were easily the most interesting I have ever attended - perhaps partly because I am becoming better acquainted with more of the other research people.

Ted Just generously spent all of Thursday with me, so I really saw the "innards" of the Museum thoroughly. He has a retired gentleman named Langford who began work as a volunteer and is now curator of fossil plants. Langford was preparing a huge collection of very nice material from various Wilcox locations, material he and a helper collected last summer.

Just seems rather hurt about the suggestion that we not publish our symposium paper. I wonder if we should reconsider? If you could do a job of reconstruction on the whole paper such as you did on the preliminary parts last week, something that would do no harm and be worth publishing could perhaps be evolved. I could add my comments when I get to Boston at Christmas. This is just an idea to be kicked around.

While I was with Just he showed me a sample of partially silicified wood from South Dakota, about which I had some correspondence with the lady who "collected" it (from a rock garden). I asked Ted to send it to you because it shows some interesting gradations from chalcedony (?) to relatively unaltered wood.

W. F. Libby has written about the Gascoyne moose antler, about which I have told you. He says, "Since we have so many samples awaiting measurement, I have to ask that you have Dr. Barghoorn give me some notion of the importance of this measurement".

As I believe I mentioned, we are interested in the antler as evidence of erosional features that may have been related to the formation of the high-oxygen lignite ("leonardite") found at the top of the Harmon bed at Gascoyne. As an indication of the popular interest in the antler, I enclose a clipping from the Minneapolis Tribune. Could you write Libby a short note about this?

Don't know why I couldn't remember more details on the coal reserve problem, especially since I had so recently written it up for the "Lignite Technology" report. On a tonnage basis, North Dakota is first, Colorado is second, Montana third, Illinois fourth and Wyoming and West Virginia about equal for fifth and sixth. This is the most recent U.S.G.S. estimate (see Averitt, P. and Berryhill, L. R. Coal Resources of the U. S. U.S.G.S. Circular 94, 1959). Brant's reestimation of North Dakota reserves (U.S.G.S. Circular 226) leaves North Dakota still in first place on a tonnage basis but behind Colorado and Montana on a thermal content basis.

Comment on a geologic question that we discussed: the Red River Valley is listed as Cretaceous on some geologic maps, though all of the gross features are Pleistocene, and much, if not all, of the rock between the drift and pre-Cambrian granite at Grand Forks is supposed to be Paleozoic.

The program for the Christmas meetings came today. I was rather surprised at the number of papers being given. My paper is in the works for approval.

Best wishes to Teresa and all. Hope you are Lexingtonians by now! You probably had an exciting weekend.

Very truly yours,

AT

Alfred Traverse
Coal Technologist

ATraverse:dm
Enclosure

cc: Region V
Lankford
✓ Traverse
File 625.1
C. File

Region V
Box 11, University Station
Grand Forks, North Dakota

October 19, 1953

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Elso:

Thanks for the advice re C-14. I have written Dr. Libby and took advantage of your offer to use your name. I hope he can do it for us. If not, I'll then write to Dr. Hulp.

The way has been cleared for me to make the Boston trip, as planned. I'll be on hand Monday morning, November 2.

Very truly yours,



Alfred Traverse
Coal Technologist

ATraverse:dm

cc: Region V
Lankford
✓Traverse
File 625.1
C. File

Dear Al,

The best place to send C-14 material is to Prof. W. F. Libby, Inst. for Nuclear Studies, Univ of Chicago, Chicago 37, Ill. You might also try Dr L. J. Kulp, Lamont Laboratories, Columbia Univ (Dept of Geol.). Kulp has told me he does only a minimum of this type of work owing to the pressure of their planned research demands.

It would be ideal if you can make it here in Nov. There is much need to settle the taxonomic question as the Brandon work. I agree that much of what was in the Madison paper (I have not yet seen what was actually in it) should first be published. However, we can go over this question and its varied complications when you are here.

Although I don't know Libby personally, as I do Kulp, please feel free to use my name, as we do correspond. Your material sounds very worth determination and I should be interested to have any results. Incidentally, why are you so meticulous with files lately as I note on letters addressed to me? Sincerely yours, W. S. Hoar

Oct 13, 1953

Region V
Box LL, University Station
Grand Forks, North Dakota

October 9, 1953

Associate Professor Elso S. Barghoorn
Biological Laboratories
Harvard University
16 Divinity Avenue
Cambridge 38, Massachusetts

Dear Elso:

It was good to hear from you the other day. Your trip this summer seems to have been even more extensive than I had previously heard. It is interesting especially that you got into Bowman County, North Dakota. Gascoyne is a very interesting locality. The Peerless mine there uncovers great quantities of plant fossils in the overburden, during mining operations. I collected some coal and fossil plants there in June. The coal picture is rather complex. Perhaps we can talk about it when I see you next.

Probably it will be possible for me to visit Cambridge before the Toronto conference to get this taxonomic business straightened out, for me to confer with you about the paper for the palynologic conference, and to discuss with you the application and value of palynological methods to the investigation of the microstructure of Fort Union coal. It seems very likely that you will have observations about the work in South Dakota that would be of interest to me. Also, it will be interesting to learn about your Pleistocene work. I shall plan to be in Cambridge November 2-6 and will hope that you can spend as much as possible of that time with me.

My feeling on the Madison paper is that it embodies much that should be first published in our three monographs, and that its publication now would reverse the proper procedure. I thought that Bill was inclined to agree with me. However, if all the papers given at the symposium are supposed to be published as a unit, I most certainly do not feel strongly enough about it to resist publication. If illustrations of the pollen are to be used, however, I would like to prepare them from the original negatives. I was rather unhappy about the pollen slides Bill used at Madison.

Have I ever acknowledged receipt of the check from Harvard, for the reprints? It seemed to be for slightly too much. Thank you very much for making the arrangements.

Would you use the enclosed card to send me information about obtaining a C-14 age-estimation? I have an antler from Cascoyne, the age of which is of some importance in determining the sequence of geological events there. It is a moose antler, though Cascoyne is well without the present range of the moose. I thought I might save preliminary correspondence if you could tell me which laboratory would be best, to whom to send the material, and so forth.

Best wishes to Teresa, and all.

Very truly yours,

AT

Alfred Traverse
Coal Technologist

ATraverse :dm
Enclosure

cc: Region V
Lankford
✓Traverse
File 625.1
C. File

check
for reprints

RECEIVED

OCT 1 1953

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

U. S. Bureau of Mines
Grand Forks, North Dakota

September 28, 1953

Dr. Alfred Traverse
Lignite Research Laboratory
U. S. Bureau of Mines
Box LL
Grand Forks, North Dakota

Dear Al:

Your letter just came and my conscience impels me to a speedy reply. There is nothing more I would rather do than write you a long and discussive letter, but there is nothing my present schedule is less conducive to. We were away perhaps a bit too long this summer, and, since returning to Cambridge I have agreed to take charge of Biology 1 for the fall term - for one year only. Hence my plea for brevity.

The only bad mistake we made this summer was in not going to Grand Forks on the way west. I certainly would have done so had we not spent quite so much time in Des Moines - five pleasant days. But it did seem too far in distance, though as you rightly pointed out, the relation of distance to time is so different in the west. As it is we did get into the southwest corner of North Dakota, in the Gascoyne area. This also was not planned originally but in connection with my A.E.C. work I went to Buffalo, South Dakota, and it seemed only a bit further to North Dakota.

I am very glad to hear that the paper Bill gave went off well at Madison. Several others have given me similar reports and I gather that the paper was well received by the botanists. Now, as to the question in your letter, I should strongly urge that you give the paper at the Boston meetings if at all possible. I did very little with the pollen story per se at Yale in February, but rather gave a general summary of the flora, its past and present ecologic relations, etc., with the pollen picture as the most readily accessible line of evidence in what we were attempting to do. My paper was very well received and I think a real treatment of the pollen work would be enthusiastically welcomed. I think every effort should be made to keep the conference from becoming a Pleistocene discussion. Although I realize the problem, perhaps I might suggest that the "taxonomic problem" part of the title come after the "palynological investigations". This is purely editorial and up to your discretion. I very much want to discuss these taxonomic problems with you and

Box LL, University Station
Grand Forks, North Dakota

September 22, 1953

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso,

Bill did a good job of the paper at Madison. We were both rather embarrassed that your name was accidentally omitted from the program. It is too bad that you couldn't make the meetings this year. But it's even more too bad that you and Terry didn't visit Grand Forks on your grand tour.

Although I am rather keen to get your reactions to my letters of April 10 and May 11, I'll not mention that here. I am writing about the recent communication from Stanley Cain re the palynological conference to be held in conjunction with the AAAS meetings this December. What would you think of my offering a paper about "Taxonomic problems of the palynological investigation of the Brandon lignite", or something of the sort? More specifically, how much of the Brandon work did you cover at the conference at Yale last winter? Do you think that the proposed December conference will be confined to contributions about Pleistocene palynology?

Yours very truly



Alfred Traverse
Coal Technologist

ATraverse:dok

cc: Reg.V
Lankford
Traverse

P.S. Do you recognize the card
was bought at Wall Drugstore!

K-21—"S" CURVE IN BAD LANDS
NATIONAL MONUMENT, SOUTH DAKOTA

As you drive through the Bad Lands you
see high peaks, sharp ridges and buttes, and
it doesn't take much imagination to see great
castles, the great wall, even statues of im-
mense people. This sculptured appearance of
the Bad Lands is a result of erosion controlled
in part by climatic conditions and in part by
the nature of the soil.

DISTRIBUTED BY BLACK HILLS POSTERS DEADWOOD, S. D.

Dr. Fred Provencher
Box L.L.
University Station
Grand Forks
North Dakota

"CURTECHOLOR" REPRODUCTION FROM KODACHROME ORIGINAL

AM 8:00
1953
S. DAKOTA

POST CARD



Dear Al,

Sorry not to have made
the trip worth to see you
but time and distance are
a bit to little and too much
respectively for this trip. Hope
to see you in Madison if we
can get there - see you soon.
Bill Spachman says he will go ahead
with the paper. Having a fine trip
with his uncle for me for the time. Best
to you!

August 8, 1953

Region V
Box LL, University Station
Grand Forks, North Dakota

August 6, 1953

Dr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Elso:

Enclosed are some reprints sent me for you,
in response to our Journal of Paleontology note.

We are still hoping you will have changed
your mind and are on your way to Grand Forks.

Very truly yours,

AT

Alfred Traverse
Coal Technologist

AT:dm
Enc.

cc: ✓ Traverse
File 625.1
C. File

Region V
Box LL, University Station
Grand Forks, North Dakota

July 15, 1953

Dr. Elso S. Barghorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Elso:

The recent communication from you is very disappointing. Perusal of a map of the Northwest convinces me that you could visit us without adding much time to your trip, though in miles it looks rather forbidding. (Mileage melts rapidly on our uncrowded, straight highways out here.) I really think you ought to visit our laboratory, and, of course, we should very much like to spend some time with you, both professionally and otherwise. Won't you reconsider?

Bill and his men left recently for their site in South Dakota, after visits of varying lengths for the different persons. Charlie Trotter was here a week. Bill characteristically arrived the night of June 29th and left late in the morning of June 30th.

About the Madison paper: I feel that Bill would be a more natural choice for a fill-in than I. He was in on more different aspects of the problem. (I know that he plans to be at the meetings, as do I.) The time is so desperately short that I would hesitate to treat the general subject.

I am sending a copy of this to Bill.

Very truly yours,


Alfred Traverse
Coal Technologist

ATraverse:dm
cc: W. Spackman
Region V
Lankford
Traverse
File
C. File

July 10, 1953

Dr. William Spackman
Department of Earth Sciences
Pennsylvania State College
State College, Pennsylvania

Dear Bill:

I found that I could not get time to adequately prepare the paper for the Madison meetings and have so written to Ted Just. Enclosed is a copy of his reply. Please let me know your reaction, so that I can help on getting lantern slides or illustrative material to you if you need them.

If you are unable to do this, please let me know as soon as possible. I plan to leave Cambridge about the 20th and shall be away all of August. As plans are now, it does not look possible for me to get to Madison.

Best wishes and regards.

Sincerely,

Elsa S. Barghoorn

ESB/jc

cc: A. F. Traverse
T. Just

P.S. The printed program has you down as second author and Al as third author.

*Al: If Bill cannot make it do you think you can.
Sorry it does not look possible to go via Grand Forks*

E

C O P Y

CHICAGO NATURAL HISTORY MUSEUM

Formerly Field Museum of Natural History
Roosevelt Road and Lake Shore Drive
Chicago 5, Illinois

June 30, 1953

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
16 Divinity Avenue
Cambridge 38, Massachusetts

Dear Elso:

I have your letter of June 26th informing me of the fact that you will not be able to finish the paper for the symposium and that you may not be able to attend the meeting. In view of the fact that the program has already been submitted and that it may be too late to take your name off the program, I would like to suggest that you ask either Spackman or Traverse to take over and that you let me know which one is going to function in your place. I am certain that they must be familiar with the material to the extent that they can present the major points and conclusions.

Hoping that this solution may be acceptable to you and looking forward to your reply, I am

Very sincerely yours,

THEODOR JUST
Chairman of the Committee
on Symposium on Paleobotany

TJ/vs

Region V
Box LL, University Station
Grand Forks, North Dakota

June 23, 1953

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

The bundle of reprints, 200 with covers and 100 without, are on the way to you. I kept the same quantity for myself. Enclosed is the lower half of the bill. I have paid the printers.

Also enclosed is a list of the persons (and institutions) to whom I sent copies. I thought it would be unnecessary to send the complete address, as you would be able to identify the persons from the name only.

The Penn. State vanguard is expected today. Things should be very busy here for a while.

Yours very truly,



Alfred Traverse
Coal Technologist

Enclosures: 2

ATraverse:vh

cc: J. D. Lankford
Region V
Dr. Traverse ✓
File 626.1
C File

Region V
Box LL, University Station
Grand Forks, North Dakota

June 2, 1953

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

Thanks for your card of May 28. It will be very good to get your reactions on the pollen proposals.

The symposium in Madison sounds as if it should be a very worthwhile project. I should be flattered to be co-author of the proposed paper. There will be no complications resulting from my status here, I have been assured.

