

LEAF LITTER



Contents

A Random Selection Of Autumnal Haiku	2
Signs You're In Grad School Too Long	2
Try A Botanical Sudoku	3
The Cook's Corner	4
Play Plant Biology Seminar Bingo	5
Old Songs Rediscovered	6
A Gallery Of Leaders	7
Plant Abuse!	8
The Best Day To Start An Experiment	8
Cartoon	8
Sudoku Solutions	9
Saving Money With A Wood Stove	9
The Parts And Layers Of A Root	10
Newspaper Headlines To Think About	11
News Of The Department	12

Volume 19

December 2009

Department of Plant Biology

NC STATE UNIVERSITY

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A Random Selection of Autumnal Haiku

Too cold for flip flops
Yet warm for sweaters and boots
Argh! What do I wear?

Exam 8 a.m.
Studying until all hours
Pjs in public?

No burn? frequent burn?
Plants - rare, threatened, endangered
How can we help them?

Mutants and wild types
Out of control in nightmares
Play nice in the lab

ABD taunts me
Dissertation sits and stares,
Smokes, drinks, snar's. and drools

How can we teach cheap?
Governor's budget empty
Spring semester here

Leaves come down like rain
Mold spores do it like bunnies
Allergies might win

Cranberries, sprouts, beans,
Turkey, ham, sweet potatoes,
Stuffing, pumpkin pie

Top 10 Signs You Have Been In Graduate School Too Long

By Anonymous Graduate Students

- 1..There have been 3 editions of the textbook you teach from since you have been here.
- 2..Most undergrads (and one grad student!) are young enough to be your children.
- 3..The only other student who was here when you got here is now on the faculty.
- 4..You are regularly greeted with a surprised, "wow, are you still here?"
- 5..Most of the professors you took classes with have either already retired or are counting it down.
- 6..You are older than most of the untenured faculty.
- 7..The graduate curriculum has changed 3 times.
- 8..You have long timed out of the GSSP.
- 9..You now feel that you can relate more to Mike Slackenery than Celia or the unnamed grad student.
- 10..Your fellow undergrads now all have their MS and real jobs.

LEAF LITTER

Volume 19
December 2009

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Sponsored By The Plant Biology Social Committee
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Chad Jordan, Vicki Lemaster. Dolores Sowinski,
Alice Wines, Donna Wright

Try A Botanical Sudoku



Each row, each column, and each 3x3 grid (denoted by bold borders) must include all nine different letters of the title word in any order. Solutions on page 9.

BOTANIZED

	I		O	Z				
	Z						I	
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T							B	
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	E	N	I					O
					E	A	T	

INVOLUCRE

I	N	L		E			U	V	
	U	E					C	O	I
	V			R	U				N
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			N						
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V		O			L		C	U	
					E	V			
					I			L	R

GYNOECIUM

	I					Y	O	
	N	C						
	G	O	I			M		
U	O			M		C		
		G	O			U		Y
C				G		E		I
			C	Y			I	
	C			U	I			
I		E	M			Y		G

TRICHOMES

H	T					I		R
		S	R				O	
	M							E
T		R	C					
I			S		R			T
			E	H		O		
C		E	O					
		M		E	S			
			I		M			

The Cook's Corner

Joyce Bruffey's Sweet Potato Casserole

3 c. mashed sweet potatoes (cooked)
1 c. white sugar
2 eggs
1 tsp. vanilla
½ c. melted butter

Mix yams, sugar, eggs, vanilla and melted butter. Pour into buttered 9X11 inch dish. I double the recipe and put it in a 9X13 inch dish.

Topping:

1 c. (packed) light brown sugar
1 c. chopped nuts
1/3 c. melted butter
1/3 c. flour

Mix topping ingredients together and sprinkle over yam mixture. I also double this when I double the sweet potato casserole. Bake at 350 degrees for 30 minutes.

Margo Daub's Sacher Tort

This cake must be baked in a water bath, so you need a pan that is larger than the 9" springform pan for the bath. It is the simplest chocolate cake I know.