Petty and Paul are on route to Indianapolis as I write. They will be back in about three weeks. I go on a collecting and business trip to South Dakota, Wyoming, and western North Dakota this Thursday, for about two weeks.

Bill Spackman and his student, Charlie Trotter, will be here for a few days the end of June.

We will be here the rest of the summer and would very much indeed like to have you and Teresa come for a visit. We have a very tiny barracks apartment which will accommodate only one guest, but arrangements can be made to put up one of you nearby. Let us know when it will be. It will be good to see you again.

Very truly yours,


Alfred Traverso
Coal Technologist

AT:dm
cc: Region V
Lankford
File 626.1
C. File
✓Traverso

THE BIOLOGICAL LABORATORIES
HARVARD UNIVERSITY CAMBRIDGE 38 MASSACHUSETTS

May 28

Dear Al,

I have given much thought to your interesting letter of May 11 and intend to answer soon as possible. I have been positively snowed under lately & hence the delay. I will reply at length shortly.

They have asked me to participate in a Symposium on Tertiary paleobotany at the Madison meetings. Please let me know if it is agreeable with you to talk on the Brandon biquta, in all its aspects, including pollen, with your name as co-author. I am also writing Bill Spachman. Would appreciate a speedy reply.

Teresa & I are planning to go to Colorado this summer - will
you & Betty be in G.F. in early August

Sincerely
S.B.

May 28, 1953

Region V
Box LL, University Station
Grand Forks, North Dakota

April 10, 1953

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

The order for reprints was sent in to Mrs. Cheetham as soon as I got your letter of March 25, and I shall send yours along whenever they arrive from the printer.

The Harvard Alumni Bulletin carries an article on the botany building in the current number, as you probably know. I would love to watch the herbaria being moved.

Re Alangium: I have just spent part of the afternoon studying with more care one of the two preparations of A. chinense I made from the material sent by the National Herbarium. I am prepared to eat crow. Although the ektexine does not have the "ropy" appearance of my BT-70, the nature of the furrow membrane, the structure of the endexine thickenings and the shape of the furrows is very similar. The enormous size of BT-70, which is almost diagnostic in itself, is matched almost exactly by A. chinense—about 90 microns in diameter. The sculpturing of A. chinense's ektexine is rather densely reticulate, by contrast with the loose, ropy reticulum of BT-70. But, judging by the variability of the exine features of the various species of the genus I now have, this is no strong argument. (My preparations of A. villosum, for example, look rather like enormous Ilex grains—i.e., with clavate sculpturing!)

May I go ahead and describe BT-70 as a member of the Alangiaceae, with proper credit to you for the suggestion?

My two additional preparations of Carva cordiformis both show the size of the grains to be about that of BT-16, as predicted by Dr. Dahl. It is interesting that my reference material (Tr-205) was collected at the northern limit of the range, in Quebec. Does this suggest that small specimens of the species have small pollen grains? Just thinking on paper.

Preparation of the monograph goes along slowly. Uncertainty about where and if it will be published is a psychological handicap, of course.

Your meteorological interest will be whetted by the fact that it has been snowing steadily here for two days, with a good cover on the ground. There are few harbingers of spring, other than a few foolhardy specimens of the genus Planesticus.

Very truly yours,


Alfred Traverse
Coal Technologist

AT:dm

cc Mr. Lankford
Region V
File - 626.1
✓ Dr. Traverse

Return to.

Mrs. Maryann Cheetham
307 West 105 Street

Apt 5-13

New York, New York

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

March 25, 1953

Dr. Alfred Traverse
Coal Technologist
Region V
Box LL, University Station
Grand Forks, North Dakota

Dear Al:

Thank you for your letter of March 20. I agree with you about the matter of the reprints and would appreciate it, if you would order 600 and take care of the shipping. It will be quite a saving.

The excavations for the new building are going ahead rapidly and the problems of moving etc. are very numerous. I will answer your letter in more detail later.

Sincerely yours,



Elso S. Barghoorn

ESB/1

→ I have written to Mrs. Cleetham cancelling my order -
This was the only practicable way since you have not yet
sent in your order. I should like to have 200 with
covers, 100 without. You compute my share of this and
bill me, plus shipping charges.

ESB

Region V
Box LL, University Station
Grand Forks, North Dakota

March 20, 1953

Dr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Elso:

My letter of March 16 and your of the 18th apparently crossed in the mails. I hope that you will be able to complete the abstract form and send it in.

I really regret the change of plans on the reprints. It seems a shame to miss the terrific reduction in price on "additional 100s". One hundred is \$4.15, additional 100s only \$1.00 (with 5% off for copies over 500). I would be glad to order 600 from here and take care of sending you yours. My order will be held up until I hear from you. Here's hoping this letter reaches you in time!

I have run up the material from the National Herbarium - three species of Alangium and two different specimens of Carya cordiformis. Would you like duplicate slides? Perhaps they could be regarded as an exchange for the Glyptostrobus material I still hope you can send me. I regret to say that the Alangium bears no close resemblance to my large unknown.

The limiting factor on the monograph is now me - I am working as fast as I can on its revision. What worries me is what will happen if G.S.A. finally rejects it.

Congratulations on the new project. Need a consultant?

Very truly yours,



Alfred Traverse
Coal Technologist

cc ✓ Dr. Traverse
File

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

March 18, 1953

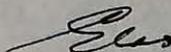
Dr. Alfred F. Traverse
Charles Robertson Lignite Laboratory
Bureau of Mines
University Station, Box LL
Grand Forks, North Dakota

Dear Al:

I have just received a letter from Mrs. Cheetam, the Managing Editor of the Journal of Paleontology enclosing forms for ordering reprints for our joint paper which is to appear in the March issue of the Journal of Paleontology. It would seem best if you ordered yours on a separate blank which I am enclosing, and I will order mine on another blank, in order to avoid confusion in shipping charges and repayment. Since I have not kept up a "closed" mailing list, it would seem best to have you send out your reprints and let me know the list, so that we may avoid duplication. In any event, I shall order three hundred copies for my own distribution since I have found that this number is necessary in order to keep a surplus for the future.

We have continued the search for the Alangium slides, but have had no success. I am as much interested as you in obtaining them.

Sincerely yours,



Elso S. Barghoorn

ESB/tjl

p.s. Since the galley proof was sent back I have no way of knowing the number of pages - I estimated it at 4. The Jour. Pale. uses small type + double columns, but it may run over 4. at any rate it is too expensive.

*Have you heard anything further from Aldrich re the Thesis?
My A.E.C. project came through in Jan and were busy enough getting that going. Also construction has finally started on the new Botany building. Approval of this was one of the last things Comant did before he left. So all in all these are busy times here.*

Elso

Region V
Box LL, University Station
Grand Forks North Dakota

March 16, 1953

Dr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Elso:

The thing for Biological Abstracts is enclosed. Since I do not have the information to complete the form (volume, pages, etc.), I am sending it to you. Perhaps you can have that added and then send in the form. This also has the advantage of giving you a chance to look at the abstract. It is perhaps a little long - but it is hard to abstract an abstract!

Very truly yours,

Alfred Traverse
Coal Technologist

Enc.

cc ✓ Dr. Traverse
File

Region V
Box LL, University Station
Grand Forks, North Dakota

February 25, 1953

Dr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Elso:

It was good to hear about our paper in J. of P. I had begun to lose hope. Your suggestion about the reprints is satisfactory. I will send a check as soon as you let me know for how much it should be. Re the galley proof - only things I would like checked are my name (~~gans~~ middle initial, to be consistent) and the name of the laboratory (Charles R. Robertson Lignite Research Laboratory - quite a mouthful but the official name). The abstract will be taken care of right away.

The two negatives from Bill's thesis are here and in a safe place. I'll return them as soon as I can get around to making prints. Thanks for sending them.

The observations of the weather are worth noting. We have had even less than the usual small winter precipitation here. The soil is already dry. Temperature-wise, it has been consistently well above "normal".

I enclose a copy of a letter I wrote Dr. Cady in response to his recent circular.

Very truly yours,



Alfred Traverse
Coal Technologist

Enc.

cc Chief, Fuels Tech. Div., Reg. V
Region V
✓ Dr. Traverse
File 626.1

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

February 16, 1953

RECEIVED

FEB 19 1953

Dr. Alfred F. Traverse
Lignite Research Laboratory
Box LL University Station
U. S. Bureau of Mines
Grand Forks, North Dakota:

U. S. Bureau of Mines
Grand Forks, North Dakota

Dear Al:

There are several matters about which I have been planning to write you, though one at least has already resolved itself, viz., the Texas proposition. As a research opportunity, you may have turned down a rare chance, but I do not know, of course, the details of the opening. That it was in the Geology Department and not the Botany Department, probably influenced you, logically enough. It would be a real chore to work up a part in teaching Introductory Geology. However, Texas is unusually well fixed financially and there would be no problem in getting support for paleobotanical work, nor any lack of real interest in aiding it otherwise. Texas is a potential paradise for paleobotany, but that is a separate question.

Your comments on the letter from A. C. Smith are encouraging. Al has always been coöperative in such requests in the past and has a real interest in these problems of geographic distribution such as our pollen studies keep turning up. Unfortunately, to date, the missing Alangium slides have not yet turned up. As for Glyptostrobus, I would suggest trying both the Gray and the A. A. on your own. I am sure the Gray will coöperate if they have the material, and if you write Dr. Clarence Kobuski at the Arboretum, I think your request will be well received. If there is any trouble, let me know.

Our paper in the JOURNAL OF PALEONTOLOGY is in galley proof and I should like to know how many reprints you wish. I wrote to the editor and the manuscript had been misplaced. I should like 200 copies and would suggest you order 200 also -- they go pretty fast. Our joint order for 400 will cost less than two orders for 200. I shall be willing to pay the whole and then bill you for one half total. Please let me know if this is satisfactory. After nearly a year's lapse, the paper looks pretty good still!

Winter here is waning a bit, after what has been thus far a mild season. Perhaps another month will tell the difference. Have you seen the last Harpers -- article by C. E. P. Brooks on Climate? Quite good.

*In a few weeks
I can take care
of the Gray material
myself - no long
right now.*

Dr. Alfred F. Traverse

-2-

February 16, 1953

I was sorry to hear that you and Betty had your session with the "flu" -- I had two spells this winter -- but it was good in a way since I got some work done at home. To switch to man's best friend, the dog, Dachshund Tiggie, had a rough time for a while but is in fine shape now. Even allowing for prejudice, he is quite an unusual little dog!

With best wishes to you both,

Sincerely yours,



Elso S. Barghoorn

ESB/jc

P.S. Enclosed is the abstract blank for Biological Abstracts - for our paper. Perhaps you could complete this and send it in shortly.

E.

Region V
Box LL, University Station
Grand Forks, North Dakota

January 30, 1953

Dr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Dr. Barghoorn:

A few days ago I wrote Dr. Smith at the National Herbarium to see what his attitude would be toward giving me polleniferous material for my work here. His reply was immediate and most cordial - proving that a progressive attitude can be found in a herbarium! He enclosed material of several Alangium species and of Carya cordiformis. So please consider that order as filled.

However, I was disappointed to learn that they have no staminate material of Glyptostrobus. My slides are rather poor - very few grains per slide. I would appreciate it very much if some material of Glyptostrobus could be procured for me at Harvard, but I hesitate to write the Gray or Arnold people. If I promise to send you duplicate glycerin-jelly material and slides, could you get some for me?

Sincerely yours,

AT

Alfred Traverse
Coal Technologist

cc Region V
Dr. Traverse ✓
File



UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF MINES
Region V
Box LL, University Station
Grand Forks, North Dakota

January 26, 1953

Mr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Elso:

May I borrow the negatives (from Bill's thesis) used in making text-figures 1 and 8 from my thesis? These are maps - the Brandon quadrangle with location of the site and Bill's map of the site itself. They will be kept only long enough for prints to be made. The prints are for use in the revision of my thesis, as you probably would have guessed.

Very truly yours,

Alfred Traverse
Coal Technologist

Jan 20, '54

Al,

Do you still have these or any other of the Brandon negatives. Have been "cleaning house" preparatory to moving in March and would like to get things in as good order as possible. Have read the correspondence re the USGS opening and will write in detail later.

Best to you both

P.S. Have you any suggestions on a program chairman for the next Coal Committee

Elso

Region V
Box LL, University Station
Grand Forks, North Dakota

January 26, 1953

Mr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Elso:

May I borrow the negatives (from Bill's thesis) used in making text-figures 1 and 8 from my thesis? These are maps - the Brandon quadrangle with location of the site and Bill's map of the site itself. They will be kept only long enough for prints to be made. The prints are for use in the revision of my thesis, as you probably would have guessed.

Very truly yours,



Alfred Traverse
Coal Technologist

Region V
Dr. Traverse ✓
File

Lignite Research Laboratory
Grand Forks, North Dakota

19 January, 1953

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Mass.

Dear Elso:

I appreciated your commenting on the "oldy" lignite. Many of the things I have been shown as alleged mold on lignite appeared to be sulphur or sulphur compounds which had collected on the surface of the weathering coal. But the stuff I sent you looked like mold mycelia to me, and I am glad to have something to tell the several people who have asked me about this phenomenon.

Yesterday I received a letter from Samuel P. Ellison, University of Texas, about an opening in paleobotany in the geology department there. They really told me very little, and I am writing to Dr. Ellison, saying that I should like more information about the position (e. g., rank, salary, term of appointment, etc.) before I bother people for references. I am grateful to you for recommending me, and I'd like to hear what you think about the thing, if you could scratch a few lines. You have assayed my feelings correctly--that I want to get back into academic work. However, I want the next move to be fairly permanent, and I am willing to stay here until the right thing comes along. Despite its faults, this job is apparently secure, and I can still profit from the experience for several years--if the right opportunity doesn't come along. My own ceiling is something around two years from now. I'll be hungrily on the prowl from then on.

This week has been a bad one for my work--Betty has been quite ill with "flu"--103° temp., and so forth. I have been nursing her, taking care of Paul and doing the cooking and housework. Betty is on the mend now, and I am more conscious than ever how glad I am that I'm a paleobotanist not a housewife.

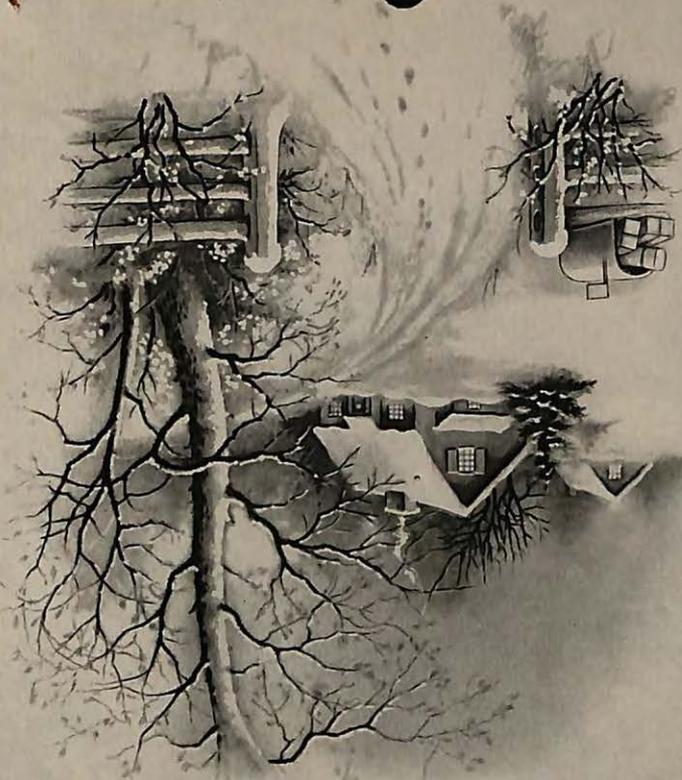
Best wishes to everybody. How did Tiggle get along?

THE BIOLOGICAL LABORATORIES
HARVARD UNIVERSITY CAMBRIDGE 38 MASSACHUSETTS

Dear Al,

For some reason or another, all legumes are quite susceptible to molding, and also most peats are - if given the proper conditions for molding. The phenomenon is quite general, though little noted in the literature dealing with legume, its source, etymology and future importance. I very much suspect that molding of legume is the result of the carbohydrate hydrolyses of pectinases present in small quantities and reduced to sugars. Sincerely, G. S. B.

1952



Christmas
Greetings

Dear Al,
 The Alamyum slides I am
 hoping will momentarily come to light - I
 certainly hope so since quite a number of
 people saw them last year. If not, however,
 it may be some time before duplicate material
 can be prepared. In the event that there is a
 need for your figures + descriptions re
 publication please let me know, and I shall see
 that duplicate material is available.

Merry Christmas
 and best wishes for
 a Happy New Year

Christmas wishes and
 the best wishes for
 the next years

Elo S Berglund



UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF MINES
Region V
Box LL, University Station
Grand Forks, North Dakota

RECEIVED

DEC 2 1952
U. S. Bureau of Mines
Grand Forks, North Dakota

December 4, 1952

Dear Al,

The search for the Olanguan
pollen grains continues, I'm sure
we will find them.

Have been very busy lately
but will write more before
long.
Greetings
Elsie

Covington's
1st & 2nd Streets
Pasadena, California

Dear Sirs:

Would you send me a catalog, or whatever in-
formation is available, of your lapidary-wheel
machines and similar grinding and polishing equip-
ment.

11 Dec. 1952

Very truly yours,

Alfred Traverse

ALFRED TRAVERSE
Coal Technologist

Dear Elsie:

This came back,
as you see — could
you provide a better
address? If so, would
you write the address
somewhere on this sheet and
return it in the enclosed
envelope?

Covington Lapidary
Engineering

1st to 2nd St on
Highway 99

Redlands, Calif

Lignite Research Laboratory
Grand Forks, North Dakota

4 November, 1952

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Elso:

Apparently my paper will go on as scheduled. I leave here next Monday and arrive in Boston Wednesday morning on the "New England States", I hope in time to take in the meta-anthracite field trip. My travel authorization gives as the twin purposes of my trip: "To confer with Professor Elso S. Barghoorn of Harvard...and to present paper at the annual meeting of the Geological Society...." This way I'll be able to stay around for a few days after the meetings to talk with you. Also, I am working on an annotated bibliography of the paleobotany and petrography of lignite and brown coal. It would be absurd to pass up an opportunity to work on this with your reprint collection.

Altogether it looks like a terrific time--would be perfect if Betty could come. I have so many musts on my list (from buying a suit of clothes to spending some time with Betty's brother) that I am likely to be a rather harried character. I need more like a month than a week.

The package of Jeffrey's papers came. I was delighted to get them. I'll try to refund the postage to someone next week. (But I remember how hard it was to refund anything to anyone at H.)

Looking forward to seeing you and to being underfoot in your rooms at the Bio. Labs, I am

Yours as ever,

My appointment as "Assistant Research Professor of Geology" came through a few weeks ago. I told the chairman of the G. department that I'd never be able with a straight face to talk about geologists entering paleobot. through the back door. If ever a man spirited himself into being a geol., it's me.

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

December 2, 1952

Dr. Alfred F. Traverse
Charles Robertson Lignite Laboratory
Box LL University Station
Grand Forks, North Dakota

Dear Al:

Thank you very much for your note of November 27. I was glad to hear from you and to know that you had returned to Grand Forks safely. Please do not feel that you usurped my quarters for your visit.

I am sorry that I was not able to locate the Alangium pollen slides for final confirmation of the BT-unknown in your manuscript, and which must certainly be clarified. I shall try to get this information to you as soon as possible as well as the slides, since I regard the information of utmost importance in the ecological interpretation of the Brandon lignite deposit. The whereabouts of the slide box still remain a complete mystery.

With best wishes to you and the family.

Sincerely yours,



Elso S. Barghorn

ESB/tjl

24 September, 1952

Grand Forks

Dear Elso,

You will note from the salutation above that I am taking you up on the suggestion implied in the signature to your note of Sept. 19. The fact that I comment at all on this proves that I am no naturalized North Dakotan. Christian names are much more widely used out here. I was a little jarred when a gas-station attendant, seeing my name on the credit card, called me "Alfred" for the first time. I have since discovered that they do this for fear of seeming unfriendly, you might perhaps say discourteous! This is a novel twist.

I was unhappy to have to leave the meetings so early, but it is fortunate that we did, for we made Big Moose at 5:55, and the Insleys dine precisely at 6:00. They are rather precise people, and it wouldn't have done to come crawling in at, say, 6:20. We had a nice stay at the lake and surrounding country, though it was all packed into three days. We swam, canoed and hiked on a few of the interesting trails near the Insley cabin. We also helped "supervise" the work on the new cabin, which Betty's grandfather has been building this summer. He took a master's degree in architecture, which he never used until he retired. Since then he has designed dozens of places. He is building the Adirondack cabin so solidly that I expect it to last a hundred years--despite the way things decay up there.

We had a five day visit in St. Joseph. It begins to look pretty good to me. Outside of New England I haven't seen anything in this country with so much to offer.

Then we pushed on to Minneapolis for a few days with Betty's aunt there. We drove from St. Joe. to Mpls. in one day--560 mi. It only took 12 hours, so you can see how much better time one makes out this way--that is, this side of Chicago.

The Ithaca meetings were enjoyable. Once again, though, I left with the feeling that it would have been nice to have more time for visiting. Another year I think I shall have a list of things I want to be sure to talk over and make precise appointments to discuss them. It seems over-formal, but I see no alternative. Also, I intend to be one of the first to arrive and last to leave.

Our paper was on my desk when I arrived. I was

agreeable to your having the preparation done in Cambridge, especially as it doubtless expedited matters. I think it reads very well, and I am at present wondering if the careful working and reworking is not a strong argument in favor of joint papers.

I have noted a few errors, none major, which can perhaps be picked up before preparation of proof or, surely, afterwards.

Page 7, line 14 Should read: "...indicators of warm temperate or subtropical climate..." (not temperature)

Page 7, line 16 Should read: "...pollen of the...." (not "in the")

Well, I guess that's all--just two. I have nothing to argue with re alluvial and non-alluvial.

My November paper is still languishing on my boss' desk. As badly as I'd like to go to the meetings, I think it would be unwise to bring pressure at this point. Bill read it and seemed to think it worthwhile. Admittedly, I am a novice as a coal petrographer, but I have come a long way in a year. Incidentally, I had some of my preparations in my briefcase and never got a chance to show them to you. Bill saw them with the naked eye.

Arnold has written me briefly recommending again that I publish my thesis in Paleontographica. I am at present weighing this against the possibility of changing the slant of thing enough so that Aldrich will take it. I had all of the correspondence with A. with me at the meetings and wanted you to look it over. I enclose the last letter from him and a copy of my reply. (I'd like his letter back, since I have been reluctant to have it copied here.) If I thought that, with the proper revision, the G.S.A. would take it, I'd naturally prefer it. How much of a gamble do you think it is?

Yours, as ever,

BOTANICAL MUSEUM OF HARVARD UNIVERSITY

Oxford Street
Cambridge 38, Massachusetts

Sept 19, 1952

Dear Al,

After returning from Ithaca I re-read the corrections suggested for our ms. in J. Palea, and it seemed simpler to do the job here. Enclosed is the new and I hope final draft. If you compare this with the original you will find that most changes are minor although a definition of "alluvial vs non-alluvial swamp" is probably important I hope you concur in the definition.

With some reservations, I would say the Ithaca meetings were well worth attending and very enjoyable. After you left there a few points of potential interest to you came to attention

and I should like to talk with you about
them in November when you are here.

Best wishes to you and Betty and greetings
from here.

Sincerely yours,

Elso

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

August 28, 1952

Dr. Alfred F. Traverse
Charles Robertson Lignite Laboratory
Bureau of Mines
University Station BoxLL
Grand Forks, North Dakota

Dear Al:

I received your letters and the flurry of correspondence with Aldrich while I was out in Michigan late July and early August. You will have noted that my correspondence reached absolute zero while I was away. In fact, I wrote only three or four postcards during the five weeks. I hope that you and Aldrich have smoothed things over by now, and I imagine that he is somewhat harrassed by the constantly increasing quantity of publication which he must supervise and, of course, he is perfectly right in reaffirming the two year publication limit of time.

Our note in the Journal of Paleontology was returned to me for some minor corrections, and I have delayed in doing this so that it will probably not be in the fall number. Do you wish to see it again after these changes are made? If so, will you please let me know right away. If you are at Cornell, we can talk about it.

It is too bad that you were unable to come to the Crystal Cliffs conference. I am sure that you would have found it very much worth while. The next one will be held in 1955 and by then perhaps you will be in a position to make a contribution. It would be a good goal to aim for because it is perfectly obvious that the whole class of sediments known as lignites are poorly understood in so many ways.

I hope that you got the abstract for the Boston paper in and that you will be able to get here. Have you heard anything new about your official travel for the G.S.A. Meetings. Incidentally do you wish to become a member of the Society of Economic Geologists, an organization which has, as a small committee, the Coal Research Committee. We can talk about that when I see you. Have you had any further success in sectioning lignite.

In going over Jeffrey's collection, which we have received, I find that he had embedded probably several thousand samples of coal and lignite in celloidin. If you wish, I could give you some of these when you are here. As you know Jeffrey used perfectly incredible chemical treatments

Page 2

Traverse

for softening the material for embedding.

I will be looking forward to seeing you at Cornell, which I presume you will take in as part of your vacation leave. Too bad, you can't have more vacation time. Bill Spackman dropped in Monday on his way to Sidney, Nova Scotia and he thinks that he will be at Cornell.

Best wishes to you and Betty.

Sincerely yours,

Elsie S. Barghoorn
Elsie S. Barghoorn

ESB/tjl

Region V
Box LL, University Station
Grand Forks, North Dakota

July 9, 1952

Dr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Dr. Barghoorn:

Your letter of June 25 was most informative and stimulating, as usual. Professional stimulation I must get via the printed and written word. I could tell by the startled look on the faces of many when I was introduced recently at a Sigma Xi meeting as a paleobotanist that I am not likely to find anybody to talk to around here.

I was much interested in the account of your activities during June. I feel as if I were standing still by comparison. It seems odd that the class of '27 is already a 25th. They're creeping up on '47.

Crystal Cliffs must have been a great experience. That is beautiful country, in my opinion. If you went by car or train you doubtless went through many places with which Taylor Steeves and I are very familiar. The Conference itself would have been interesting to me, though, with exceptions, I don't think the program was as good as last year. Bryan Parks very kindly sent me a copy of the abstracts.

An importunate little note came the other day demanding an abstract for my Boston paper by July 14. This was something of a bombshell. I shall send the abstract, but the paper will probably be a little broader when the time comes. My work has consisted of an intensive study of the coal from one mine, including the study of a "column", the standard Bureau of Mines technique, developed by ~~the~~ Niessen. I made ca. 200 thin sections from top to bottom of the seam. I also made a series of sections from lumps of run-of-mine coal from the same mine, and have been trying to work out a method of studying pulverized lignite from a representative sample selected from run-of-mine coal. All of these sections

have been studied by standard Bureau of Mines petrographic methods. I have been interested in determining, among other things, the necessity of using the very laborious column method. If my paper goes through for presentation, I contemplate little trouble with transportation. If it doesn't go through or doesn't go through in time, the Bureau will not send me. I intend to get it in the works sometime in August. (An odd sidelight: A man from Washington was recently here who said that it would be desirable for me to be sent East once a year because of the lack of professional contacts here. The most economical way they could possibly do that would be to send me to the Botanical Society and Geological Society meetings. But there is a fixed policy against Bureau people going to meetings.)

These sections were all prepared by the techniques I learned from O'Donnell in Pittsburgh. He was Wiessen's technician and a terrific one. (Schapf was in Pittsburgh, as you know.) The marine glue-balsam technique for coal was developed by Wiessen (see "Structure in Paleozoic Bituminous Coals" 1920. U.S.B.M. Bull. 117, and others), as far as I know, and was in use by him forty years ago. I wrote briefly about the method to you on 4 October, 1951, and asked Parks to send you a copy of the Bureau's publication on it. Did you get it? (U.S.B.M. Inf. Circular 7021 1938.) I think I can honestly say that, except for O'Donnell, I can make better sections of lignite by this method than anybody around - which doesn't mean too much because so few have tried.

I am much obliged for your advice on knives. I am at present embedding a number of things in celloidin, making much use of your "celloidin letter", and sharpening of knives will come up before long.

Thanks for the advice on herbaria - that was just the sort of information I wanted. It looks as though it will be some time before I can do anything about it, as there is no prospect of my getting an assistant for a year or so.

Bill Spackman writes that he is on his way to South Dakota. I hope he will stop here on his way to or fro, and that I will be here when he comes.

Petty and I are going to make every effort to be at the Cornell meetings, though, as I must go at my own expense and on my own time, we may find too little time and money left after short visits with our parents. I get the magnificent total of 13 days leave per annum.

Hope you are having a profitable summer. Best wishes to Terry.

Sincerely yours,

cc Region V

Dr. Traverse ✓

File

ALFRED TRAVERSE
Coal Technologist

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

June 25, 1952

Dr. Alfred F. Traverse
Charles Robertson Lignite Laboratory
Bureau of Mines
Grand Forks, North Dakota

Dear Al:

I discover to my surprise that a reply to your letter is almost a month overdue. This month has been exceedingly busy, what with a symposium paper in mid-May and attending and giving another paper at the Conference on the Origin and Constitution of Coal, in Nova Scotia, the past week. I also, while resting, engineered an exhibit for the reunion classes of 1907, 1917, and 1927. This was one of five exhibits in the building, attended by some 600 alumni. All this, of course, in addition to finishing up the semester and gathering data for the aforementioned papers, plus judging some 47 Bowdoin Prize essays. I am, of course, not including advising undergraduates on various and sundry problems, nor guiding visiting celebrities around. You are, by now, quite well smothered in excuses.

I was much interested in your reactions to your visit to Montana. Despite the lure of the motel business, I think I would stick to paleobotany. Fossil plants have a more permanent future than the tourist business, although there is always room for development, especially with Detroit pushing out automobiles in an unending stream. The trouble is too much money is being printed, although a considerable amount of it is rather desirable to pay your taxes.

While I was in Nova Scotia, I talked with Dr. Simon about the program this fall. I hope very much that you can arrange transportation for this Meeting through the Bureau of Mines. If it looks as though you will have trouble, perhaps I can exert more pressure, somehow. Often times people outside the government can do more good than those in the government in matters of this sort. It would certainly be very desirable, and very profitable, for those attending to hear your paper. Much more interest is bound to develop in the near future on the coals of lower rank, particularly since the uranium in lignite bubble seems to be blowing up bigger and bigger. Let me know if I can help in case of any anticipated difficulty.

on the transportation problem

Have you tried Schopf's marine glue and balsam cement for grinding thin sections. The core should have the original bed moisture in it for the best possible results. With dried material, you might investigate the possibility of the reflected light technique, although I would be dubious about it.

As for sharpening microtome knives, I will be very gentle with you and not chide. It is something that one has to learn by practice and experience. You would do best by getting a good fine grain hone (Belgian water hones are the best, if still available, if not artificial abrasives are suitable.) A coarse and a fine stone and a good leather strop, attached to a board of same width as the strop, are all you need. The knives, of course, should have detachable backs and handles. On the stones, push toward the edge, keeping the knife at right angles to the long axis of the stone. For stropping, draw away from the edge at the same angle. This will produce a perfect edge, but takes time. Glass plates are pretty tricky unless you can keep them optically flat.

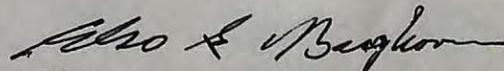
Re. the thesis, I would certainly drop a line to Aldrich in the near future. I have heard no more than you have about it. It may be possible to publish it in Paleontologica in Germany, if somewhat condensed.

The best bet on herbaria for the American flora would probably be the National Herbarium, provided you can arrange it through the usual circuitous channels. Dr. A.C. Smith is one of the head men down there, and I am sure, would be sympathetic. I know him quite well and would be willing to help. It might be possible to get occasional specimens by writing directly to the curators of the larger private herbaria. Many of the foreign herbaria are also quite co-operative.

There is much more to write about, but no time. I certainly hope that you will be able to get east this fall.

Best wishes to you and the family.

Sincerely yours,



Elso S. Barghoorn

ESB/tjl

U. S. Bureau of Mines
Grand Forks, North Dakota

9 July, 1952

Dr. Elco S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Dr. Barghoorn:

A letter to you is in the stenographic works here, but a reply to my letter of three weeks ago to Dr. Aldrich has come in, and I guess I had better write you again.

I wrote to Dr. Aldrich, merely requesting information. After all, I did submit the paper in January and had heard not a word. I enclose copies of the exchanged correspondence. His reply is a scorcher, isn't it?

Apparently (though the fact is pretty well hidden in Aldrich's letter), with proper revision, they will accept the paper. I am going to stay with it until and unless they flatly reject it. For one thing, I have much of the waiting period out of the way!

Let me know what you think.

Sincerely,

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region V
Box LL, University Station
Grand Forks, North Dakota

May 6, 1952

Dr. E. S. Bargheorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Dr. Bargheorn:

Would you jot down on a postcard a brief resume of the celloidin schedule you use for lignite? I have a copy of Wetmore's paper and am familiar with the general scheme. Did you embed all of the Brandon material you sectioned?

I am trying to find some way to embed lignite of particle size so that sections can be made either on the microtome or by grinding.

Very truly yours,


ALFRED TRAVERSE
Coal Technologist

cc Region V
Dr. Traverse ✓
File

THE BIOLOGICAL LABORATORIES
HARVARD UNIVERSITY CAMBRIDGE 38 MASSACHUSETTS

Dear Al,

P.S. The Alangium in our T.R. pollen collection is very different from many of the others!

This is not a reply to your letter, which I will answer shortly & send negatives which are here. I just thought you might be interested to know that your giant unknown pollen grain BT-70 turns out to be an Alangium - quite close to *A. platyphum*. I caught it when I identified my fruit #19 as Alangium - the fruit is somewhat different from *A. platyphum*, so the pollen is probably a closer match in another species - all Asiatic. More later

Sincerely,
Elio S. Bergstrom

THE BIOLOGICAL LABORATORIES
HARVARD UNIVERSITY CAMBRIDGE 38 MASSACHUSETTS

Dear Al,

I received this week a letter from the new editor of the Journ. of Paleontology and please be assured that it, ^(your manuscript) has been accepted for publication. The date is uncertain, but in the absence of ^{text} figures it shall be early in the pile of us' to come out. Sincerely,

Sincerely yours,

Elio S. Bergstrom

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
Region V
Box LL, University Station
Grand Forks, North Dakota

April 1, 1952

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Dr. Barghoorn:

Your postcards of March 4 and March 10 were much appreciated. I welcome that form of correspondence, especially since I remember how little time you have for formal letter writing.

My talk on pollen analysis was satisfactory, although I missed having my thesis for reference. It has disappeared into some sort of a void in New York. All I ever got was a card acknowledging receipt - about two months ago.

It was good to hear about acceptance of our paper. By the way, I am waiting for my reprint of your J. of P. "curve" paper.

Now, about Alangium: The Alangium chinense pollen I have is quite in line with the pollen of the Nyssaceae-Cornaceae group. I remember that this seemed reasonable to me because of the Alangiaceae and Nyssaceae being listed together in the Engler-Diels Syllabus. If BT-70 is, indeed, Alangium, something must be wrong somewhere. (But remember the example of Maclura pomifera - a certain case of misidentification in the herbarium.)

Best wishes.

As ever,

AT

ALFRED TRAVERSE
Coal Technologist

cc Region V
Dr. Traverse
File

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region V
Box 11, University Station
Grand Forks, North Dakota

April 15, 1952

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Dr. Barghoorn:

I have just written Jack Simon, Illinois Geological Survey, of my intention to give a paper at the Boston meeting in November on some of my petrographic studies here. If I can get permission to do so, it should be a stimulating and valuable experience.

About the S.E.G., do I recollect your telling me that you had proposed me for membership? I might try to have the proposed paper published by their journal.

Bill Spackman has written about the conference on the Origin and Constitution of Coal in June. I should very much like to attend that conference, but would probably have to pay my own expenses and perhaps might not even be able to obtain leave. It's a very long trip, of course.

^{See} The additional question - what do you think of preparing lignite for display by some modification of the paraffin method? Can you supply me with information on the high melting-point paraffin you have used, especially where it is obtainable?

Sincerely yours,

AT

ALFRED TRAVERSE
Coal Technologist

cc Region V
Dr. Traverse ✓
File



April 11, 1952

Dear Al,

Please excuse another hurried letter, though the letter is not hurried in spirit. I want to give you and Betty my best congratulations for the recent news. I know how you both feel - or shall I say I know how it feels, only, to be father to his first son. I hope everything is well, and that little Paul is not too outraged by the Dakota spring! Which, also has not been too genial to us here this year.

Your recent letter had a number of questions about the Alangium problem which I have considered in some detail. I am not certain about the source of our A. chinense pollen since I have not checked the particular sheets, but from examination of 20 species of Alangium pollen it is overwhelmingly apparent that our form BT-70 is Alangium. Several species from southeast China are almost perfect matches as to size, texture of exine and other characters. It may be that our A. chinense is in error and I will look into this. The fact that BT-70 is Alangium is beyond question after looking

over the slides, of which a good sampling is available since
last year. The seeds from Brandon are without doubt *Alouquin*, or
an extinct genus very close. They are one of the most distinct
forms in the deposit and have been especially in mind since
your work on the Sapotaceous pollen straightened out the
"round fruits". If you wish I can send slides to confirm
this to your own satisfaction. In the interim I would suggest
changing the unknown to '*Alouquin*' if any need arise before you
restudy the material for publication.

I hope the thesis is not lost in the "void" and will
be interested to know who has been looking it over.

California Stand. Oil was here - looking for young pollen
workers on the A B or M A level - excellent salaries for beginners
Their work has been transferred to Le Habee Calif. - a much
more desirable locale, about 20 mi se of Los Angeles. A
PhD by the name of Norem is in charge. Apparently they
intend to expand the work.

Best wishes to you and the family

Sincerely yours,

Elsie S. Barghorn

U. S. Bureau of Mines
Box LL, University Station
Grand Forks, North Dakota

15 April, 1952

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Dr. Barghoorn:

Your letter of April 11 was most thoughtful, and we were both glad to hear from you. Betty and little Paul are both fine. Betty's mother is here from Indianapolis to help out with the extra work. This was especially necessary because Betty had to stay in the hospital ten days and was a little weak. She had a comparatively easy, six hour labor, but her physician is conservative--but not of my purse! Medical expenses are atrocious out here, by the way. Betty had one filling (not large) done a month ago: \$20! I was staggered. When these fellows decide that a half-hour of their labor is worth 1 1/2 da. of mine, that's too much. The phenomenon is partly local, of course. Nearly all services are more here than in Boston (save haircuts, @ \$1).

The weather has been wonderful. For the last month it has been 20-30 morning and evening and 30-40 at noon, very constant. The sun shines more than six da. a week. There are few of those dank, dark Boston days. For the last three days it has been over fifty at noon. Robins and grass have appeared almost instantaneously.

Re Alangium: I did not mean to question your identification and hasten to express my pleasure that the mystery is no more. What I did mean to emphasize is that something is wrong, and interestingly wrong. My A. chinense pollen is like the Nyssaceae, and BT-70 is utterly different. The Nyssaceae and the Alangiaceae are supposed to be closely allied. Hence, it looks as though we might, just might, have something interesting. It would perhaps be worth looking into.

Speaking of reference material brings up another point I would like your advice on (and, as I keep saying, I'm far more interested in your comments than in the form they take.

Please feel free to use postcards or whatever other medium is handy.) Have you any suggestions as to herbaria I could beseech for material? How about the National Herbarium? Is it any good? Do you know anybody there? I must start enlarging the pollen collection a bit, and I must at least begin to put together a cuticle and a wood collection. If the N. H. is any good for the world flora, or if there is another government herbarium where I could use my influence (ha!) I should start on it soon.

I have finished the strictly petrographic analysis of the column I have been working on and am now making some studies of run-of-mine coal from the same mine. My new centrifuge arrived today, and I shall start some pollen studies of the same column soon. I have no assistance, as I have mentioned before, and I am beginning to see small storm clouds of bureaucratic functioning--I am currently seething because I have been refused a key to the darkroom, which I use regularly, of course. So far I have been able to straighten out all such little things, but it is wearing, and I am looking forward to finishing my stint here and getting back into the academic stream. In order to have much to show for my efforts, that will mean at least another two years here.

I think I'll put this in the mail and finish it up in an official letter, in order that a couple of things about which I am thinking will be noticed in Minneapolis. I'm learning, you see.

Best wishes, as always,

U. S. Bureau of Mines
Box LL, University Station
Grand Forks, North Dakota

29 February, 1952

Dr. E. S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Mass.

Dear Dr. Barghoorn:

A week has gone by and no unfavorable comment about my using time and Bureau stenographic help to get out that letter on the paper; perhaps if I can keep my mouth shut I'll be able to get more paleobotany done here than I had expected. Officially, I haven't had much encouragement. In fact, we have just completed a two day conference with representatives of the lignite industry and the regional director and his staff, in the course of which the regional director referred to me facetiously (albeit I wonder how facetiously) as a "high-brow" scientist and went out of his way to indicate that even a paleobotanist must contribute in dollars and cents to the lignite industry if he is to earn his keep with the Bureau. I gave a short talk and demonstration for the group in which I think that I won them over to the idea that a broad attack by me would help the industry, though not in the short run. Of course, with no help at all I can't burn the world up anyway, and that's what's ahead for at least another year, unless I get an unforeseen break.

The immediate purpose of this note is to ask you to send me the negatives for the thesis plates. I have just been asked to give a talk on the work for the local geological society in about two weeks. I am driving to Fargo tomorrow to interview a scholarship applicant for Harvard (I am local Harvard official agent!), so would not be able to write until Monday if I didn't dash off this hasty missive. I would appreciate the negatives if you can send them, so that I can make some lantern slides. I hope that it doesn't turn out that you have returned them already and I have misplaced them in moving.

As ever,



Alfred Traverse

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
Region V
Box LL, University Station
Grand Forks, North Dakota

February 19, 1952

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge 38, Massachusetts

Dear Dr. Barghoorn:

I was glad to hear from you the other day - your letter of 22 January - and also to receive your letter of 9 February and the paper. Since I last wrote I have heard from Aldrich's office that the thesis arrived there, after having been missent. They did not comment further. I wonder what their next move will be? Your suggestion that it might be published in Phytomorphology is interesting - more about that after I hear from New York.

While in Urbana, I had about two hours with Wilson Stewart, during which I absorbed a good bit of information about the medullosans. I am looking forward to the paper on Roberts' material.

The word of the two hundred species of pollen is intriguing. Are you keeping surplus material? I would certainly appreciate the opportunity of getting slides somehow. Some day I hope to visit Cambridge and spend a little time getting wood samples for use in studying the lignite here. Perhaps I could make pollen slides at the same time.

My work here is still centered around getting the laboratory set up for work, a longer job than I had expected. I have also spent part of my time studying the column of lignite I sectioned in Pittsburgh. Quite a number of interesting things are developing from this study, and I need only time and help to follow them up.

About the weather - we are surviving quite well, though winter shows only slight signs of abatement. The natives allege that this is a mild winter here, too, but it is still well below freezing.

UNITED STATES
DEPARTMENT OF THE INTERIOR

Now, about the paper preference as between the Journal of Paleontology and American Journal of Science would be affected by the waiting period. If the shortness of our paper would shorten the delay with the J. of P., that would be fine. If A. J. S. would do the job much quicker, that might be better.

I have gone over the paper very carefully; perhaps I have been almost picayunish, but it seems that, when we are separated by 2000 miles, this is necessary. I think it looks a pretty good paper.

Sincerely yours,

ALFRED TRAVERSE
Coal Technologist

Corrections and suggested changes:

pl-5 Use Alfred Traverse. I am trying to avoid use of middle initial because of Junior business.

In the footnote, name of this laboratory is Charles R. Robertson Lignite Research Laboratory (not Robinson).

1-8 (Footnote) I have looked into the "brown coal" vs. "lignite" question, with the help of Mr. Selvig in Pittsburgh, who has been in on much of the coal classification work. The truth is that the terms have been used interchangeably so much that the situation is almost hopeless at present. The Bureau of Mines classification, based on A. I. M. M. E. work, is unsatisfactory, there being no way to draw a line between "unconsolidated" and "consolidated". No rank distinction has ever been drawn, although Selvig thinks it would be possible.

Hence, I should prefer something like: "Because it is relatively unconsolidated, has a relatively low B.t.u. rating and is brown when dry, the Brandon deposit might better have been called a brown coal. However, because relative consolidation is difficult to measure, because no exact definition between brown coal and lignite exists, and because of usage, the term lignite, in its general sense, can be retained."

- 1-9 Town
- 1-10 I suggest "...iron ores, ochers, sands and clays which were formerly of local importance" rather than two adverbs.
- 1-17 I suggest "A coordinated program has been directed toward geologic, etc." instead of "These investigations have involved....".
- 1-23 I would prefer "...pending publication of the monographic study of the pollen and spore types," omitting reference to genera and species.
- 2-6 Omit "biological". I think it makes "botanical" (2-5) and "botanically" (2-8) redundant.
- 2-11 Makes
- 2-12 Suggest megafossil for macrofossil.
- 2-13 Suggest "It was felt that conclusions resulting from study of the microfossils in the Brandon lignite might help....". I don't like "in the case of".
- 2-17 Compromise on "belong" - how about "are referable to"?
- 3-223 Suggest a comma after "or" and after "probably".
- 3-6 Acetylated
- 3-8 Suggest "likewise almost always removes....". Omit comma after likewise.
- 3-11 Omit comma after "acquired".
- 4-5 On a proposed curve?
- 4-6 Omit comma after Barghoorn, unless it is added in ~~an~~ other citations.
- 4-7 Approximate
- 4-8 I think concurrence or coincidence would be better than concomitance, which has more the idea of accompanying.
- 4-15 Megafossils
- 4-17 Another (after the period: (Berry 1930).) ?

4-20 Asiatic

4-24 & 25 "...representatives of which, in the United States, are now confined to southern Florida". This avoids the suggestion that Sapotaceae are confined to the United States.

4-25 Florida

5-2 Equivalent

5-5 There

5-7 Do not hyphenate paleoecological.

5-9 Woody

Bibliography: Add a reference for Erdtman's text, since it is cited on page 3.

Reference to Berry: "A Revision of the Lower Eocene Wilcox Flora of the Southeastern United States....". The words "Lower Eocene" were omitted.

cc Region V
DravTrac ✓
File

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

February 9, 1952

Dr. Alfred F. Traverse
Charles R. Robinson Laboratory
Bureau of Mines
Grand Forks, North Dakota

Dear Al:

I have completed going over your manuscript on the Brandon pollen and will forward a carbon of it to you as soon as it is typed. After you look it over please let me know as soon as possible of any suggested changes. I will send the original in as soon as I hear from you. The reason for this procedure is because the paper would seem most appropriately published in either the Journal of Paleontology or the American Journal of Science. I am acquainted with the editors of both and think they would be willing to take it, Science, I am quite sure would not, because of its length. It is a bit difficult to publish a paper of this sort since it is not actually a preliminary note nor a complete study. I would favor the Journal of Paleontology first if they will take it. Please let me know your preference.

As you will note I have added a bit here and there and somewhat changed a few parts, making it a bit more comprehensive. These additions remove the paper from the category of "preliminary note".

The brochures on your laboratory I was very glad to see--they were duly enjoyed by members of our afternoon "coffee club"--an innovation of this year, since I moved to the new laboratory in D-355. I am glad all is going well, and will be much interested to learn how your research is progressing, and how the scientific "atmosphere" is.

This year has been one of the busiest, probably by self choice, and I am glad the spring term has begun, and with it a bit more free time for research. I put more effort into the course this fall than last year and was pleased to see the best group of exam papers I've had--or perhaps it was the class!

Dave Roberts and I finished up the new species of Medullosa and it will be published soon in the Museum leaflets. I will send a copy on to you.

We are turning out more pollen slides and have added another 200 spp. to the collection, since you left in June. We often refer to your thesis for methods.

Traverse

Page 2

Let me know when you hear from Aldrich re the thesis publication. If they turn it down it may be possible to publish it in the new international journal Phytomorphology at less extra paging cost than anywhere in the United States.

Best wishes and regards to you and Betty.

Sincerely,

Elsie S. Barghoorn

Elsie S. Barghoorn

ESB/tjl

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

January 22, 1952

Dr. Alfred F. Traverse
U. S. Bureau of Mines
Box LL, University Station
Grand Forks, North Dakota

Dear Al:

If the above address is not correct, please let me know --
I have discarded the envelope with return address.

I am glad to see you have gone ahead with the revision of
the thesis and sent it in to Aldrich. At least I assume from
your letter that it has been sent in. I hope it is given a
good reception. Incidentally, I have learned that Chaney is
in Japan, probably for the year.

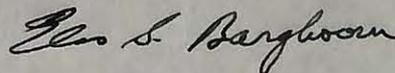
Am glad to learn that the books arrived in good shape.
They are the worst problem in moving anywhere.

Too many things are going on to give me the leisure
I have wanted, to go over the P. and S. of B. and L. short
paper which we should get out soon. However, it is now on top
of the pile and I will let you know very soon. I wonder if
the American Journal of Science wouldn't be the best place
for it. We could cover the country with reprints, for benefit
of the botanists. It is really not appropriate for Science
which has recently become a journal for non-clinical medical
research.

I hope you and Betty are not suffering too much from
the Dakota winter. This has been a mild one here.

Best wishes,

Sincerely yours,



Elso S. Barghoorn

ESB:jl

Grand Forks, North Dakota

17 January, 1952

Dr. E. S. Barghoorn
The Biological Laboratories
Harvard University /
Cambridge 38, Massachusetts

Dear Dr. Barghoorn:

Enclosed is a copy of a letter which I sent J. M. Schopf in response to his criticisms of my thesis. This nomenclature business is a terrific headache--I have tossed and turned more than one night thinking about it. Just to take one angle: if each of us describes his "part" of the sapotaceous complex as new genera and species, as he would be obliged to do according to taxonomic convention, we would create at least 5 or 6 new genera and at least as many species. But our sapotaceous plant parts are almost certainly from the same genera, and these might conceivably be extant!

On the other hand, if one accepts the idea/for the Tertiary using numbers and the closest possible botanical determination, with new genera and species only where the evidence is overwhelming, what will one do in the Cretaceous?

Any comments will be appreciated, but I am not sanguine that there is an easily turned key for this lock.

I am also sending Bill a copy of this letter and one of the letter to Schopf.

All goes slowly but well here. I am spending much of my time drawing up specifications for equipment and supplies--how wonderful it was to amble into the stockroom and order almost anything. I am starting almost from scratch and find the process of getting such items as copper beakers, not to mention a centrifuge, fairly complicated. I am also working on the design of such items as a carborundum saw for lignite and a makeshift coring apparatus for use on our sampling trips next summer (the word has an unreal ring). This pushes me into things about which I know next to nothing, but I am learning.

Yours as ever,



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Grand Forks, North Dakota
8 January, 1952

Dr. E. S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge 38, Mass.

Dear Dr. Barghoorn:

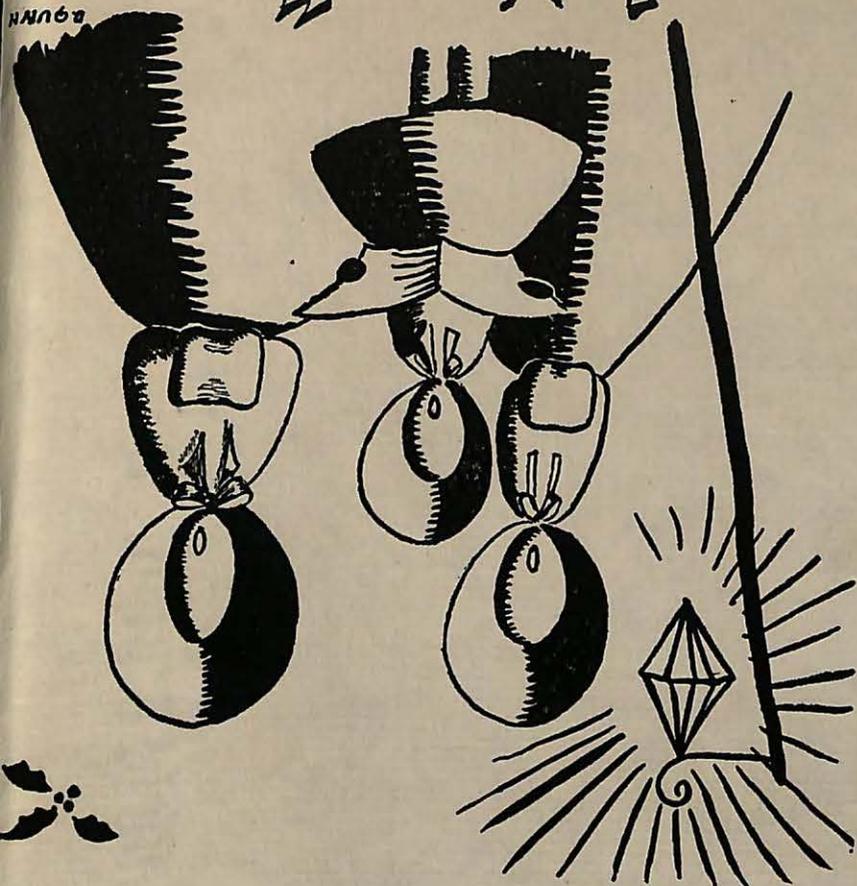
A brief note about the P. & S. of B. L. I have at last been able to grab a few minutes from the turmoil to write Aldrich and ready the thesis to be sent him. I enclose a copy of the letter I sent him.

As I have written Terry, the packages of books arrived ~~day before yesterday~~ *a few days ago*, at the comparatively moderate cost of \$40.06. I appreciate the work she did in getting them on their way and everybody's understanding-ness in letting me store them at the Labs.

Your answers to my queries have all arrived. You needn't worry about the brevity of answers--if I thought you would feel obliged to reply at length I would hesitate to bother you. I hope all goes well, as usual, around the Labs. Betty and I sorely miss the familiar faces.

Yours as ever,

22 NOV 22



1951

Greetings from the far East
- Hows the winter out there
bad enough here.

Your ms is much improved -
more about it later.

About the plastics - it is
Wards Bin-plastic. They can
give you all the dope. Address
is Rochester N.Y. You can
embed wet lignite as long as
there is no free water (liquid)
on the surface.

Elw S. Barghoorn

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
Region V
Box LL, University Station
Grand Forks, North Dakota

December 4, 1951

Dr. E. S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Dr. Barghoorn:

In the course of conversation the other day, I mentioned to Mr. Burr your efforts to embed Brandon specimens in transparent plastic. He has asked me to write you about the method. We would like to be able to prevent lignite samples from falling to pieces, as they do in North Dakota air in a matter of hours, so that exhibits could be set up. Could you send me a few words about where I can get more information on the plastic technique? Have you any other suggestions?

Last July I put some lignite blocks in glycerin and evacuated the container for several hours. The impregnated blocks are on my desk, still visibly unchanged, but I suspect that this will not last more than a year or two. If the same degree of impregnation and protection could be obtained in a permanent way, it would make possible permanent exhibits of lignite blocks and Brandon fruits.

Sincerely,

ALFRED TRAVERSE
Coal Technologist

cc Region V
Dr. Traverse ✓
File

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

November 15, 1951

Dr. Alfred F. Traverse
U.S. Bureau of Mines
Lignite Research Laboratory
Grand Forks, North Dakota

Dear Al:

Sorry we had to part so precipitously in Ann Arbor since there were several things I should like to have talked over with you.

Firstly, it is quite propitious that Dr. Aldrich took the stand he did re publication, and I would encourage you to get the thesis MS in to him as soon as possible. It would perhaps be best in marking it up if you first indicate the contemplated omissions in the text. Some of the discussion re methods can be eliminated, although some parts should not be eliminated since they were worked out as a part of our joint laboratory procedure. Moreover new methods and techniques are a luring aspect these days in paleontological procedures. I should also suggest that insofar as your notes allow you, expand the description of the species, and, more important, of living pollen forms, to the extent possible in order to allow as thorough presentation as may be made of the morphology of pollen grains of living members. This aspect in the distant future may be of more permanent interest than that of the fossil forms described.

As soon as you find time to go over it again, I should like to see the MS on the preliminary study of the Brandon deposit which you sent on. With a few changes and additions I think this paper will be of wide interest and it is in this connection I should like to add a few points.

I hope you had a good trip to the west and shall be interested to hear of your journey.

Very sincerely yours,

Elsie S. Barghoorn
Elsie S. Barghoorn

ESB/tjl

November 30, 1951

Dr. Elso S. Barghoorn
The Biological Laboratories
Harvard University
Cambridge 38, Mass.

Dear Dr. Barghoorn:

Your "last letter", to which you referred in Detroit, had indeed missed me in Pittsburgh and was waiting here when I arrived. The enclosed letter from Aldrich explains some of the things he said. I have made a copy of it and am returning the original.

I also have your letter of November 15. I hope to be able to get that thesis into the mails before long. The short paper for Science I have retouched, including almost all of your suggested changes and some of my own. A page of notes on the changes is appended to the paper--I think it's in pretty good shape now. If Science won't take it, perhaps Amer. Journ. Sci. will. How do we handle its submission?

The trip up here was very much enjoyed, despite bad road conditions nearly all of the way. We stayed a couple of days in Urbana. I believe that my lecture was well received, although I had been so busy packing household goods and in travelling (Detroit-Ann Arbor-St. Joseph-Indianapolis-Urbana) ever since Kosanke asked me, that special preparation was out of the question. I am glad that they arranged it. Dr. Tippo asked several questions in the after-period, the last one about what I thought on the question of whether the stele includes the secondary body or not--this seemed remote but fortunately I was fairly well primed on the subject from my reading on M. Thompsonii. I also spent a few hours with Wilson Stewart, who has a well-equipped coal ball laboratory going in the bowels of the Natural History building.

We were fortunately detained in Minneapolis a day by icy roads, and so I spent a few hours with Drs. Dahl and Abbe there. They were very nice in giving over their afternoon to me although I arrived without notice. Dahl is certainly a prince.

The laboratory here is magnificent--modern in every respect, spacious and comfortable. I have two rooms, both about the size of good old #385. I also have a large darkroom almost entirely to myself. I am as yet short on equipment, although they got for me a nice new Spencer scope with photographic accessories, including a 35mm. camera for kodachrome. The reduction-in-force policy has now hit here, so that my quota of assistants has dropped off a bit--to 0.

2. Barghoorn

Betty and I are getting settled in our University "hutment", which is not unlike the affairs behind the biology labs but considerably better designed and equipped. Betty is going to faculty teas, and we are apparently considered faculty for most purposes. Life here seems no hardship--buildings are well insulated and heated and everybody dresses warmly. It was down to -17° the other night, and the only suffering I noted was automotive--cars just will not start unless one uses one of the new "Freeman Headbolt Heaters", which replace a regular bolt and heat the water-jacket from house current supplied with an extension cord. It is plugged in when one gets up, to have the car ready in 30 minutes. They are almost universal here.

Best wishes to all,

A. Traverse to E. S. Barghoorn.

Notes on changes in Pollen Paper

(Page numbers refer to new copy)

Page #

1. Early for lower--o.k.
1. Have sidestepped residual vs. sedimentary question.
1. Megafossil is better than macrofossil..cf. megaspore vs. microspore. Macro- really means long. J. Schopf called this to my attention.
2. I have rewritten the section on botanical determination. I think my points are clearer now.
2. "Tertiary plants belonged" this is a question I have thought about a bit. It seems to me that Tertiary plants no longer exist but only their fossil remains. When speaking of Tertiary plants I would rather use the past tense, reserving present tense for extant plants or for fossils. Examples:
 - a. "Carboniferous plants were probably green."
 - b. "Mesozoic angiosperm fossils have the following characteristics..."I am still open to arguments on this somewhat pedantic but interesting point.
3. Rewrote sentence on preparation of reference collection, as suggested.
5. Compromised on sentence about requirements for Gordonia and Cyrilla.
6. Science always abbreviates Journal as J. and American as Am.

26 October, 1951

Dr. E. S. Barghoorn
Harvard Biological Laboratories
Cambridge 38, Massachusetts

Dear Dr. Barghoorn:

Your letter and the typescript came this morning. I am very glad to have had your advice and help on this paper, as I hope I shall on future papers. As was probably evident, the thing was not intended to be in final form, though some mistakes which crept in between my manuscript and the typist (e.g., Am. Sci. for American Journal of Science) were a surprise to me and will make me more cautious in examining typescript in the future.

I accept the idea of joint authorship gladly. I would have suggested it myself but for fear that the quality of the paper was not up to your standards. It will be a great professional boost for me, and I appreciate your asking about it.

I have almost finished my work here--the method of making thin sections I have mastered, by making hundreds, including *almost* 200 in the series running from bottom to top of the 12 foot bed which I worked. I am very proud of this series--I wish I could set some of them up on your 'scope to show you. It is obvious that the variety of plants and plant tissue is greater than some have assumed. I am now working on the petrographic analysis, calculating the % of the various petrographic components ("anthraxylon") for example).

We leave for North Dakota 1 November and will take 2-3 weeks for the trip, including the time in Detroit. I shall finish the revision of the paper this weekend, if possible, and send it to you with the negatives of the plates from my thesis--the negatives--proper are in transit to Grand Forks. Perhaps you can bring the paper to Detroit, if you have time to work on it in the meanwhile. Otherwise send it to Grand Forks.

Alfred Traverse to Dr. E. S. Barghoorn

I am having Mr. Parks send you a copy of the most recent publication on the method of preparing thin sections of coal. The paper is out of date, and a new one is being prepared. Also, I would point out that the method as now used is shorter and simpler, especially for lignite. The coal is not treated before sectioning in any way, but is simply fixed to the slides and ground down on a series of carborundum wheels and a hone.

A letter I have sent to Miss LaCroix will perhaps be interesting--it's about those boxes of mine. I enclose a copy.

Your comments about the progress of the academic year, hectic as ever, were very interesting to me. I'd like to hear more about your bumper crop of graduate students. If they're paleobotanists, I'll wager that there's been nothing like it since the days of Noe.

Yours,

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

October 23, 1951

Dr. Alfred F. Traverse
Bureau of Mines
4800 Forbes Street
Pittsburgh, Pennsylvania

Dear Al:

I was very glad to hear from you and to receive the copy of the enclosed manuscript. I have been quite rushed this year with various projects and three graduate students, as well as the normal academic grind, hence have not written more.

The news of your activities in petrographic studies sounds very interesting. I am amazed at the speed, with which you indicate, sections can be prepared from fresh lignite. If there is a published account of this method, I would certainly appreciate having a copy. Our histologic methods unfortunately necessitate removing the inorganic material, which is a disadvantage in sedimentary analyses, although, of course, an advantage in studying plant tissue contents.

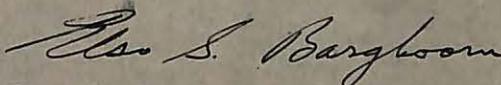
I have looked over your manuscript and made a number of corrections. If I may be frank, it seems to me that it is a bit too telegraphic in style in places, although this is perhaps desired to conform with the normal run of papers in Science. My suggestions and criticisms may not meet with your approval so use them as you wish. A few sentences seem ambiguous and can probably be broken up. I think the paper is fairly well balanced, although it is a bit broader in content than the title indicates. The reverse is usually the case. Please let me know what the reaction is from Science, and don't be hurt if they reject the paper. I had this experience once on the grounds that the paper was not of the type or content which they wished to print, as a matter of editorial policy.

I should be much interested in making lantern slides of some of your pollen photographs for my course, if it is possible for you to send me the negatives. If you are actively using these and don't want to let them out, could you send on the big negatives which were prepared in copying the original plates in the preparation of my copy of your thesis. The slides would be of great use to me in my course. You might be interested in knowing that there are sixteen students taking the course this year, eight graduate students and eight undergraduate.

I do hope that you can get to Detroit to the GSA Meetings. There should certainly be little argument about the pertinence of your work to the subject of the Meetings. If I see you there, we can discuss the question of publishing your thesis.

With best wishes to you and Betty.

Sincerely yours,



Elso S. Barghoorn

ESB/tjl
Enclosure

P.S. After rereading the ms I wonder whether it would not be better to publish this note as a joint contribution, with my name as second author. If you do not wish to do this it will in no way offend me, I assure you. Much of the substance of the paper and part of the conclusions are part of our joint reminitions and joint efforts. Publication of the thesis I feel should be solely your contribution and I shall negotiate further with the G.S.A. on that basis, which I think is fair and just. If this proposal appeals to you I should like to do a bit more editing and revising of the paper but am returning it now pending your word.

ESB.

22 October, 1951

Dr. E. S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Dr. Barghoorn:

This is a brief note about a number of unrelated things. First, about those 16 boxes of my books and things which I left in the Biological Laboratories. I hope that nobody has been inconvenienced by them so far, but I fear that getting them on their way may be some labor for somebody--Terry? I enclose enough labels for at least two per box. Here's what I'd like done about them: 1. Send the boxes marked "miscellaneous" Railway Express, charges collect on delivery. That's easy. About five of the boxes are in this category. 2. Send the boxes marked "books" by book post, which is much cheaper, but more bother.

Since I'd like to be in Grand Forks when these start to arrive, they should be sent to me about the fifteenth of November. The book post items will take about \$50-\$60 in postage, plus possible charges for getting them to the post office. I will send a check for whatever it is as soon as I hear from you. If the money would have to come out of your own pocket, of course, I will send an approximate amount in advance but will not be able to do that until we get to North Dakota.

I enclose also a copy of part of a letter from O. Tippe to Bill S. which may interest you.

Did I ever give you a list of the things I have which will eventually be returned to Harvard? They are: 1. the negatives for the Brandon pollen. 2. the pollen slides with my "types". 3. the material for that odd sporangium from the Frontenac, Kansas, coal ball, which I still hope to work up eventually. 4. the material for that beautifully preserved piece of wood from the large coal ball, in which Bill and I were interested. I hope to do something with that next year also.

Sincerely,

Copy of part of a letter from Oswald Tippo to Willfam Spackman,
dated September 25, 1951.

"....I should be very much interested in seeing Traverse's manuscript, since you recommend it so highly. However, I imagine that he will find the printing costs prohibitive. At the present time, we allow 8 Journal pages for each author; additional pages cost the author \$25.00 each. I estimate that Traverse's paper would take $28\frac{1}{2}$ Journal pages, plus 10 pages for plates, making a total of $38\frac{1}{2}$ Journal pages. If we were to publish the whole thing it would cost him \$763.00. Perhaps he can get the American Academy of Arts and Sciences or some other philanthropic organization to subsidize the cost of publication.

"Your idea of a Memoirs series sponsored by the Botanical Society of America is a good one, but where would the money come from? It is hard enough now to get botanists to pay the annual dues which, at \$7.50 a year, are small enough."

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

October 24, 1951

Dr. Alfred F. Traverse
Bureau of Mines
4800 Forbes Street
Pittsburgh 13, Pennsylvania

Dear Al,

Professor Barghoorn has asked me to write to you concerning your letter of October 22. I am somewhat surprised at your request for mailing the packages of books at book rate, since it was my understanding from a discussion with you that all packages left would be mailed Railway Express, COD. This was decided on because it was felt that the books, etc. could be sent COD, could be insured against loss and could arrive at the same time. It was on that line of reasoning that I made the offer to send your books etc. to you, thus saving you the financial drain of moving the books twice.

Since it is impossible because of the lack of help this year and the lack of time to send the books by book post, I am following what was my understanding of last spring and will mail the books to you on approximately November 7 by Railway Express COD. I hope that this does not disturb your plans too much.

Life goes on merrily here. Harvard won a football game against West Point 22-21 last Saturday.

Sincerely yours,

Teresa
Teresa J. LaCroix



UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF MINES
4800 FORBES STREET
PITTSBURGH 13, PENNSYLVANIA

26 October, 1951

Miss Teresa J. La Croix
The Biological Laboratories
Harvard University
Cambridge, Mass.

Dear Teresa:

I have your letter of October 24. I guess I did not make myself clear in my letter to Dr. Barghoorn about the boxes. I had no intention that anybody around the labs would do any manual labor on the packages. I thought that it might be possible to have, say, Armstrong, take them to the post office, with the total cost still less than Railway Express rate, which is pretty steep. Betty and I have also discovered that Railway freight is fairly efficient, though slow, but then it is also necessary to have a local freight agent move the boxes (to the station) before they can begin their journey. All in all, you may be right, Railway Express perhaps combines the greatest number of advantages. In any event, I throw the things entirely on your mercy. Whatever method you decide upon will be agreeable, and I appreciate your cooperation. It will be very different in Grand Forks from Cambridge, and Betty and I will appreciate seeing at least the familiar faces of my books.

One favor I do ask: please don't send the boxes until the fifteenth of November. I want to be there when they arrive.

We certainly wish we could fly back to old Cambridge for a weekend or two--we miss our old friends and the old places very much. One piece of personal information which may be of interest: Betty and I are going to live in one of the University's faculty housing projects, in a thing called a "hutment"; I wonder if it will be like those jobs outside of Biol. Labs.

U. S. Bureau of Mines
4800 Forbes Street
Pittsburgh 13, Pa.

4 October, 1951

Dr. E. S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Dr. Barghoorn:

Your letter of September 24 was much enjoyed--seemed just like one of our lab chats of the last few years. I know that the beginning of a new academic year is upon you, realize that you must be very busy, and appreciate your taking time to write. How odd it seems not to be returning to the classroom for the first time in twenty-one years!

My work here goes along well--I have now completed making sections for the twelve-foot column of N. Dak. lignite, using the Bureau's methods. It has been fun. I think the technique has much to be said for it--the sections can be prepared in about fifteen minutes, from a piece of wet lignite to finished, covered slide, and the section includes all of the sediment, including mineral matter. Next step is to make a coal petrographic study of the column, using the Bureau's method: computation of the percentages of anthraxylon, attrital material, fusain, mineral matter, etc.

I am planning to leave here on the first of November and will make every effort to attend the Detroit meetings en route. After my experience with the Minneapolis meetings last month, I shall no longer be so confident in advance, but I shall try to be there. I should indeed like to be a member of G. S. A. and would be pleased if you can arrange it.

Here is the thing for Science--it is basically the abstract for the thesis, I think somewhat improved. It is about the length of most of the technical papers in Science, about ~~2000~~ 1200 words. Can you supply a more complete reference for your Journal of Paleontology article? Please be brutal in your criticisms, if you think it necessary.

As for the body of the thesis, there is much to be done to it by my own calculations, let alone what suggestions others will make. This work will have to wait until I get to Grand Forks.

Yours sincerely,

HARVARD UNIVERSITY
THE BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE 38, MASSACHUSETTS

Sept 24, 1951

Dear Al,

This is an unconsciously late date to be replying to your very interesting and informative letters of the past few weeks. In fact this letter is not intended as a reply but a 'stop-gap' to let you know they will not go unanswered. You raised many questions in your letter of August 24, some of which I hope have already straightened out. It is probably overwise to have to learn a lot of new techniques, fresh out of graduate school, but I feel sure they will be of much value in the next year - in fact I somewhat envy you the opportunity because working out your own techniques is a very laborious process. Please let me know how 'other matters' develop from time to time - after you reach Grand Forks.

I was very glad to know that you and Betty had a good trip and an opportunity to visit some old acquaintances. Charlotte Pratt must have been surprised to see you. The visit with the Spachmans last week brings up some points regarding publication of your thesis which should be followed up soon. I agree that Science would be the better place to publish the preliminary note and would suggest that you get it in soon. If necessary!

I will be glad to look it over for suggestions if you wish. The question of the G.S.A. Memoirs I shall follow up with Aldrich this week. I had no time to go into civil I wrote and it is a matter which will involve much correspondence. Perhaps we can discuss it in greater detail and with more of the preliminaries out of the way in Detroit if you plan to go to the GSA meetings in Nov. I shall be there Nov 8-10. Let me know if you plan to go. Which raises the question of your becoming a member of the GSA - did I talk with you about it in the spring? I shall be glad to sponsor it. If you get to Detroit there are many other things I should like to discuss with you.

My summer was profitably spent I think. After the ordeal of moving my laboratory to D-357 I finally got off to the south, not for return until the 10th of September. After I got back a number of personal matters took up considerable time so that I have just gotten back into the "rut". With the term starting Wednesday I shall have my hands full - also have two Ph.D. candidates for field in the spare moments. I was fortunate to get some good peat samples this trip - the ground water was low throughout the south east (although I sat through one $3\frac{1}{2}$ " thunderstorm in the Okefenokee!) and the collecting good. I feel we have pretty well exhausted the south eastern U.S. for Brandon equivalents. The Mimosa question is clearer - the fruits I collected 2 yrs ago were Achras, not Mimosa. I got abundant material of both this time. The tree is limited to tropical Florida.

With more to write than time to write I shall end here. With best wishes also to you and Betty I am
Sincerely yours,
Elsie L. Barstow

U. S. Bureau of Mines
4800 Forbes St.
Pittsburgh 13, Pa.

17 September, 1951

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Dr. Barghoorn:

Betty and I have had a fine visit with the Spackmans, in State College. It is beautiful country, in the Valley and Ridge Province, of course, and Bill kept us on the move all of the time to be sure that we had a look at all the interesting geological and botanical features. Bill and Virginia have a very nice house. It is a good place for the boy, with plenty of room to play out-of-doors. Bill's parents have a nearby apartment. The town is very attractive, though small. He has a spacious office in a new building. His only conceivable complaint about the facilities would be (it is obvious on first glance) the lack of adequate working laboratory space. I think he has it pretty good, as the boys around the Bureau of Mines are fond of saying. In short, we had a good time, they were very nice to us, and I like State College.

Bill and I talked some business. He showed me a very interesting peat bog up in the mountains, of all places. He wondered if I might be interested in working up the pollen. I don't know when I will get time, unless things are easier when I get to N. Dak., which they may be. He also wants me to go down to Chambersburg with him to look into the possibility of rediscovering the lignite there. If my work here gets more under control within the next couple of weeks, perhaps I can go. I do want to finish here and be on my way to the land of long winters by the first of November at the latest.

I talked a little with him about the question of publishing the thesis work. He said he would like to write about the possibility of getting it into the American Journal of Botany. I told him he could write if he wants to but that whatever arrangements are made are subject to your approval. He seemed to think that Science would be a better place for the preliminary statement than American Journal of Science. What is your feeling? If I sent it to Science I could get in almost immediately.

Hunt Institute We were shocked to hear of Mr. Wharton's death. Yours,

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

CENTRAL
EXPERIMENT STATION

4800 FORBES STREET
PITTSBURGH 13, PENNSYLVANIA

24 August, 1951

Dr. Elso S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Dr. Barghoorn:

I have your letters of June 20 and July 13 and your postcard of August 17. A letter from me to you has been on my docket for some time--but rather terrifies me in prospect: it could easily run to ten or twelve pages.

First of all, may I reiterate how much I enjoyed the experience of working under you and how much I appreciate your help in getting me started in this business of making a living by studying the earth. I shall always be gratified to know that my training with you was the best there is. I have been very fortunate, and I know it.

After we left Ottawa, Betty and I drove to Baldwinsville, N. Y., by way of the Thousand Islands. We spent a few days with some of her relatives there, then proceeded to Buffalo to visit Betty's former roommate and her husband. They had been in our wedding party. We spent an afternoon with Charlotte Pratt in Geneva on our way to Buffalo. She is very well and seems happy in her new job. We next stayed a few days with an aunt of mine in Niagara Falls, Ontario, and drove on to St. Joseph, and Indianapolis.

While in Indianapolis we got a car--1946 Dodge sedan which was packed full of our belongings with which we drove here. We looked like something out of "Grapes of Wrath." We have a spacious furnished sublet here which is adequate but very primitive; it belongs to a school teacher during the year. She wrote us a very nice letter before we came which was long on the kinds of birds alleged to be in the yard, but she said nothing about the utilities. The icebox, for example, is efficient in

1849



1949

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

CENTRAL
EXPERIMENT STATION

4800 FORBES STREET
PITTSBURGH 13, PENNSYLVANIA

-2-

Dr. Elso S. Barghoorn

only one respect, its capacity to convert H_2O from the solid to the liquid state, which is prodigious....so fast that we continually forget to empty the drain pan, which then overflows from our porch onto our unfortunate neighbors below. The gas stove is a converted wood range. Poor Betty doesn't have much equipment to indulge her taste for well-prepared food, but we both know it's temporary, and we are enjoying the experience. We will appreciate more modern things when we get them.

I could talk at great length about the work at the Bureau. The fun of learning new things, different ways of looking at familiar concepts and observing different approaches to and attitudes toward research will last some time. I have always enjoyed learning. Add to this the facts that I am going to a new laboratory to begin work on problems which are obviously virgin and that we are seeing parts of the country we have never seen before and are about to live with people probably much different from any we have known. The adventure-index is very high!

There are bad features, though. The Bureau of Mines is devoted to increasing the efficiency of American mines and must so justify its requests for appropriation. I am being quite frankly told to forget that I am primarily a paleobotanist, and there is extremely little likelihood that I shall have much freedom to follow my own research, except within relatively narrow bounds. As far as the Bureau is concerned, spores and pollen are "translucent attritus", and that's all. What they want to know is what kinds of lignite give the best yields in hydrogenation and so forth. I have been promised that I can use my spare time to develop paleobotanical aspects of the lignite problems, and I shall make every effort to do so, but how much spare time will I have? Time will tell.

My training here so far has been in the techniques and theory of coal petrography. I was sent a twelve foot-column from N. Dak. in three large drums and have been instructed in the standard methods of collecting and logging these samples, how to prepare a representative sample from the column for chemical analysis and how to make thin sections of lignite by grinding. I have been given every

1849



1949

A Century of Conservation

Hunt Institute for Botanical Documentation

Dr. Elso S. Barghoorn

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facility and a great many hours of personal attention by Parks and his staff and now have the basic things pretty well conquered, including methods of microscopical examination for the Bureau's standard petrographical analysis. After I finish the column and prepare my report--about another six weeks--I go to Morgantown, Columbus and Urbana to see Cross, Schopf and Kesanke, then on to Grand Forks to set up my laboratory (two rooms and all new equipment). Presumably, when I get to N. Dak. I am on my own, except that I have to file monthly reports on my progress with the projects which I am assigned, and I have been warned pointedly that I won't last long if I don't toe the mark.

The maze of regulations is very distressing. The basic reason for the maze is that everybody is watched, including the big boys, who are supervised closely by congressional committees. Everybody is afraid that he will do something wrong and be carpeted by his superior. There is a prescribed way of doing everything, and one is really forced to conform. Just to take one example, I tried when I first came here to get permission (!) to write letters, that is using the frank and the stenographic facilities. I wrote my supervisor in N. Dak., J. C. Holtz, for permission. He granted it, and I wrote one letter--to you. This had to be in 10-plicate (!). When it reached the desk of the director of the region for approval, he challenged Holtz' authority to grant me permission. He carpeted the chief of my section, who carpeted Parks, who told me that I must get permission from my own regional director, in Minneapolis. I still do not have it, and all ten copies of the letter to you lie fallow on my desk. After a few more days, I shall send it on to you as a personal letter (i. e., not official), if official sanction does not come through.

The regulations even cover one's behavior outside of work. One may take no active part in politics, not even by being an officer, say, of a political club of any kind. The right to vote is, however, specifically granted, which is nice. One may express his political opinions only "in private" (to one's wife?). Of course, these regulations have a purpose, but the deadening effect intellectually is not less for that reason.

Worry about appropriations is omnipresent. Much of alleged waste of government bureaus obviously could be traced to financial problems. Money may be allocated for a certain project one year, the equipment

Dr. E. S. Barghoorn

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bought and the research begun. Next year, for some (any) reason the project may be axed from somewhere above. The newly purchased equipment lies unused and the workers are told to begin something else, even though they may be getting significant and fascinating results! This is not conducive to good research, although it is apparently more often a threat than a reality. The knowledge that anything that one does may be snuffed out is no incentive to original work. Faithful, plodding execution of orders is, then, encouraged by the general atmosphere, though not by specific statement.

I am very anxious to do something about getting my thesis work published. There is much in it which I am sure ought to be published because it is moderately new and important. Doubtless I have also the selfish motive of wanting to have the work recognized by publication.

Last spring I sent the title of the thesis in for a 15-minute paper at the Minneapolis meetings this September. I only yesterday was informed, however, that administrative leave to attend the meetings has been refused--in other words, my pay would be suspended if I went. In effect (according to Parks), this means that I have been forbidden to go. I shall have to cancel the paper, of course.

I was quite enthused about the letter from Aldrich which you sent me 20 June. Chaney would seem a good choice, particularly since he was specifically suggested. As general authorities, perhaps Roland Brown or Chester Arnold might be asked, although neither's main interest is close to the subject of the thesis. The other "proper authorities" will be more difficult. They should probably be pollen investigators. That narrows the field. Would Dahl be considered ineligible because he was on my committee? J. Schopf or L. R. Wilson would be competent, but would they be interested and/or friendly?

Although I have had some difficulty adjusting my daily schedule to report for work at 8:00 (must get up at 6:30) and have been very lazy at the end of the day, I am now able to read and write in the evening and am game to do whatever you think needs to be done to get this job done.

Betty and I are invited to visit the Spelmans in State College this weekend, and I shall ask Bill about sending my "abstract" to the American Journal of Science. It was written with that purpose in mind.

Yours as ever,

Dear Al,

I am very glad to get your letter, which has ^{so} furnished me to these parts. I will write you when I return.

I find my vacation from correspondence too pleasant to spoil at this point. I agree with your comments re Sedgwick.

"Found" one more of the Brandon fruits - on the banks of the Suwannee R. of all places. Hope all goes well. Best to you + Betty
Sincerely
Edw & Margherita



Dr Alfred F Traverse
Bureau of Mines
4800 Forbes St.
Pittsburgh, Penna.

July 13, 1957

Dear Al,

Thank you very much for your communication and news of your trip. It is a very good thing for both of you to get a good rest and I hope that the weather has cooperated in letting you take advantage of the time. Your information on tea collections in Ottawa is of much interest. I had not realized that any of Perry's types were there. I know the Brandon material at Ottawa. It is largely of Perkins' collections - perhaps some of Hitchcock's - described by Annie some years ago.

Since you left, the Sargus project reached its peak of urgency with the annual meeting of the First Iron Works Assn on the 30th of June. I got there on that day - my birthday, as well as your wedding day - after a trip from Philadelphia on the night train. Everything worked out as well as could be expected and the assembly of the wheel was very well received. We had eight buckets and the parts there-to assembled. Since then the entire wheel has been treated, and is ready to put together, i.e. the part of the wheel recovered.

I have done nothing further with regard to publication of your thesis and shall not have opportunity to until this

autumn. However, I have replied to Dr. Alford's letter and we can perhaps best let the matter rest until September. You will doubtless be more than busy in Pittsburgh soon after you arrive.

Next week I am leaving for the south and correspondence until September 1 or thereafter will be a bit sporadic. However, you can reach me by forwarded mail via the Dix Lobe.

From my meeting with Dr. Parker at New Hampton N. Hamp on June 25 I know that your arrival at Pittsburgh is well known. You may find things, in many ways, very different from the past years, but my only advice is to learn as much as you can as quickly as you can.

I hope all goes well with you both,

Sincerely,

Geo. S. Bergstrom

BOTANICAL MUSEUM OF HARVARD UNIVERSITY

Oxford Street
Cambridge 38, Massachusetts

June 20, 1951

Dear Al,

It seems very quiet at this end of the 3rd floor since you left. The student population throughout the building has been thinning out rapidly and the summer calm will soon descend on Cambridge. The post-Commencement lull will be a pleasant change.

I was very glad to read your letter of the 15th, and greatly appreciated the copy of your thesis, which involved much extra work on your part - and Betty's. You did an excellent piece of research in the stems and I do hope you will keep up in the future your 'best' for independent investigation.

The various items left in your room I have taken care of. Your personal belongings are still there, but I presume will be moved soon.

The enclosed copy of a letter from Aldrich will interest you. It is nothing for you to worry over now, but by the end of the summer we should get a few "proper authorities" to read the thesis with a view to approval for publication in the Memoir series of J.S.A. Although Chavely has never

worked in this aspect of paleobotany it might be well for us to send it to him. He has been interested in the Brandon work for many years. What other choices of "authorities" do you have?

I hope everything in the quadrangle between home, Pittsburgh, Indianapolis and Grand Forks is going according to schedule and does not seem too hectic,

With best wishes for you and Betty and for the years ahead
I am,

Sincerely yours,

Ellis S. Barghoorn

August 14, 1951

Dr. E. S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Dr. Barghoorn:

I plan to write you more fully about my training here and the Brandon work, but Mr. Parks and I have talked about the question of dating Tertiary coals by means of the B.t.u. ratings, and I thought that I would pass this information on to you now. Mr. Parks feels that if such modifying influences as overburden and orogeny are taken into consideration, the B.t.u. method is fairly accurate. He confirmed my suspicion that the figures you published in Economic Geology, 45:354 (1950) for the Brandon lignite are not comparable with those published by Parks in Economic Geology, 46:31 (1951), although all the analyses are by the U. S. Bureau of Mines. In the first place, none of the figures in your chart is to a bed moisture, ash-free basis, which Parks' figures are. It is simple, however, to calculate such a figure from your "Coal (as received)" figure--5030 B.t.u. This would put the Brandon in the Miocene on Parks' chart. However, your figures are apparently those on file here as done for G. H. Cady, and the analysis was made on a "lump sample". All U. S. Bureau of Mines samples for analysis are collected at the mine into special cans, with rapid handling to prevent loss of bed moisture and to prevent oxidation. Oxidation is an important factor in reducing calorific value in exposed lignite, according to Parks. A conventionally collected sample of the Brandon lignite would perhaps yield a higher B.t.u. rating than the "lump sample" submitted. Of course, this would be all to the good for our idea of the age of the deposit.

Sincerely yours,



Alfred Traverse, Technologist (Coal)
Coal Constitution and
Miscellaneous Analysis Section

ATraverse/jp

cc Coal Branch, W. O.
HNSorch
BCParks
ATraverse
Dr. John C. Holts, Grand Forks, N. D.
Region V, Minneapolis
Files, Grand Forks
(1) HPG (2) Files

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Sincerely yours,

AT

A Traverse/jp

Alfred Traverse, Technologist (Coal)
Coal Constitution and
Miscellaneous Analysis Section

cc Coal Branch, W. O.
HMStorch
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ATraverse
✓ Dr. John C. Holtz, Grand Forks, N. D.
Region V, Minneapolis
Files, Grand Forks
(1) HPD (2) Files

U. S. Bureau of Mines
4800 Forbes St.
Pittsburgh, Pennsylvania

27 July, 1951

Dr. E. S. Barghoorn
Biological Laboratories
Harvard University
Cambridge, Massachusetts

Dear Dr. Barghoorn:

This is just a perfunctory note, which I hope will be forwarded to you, not an answer to your letter of 13 July, which I have. I might note, though, that Betty and I are comfortably entrenched here, at 5808 Walnut St., and that my training is proceeding, as of the 25th, under the direction of Dr. Parks.

I have just received a letter from Erdtman about a student of his, Mr. Jaan Jerasme, an Esthonian. Erdtman says that Jerasme is visiting Cambridge for a few days in August or September and wonders if I would take him under my wing, which I should be most pleased to do except for the inconvenience of returning to New England. Erdtman says that Jerasme wants to get some polleniferous material from the Gray Herbarium. Perhaps you can help him if you are in Cambridge when he arrives. I am writing him to that effect. Erdtman says that the pollen is to fill some gaps in the collections in his (Erdtman's) collections. Will that impress the folks at Gray?

Yours as ever,

Alfred Traverse

U. S. Mines

COPY

The Geological Society of America
Office of the Secretary

June 13, 1951

Prof. E.S. Barghoorn
The Biological Laboratories
16 Divinity Avenue
Cambridge 38, Massachusetts

Dear Professor Barghoorn:

I am delayed again this time in replying to your letter of
1 June.

When Professors Billings, Carpenter and Shrock volunteer
enthusiastic support for publication, something surely
must be done about the thesis of A.F. Traverse.

A manuscript of proportions specified would, for that reason
along, be publishable by the GSA only in the Memoir Series.
Manuscripts already in hand for this series add up to 5414
pages which means something like two years or more of normal
production. Accordingly then rather than have the manuscript
lie fallow here for any length of time, I would like to
suggest that, with all due respect to the men named above,
you or Mr. Traverse have such people as Ralph Chaney and
others better known to you to be competent, advise with respect
to the material. The manuscript could then be evaluated
independently of this office. Criticisms of competent
reviewers could be considered and in short the whole process
of critical reading, revision and perhaps even some of the
problems otherwise to be handled under editorial supervision
would be short-circuited, leaving it to us only to evaluate
these estimates and apply our editorial markings. May I
tell you also that it has been our policy for some time
to expect an author to meet his full responsibilities and
to present his contribution in the very minimum of words.
Surely anything which the two of you may do to improve the
reading qualities of the manuscript, to condense the contribution
into a minimum of pages would not be lost regardless of where
the paper might be published. We have here two editorial
people and we must ask that our manuscripts be as nearly in
final form as is reasonable before having them deposited in
our custody.

To summarize then let me suggest that you and Mr. Traverse get
the proper authorities in the field of this manuscript to
evaluate the contribution and to have the author apply his
best hand at condensing the contents. When this is done, we
will be pleased to have the manuscript submitted and see what
further can be said.

Sincerely

(Sig) H. R. Aldrich
Secretary

To Dr. E. S. Barghoorn for The Micropaleontologist 2.6.51

Several years ago an intensive study of the Brandon (Vermont) lignite, a coal of early Tertiary age, was undertaken by Dr. E. S. Barghoorn and Dr. W. Spackman. It was felt that the problem would be illuminated most clearly by cooperative investigation of its several aspects. Geological, petrological and macropaleontological studies were done by Drs. Barghoorn and Spackman and are either published or in the course of preparation

~~Mr. R. V. Perry~~
~~office of the Comptroller~~
~~Lehman Hall~~
microfossils, mostly dicotyledonous pollen, in order to contribute

Dear Mr. Perry:
to the total knowledge of the flora which produced the coal and

~~Enclosed is my check for \$10.33, the interest on my student loans. I have finished the requirements for the collection degree and will go to work for the government in August. I intend to publish a thousand species, was prepared and studied for comparison as I begin drawing my salary and will increase this as soon as with the microfossils. Some important results have been yielded~~

by the micropaleontological studies. ~~These~~ results are to be published soon and include:

1. Some modifications of the standard methods of ~~Alfred Traverse~~ preparations.
2. Descriptions of about seventy-five microfossil species, mostly dicotyledonous pollen.
3. Paleocological conclusions from the microfossils on the age of the deposit and the conditions which existed in the basin of deposition.

Alfred Traverse

Watson
(GRAHAM)

Copy of letter to Professor E. S. Barghoorn.

October 14, 1948

Commonwealth of Pennsylvania
Department of Internal Affairs
Harrisburg

Professor Elso S. Barghoorn
The Biological Laboratories
Harvard University
16 Divinity Avenue
Cambridge, Massachusetts

Dear Professor Barghoorn:

On receipt of your letter of October 1 I wrote to Dr. Jack Graham who currently is in charge of groundwater work being done in the Philadelphia District by the U. S. Geological Survey and the Pennsylvania Geological Survey and to Professor E. H. Watson of Bryn Mawr who is a cooperating geologist on our staff and is at present engaged in revising the geological map of the Philadelphia District for us.

Below, I quote from their replies. Should you wish to follow through with either man, I suggest that you do so directly. I will be glad to be of any assistance possible, but direct contact always helps to avoid misunderstanding.

Dr. Graham writes as follows:

"We have no record of lignites in any of our tertiary area wells to date. However, we have not done any work with Bryn Mawr gravels, so I cannot add any information to his supposition in that respect.

I am sending a copy of Professor Barghoorn's letter to Dr. Dorf of Princeton University who has charge of paleobotanical work for the Academy. We have a fairly large plant collection here and he probably can help us if any tertiary lignites are included. If I get any help in this regard from Dorf, I shall forward it to you."

Dr. Watson writes as follows:

"This is in answer to your letter concerning the inquiry of the Harvard University Biological Laboratories concerning the occurrence of lignite of possible Tertiary age in the Philadelphia region. Lignite has been found here and we have specimens of it but it occurs in material of what is, in my opinion, of uncertain age. It was first found in 1879 by H. Carvill Lewis in variegated clays at Marble Hall, Montgomery County and also at Harmonville and other localities near Conshohocken, all of these being on or within cavities in the lower Paleozoic limestones of the Whitemarsh Valley. These were described by Lewis in detail in "The Iron and Lignite of the Montgomery County, Philadelphia", Acad. Nat. Sci. Phila., Proc. 1880 p. 281-291. The lignite occurred as branches, twigs, etc. and lies in a three-foot dark clay stratum at a depth of about 30 feet, and overlain by colored plastic clays. Overlying these clays, probably unconformable, are gravels. Lewis thought the gravels were glacial or late Tertiary but assigned the lignite and clays to an early

Tertiary age, presumably on the basis of the "dicotyledonous" character of the lignite. He describes no leaf impressions. In this paper he refers to Hitchcock's work on the Brandon, Vermont, deposits which were even then thought Tertiary. He also refers to a similar occurrence in Georgia (op. cit. page 289). There is also a paper by J. P. Lesley on a somewhat similar occurrence of lignite with clay in limestones near Chambersburg in Franklin County, Pennsylvania (Am. Philos. Soc., Proc. #9, 1865, pp. 463-482). Here also Lesley thinks these are of Tertiary age and again refers to the Brandon deposits.

(sic) → In subsequent years a change of opinion occurred. In the Philadelphia folio, with very little description, W. B. Clark and B. L. Miller assigned the variegated clays of the Whitemarsh Valley to the lower Cretaceous Patapsco formation with the overlying gravel as Quaternary, Pensauken. The nearest Patapsco to this is 25 miles to the south and the correlation was made on the basis of the lithologic similarity alone. This point was stated to me repeatedly by Dr. Miller.

In the 30's I studied and mapped the upland gravels and so-called "Coastal Plains" outliers in the region and tried to correlate them with certain physiographic phenomena. I was of the opinion that they may be all of late Tertiary or Pleistocene age. To this end I had Dr. Ruth Patrick of the Philadelphia Academy look for diatoms and foraminifera in these clays but none were found. She also looked at the lignite but could not determine its age.

No more of the lignite can be found, but Miss Bascom has a specimen located in her handwriting as gotten from near Harmonville. Possibly more is in the Academy's collection. I have always intended to study this lignite further: by making thin-sections and sending it to someone like Roland Brown at the National Museum.

I don't know whether this information helps you but it is a problem in which I am interested and I would be pleased to send some fragments of lignite to the Harvard people if they might be of interest. You might also bring the localities I mentioned to their attention. They may have been long forgotten."

Dr. Jack Graham's address is: Academy of Natural Sciences
19th and Parkway, Philadelphia

Dr. E. H. Watson's address is: Department of Geology
Bryn Mawr College, Bryn Mawr, Pa.

I hope that these two sources of information will provide the measure of assistance you need in your investigation. We consider Dr. Watson to be exceptionally well-informed about the geology of his part of the State.

When you have completed your investigation, we will be very much interested to learn of the result.

Yours very truly,

William S. Livengood, Jr.
Secretary of Internal Affairs

By: S. H. Cathcart, ^{Director} Bureau of Topographic & Geologic Survey.

Copy of letter from E. S. Barghoorn
November 16, 1948.

Professor E. H. Watson
Department of Geology
Bryn Mawr College
Bryn Mawr, Pennsylvania

Dear Professor Watson:

Some weeks ago I wrote to Dr. Cathcart, director of the Pennsylvania Geologic Survey concerning Tertiary lignites reported in Pennsylvania. In his reply he stated that he had written to you and included in his letter extracts from your reply to him. I am not sure how much he told you of what we are doing here in our study of the paleobotany and geology of the Brandon lignite. The latter deposit is of extreme interest and has yielded a rich and complex flora of which it has been possible to identify a considerable percentage of the genera represented by seeds, fruits, wood and pollen grains. A large part of the flora is unidentified as yet. Six of the genera most accurately determined botanically are limited in their present geographic distribution to latitudes south of the Delaware Capes. The climatic interpretation deduced from such facts is indicative of an earlier rather than later Tertiary age. In addition a considerable number of extinct species occur in the deposit. Some of these are very unlike any modern species of warm temperate North America or Asia, yet clearly belong to modern genera. This aspect of the flora is also indicative of an earlier rather than later Tertiary age.

However, the determination of the age of the Brandon flora is still unsatisfactorily settled owing in part to the absence of other Tertiary floras with which to correlate it. The lower Eocene floras of the southeastern states are distinctly different, although E. W. Berry made several efforts to correlate the Wilcox with the Brandon. It would therefore be of great interest to us here if samples of the Pennsylvania lignites could be studied with a view to possible correlation with the Brandon. The most useful method would be a comparison of the pollen flora and for this purpose small samples of the non-woody component of the lignite (or lignitic clays) would be best.

I should greatly appreciate receipt of any samples which you might send to me for study.

Sincerely yours,

Elsie S. Barghoorn
Assistant Professor of Botany and
Curator of Paleobotany.