Cake:

1 cup (2 sticks) butter
6 oz semi-sweet chocolate (chips or bar chopped)
3 oz unsweetened chocolate, coarsely chopped
1 ¼ cup sugar
5 "large" eggs
1 tablespoon flour

Butter bottom and sides of 9" springform pan. Cover bottom with parchment paper, and butter paper. Add 1-2 tablespoons of sugar and shake to coat bottom and sides with sugar. Shake out excess. Wrap foil on outside of pan to cover bottom and 2" up the side. Set aside.

Melt together butter and chocolates in microwave or in a double boiler. Stir until smooth. Mix sugar and eggs in a large bowl. Mix in flour. Add warm chocolate mixture. Pour batter into prepared pan.

Set pan inside a larger pan. Pour enough boiling water into larger pan to come up 1 ½" up the side of the cake pan. Bake at 325o for about 1 hour until toothpick inserted into the center comes out with a few moist crumbs. Remove cake from water and cool completely on rack. Remove sides and chill cake until you can remove it from the pan base and parchment paper. Spread cake with jam and ganache glaze. Or cake may be frozen at this point to frost at a later time.

Place cake on plate. Spread top with 1/3 - ½ cup of apricot preserves. Cover with glaze.

Ganache glaze:

6 oz semi-sweet chocolate (chips or chopped)
½ cup whipping cream
1 tablespoon liqueur (orange liqueur such as Grand Marnier work well or substitute orange juice or another liqueur)

Heat cream in microwave or in heavy sauce pan until it just reaches a boil. Pour over chopped chocolate in a bowl. Stir until chocolate is completely melted. Add liqueur. Let ganache cool for 10 minutes or so, stirring occasionally until it is still thin enough to pour, but thick enough that it doesn't run off of cake, spreading as needed. Refrigerate cake to chill. Serve with whipped cream.

Note: the basic cake is also good on its own without jam and glaze. Just sprinkle with powdered sugar and serve with whipped cream.

Paul Cancellieri's Momma's Green Gold

3 cups packed, washed fresh basil leaves (tops OK)
1 large (or 2 medium) cloves garlic
7/8 cup olive oil
1/3 cup grated parmesan
1/4 cup pignoli nuts (pine nuts)

In food processor, puree first four ingredients. Add nuts and pulse briefly. Freeze for several months, or keep in refrigerator and use within 1-2 weeks.

This makes a "pesto base" to which you should add more olive oil and parmesan cheese when you use it. Just add enough of each to get the consistency and flavor that you want.

Play Plant Biology Seminar Bingo

(Adapted From PhD Comic #847 By Jorge Cham)

Bill Thompson asks a question	Virus induced gene silencing	PowerPoint template with blue background	You're the only one from your lab in attendance	Excessive use of animation
Speaker can't figure out how to advance slides	More than half the people in the back row are grad students	Any signaling pathway	Entire slide filled with gene sequences	"I know there is a lot going on in this slide..."
You have no idea what is going on	Any mention of <i>Arabidopsis</i>	FREE	Laptop malfunction	Any word ending in "-informatics"
Indecipherable ordination	Does acknowledgements slide at start of talk	"That's an interesting question."	You're the only one here from centennial campus	Work has something to do with climate change or biofuels
Someone leaves early out the back door	Any word ending in "-omics"	Cell phone goes off	Work has something to do with evolution or phylogenetics	Speaker did some part of academic work at NCSU

Old Songs Rediscovered



IN THE 1920S PROFESSORS B. W. Wells and I. V. D. Shunk of the Department of Botany and Plant Pathology (later Botany, still later Botany and Bacteriology, even later Botany again, and now Plant Biology) at N. C. State College of Agriculture and Engineering (now N. C. State University at Raleigh) conducted field research on the Big Savannah. This was an ecologically unique upland grass-sedge bog community in Pender County. A recent cleaning out of an old map cabinet during renovations in Gardner Hall uncovered the manuscripts of two songs which the men wrote in connection with their work. The tunes to which they set their words were of two World War I songs well known at the time, *It's A Long Way To Tipperary* and *Mademoiselle From Armentieres*. They were especially familiar to Shunk, who had served in the army during that conflict. According to field notes kept by Wells, found with the manuscripts, the men were accustomed to sing the songs while relaxing around nightly camp fires at the research site..

Here's To The Big Savannah

(Tune: *It's A Long Way To Tipperary*)

We are out on the Big Savannah
With its great flower show,
We are out on the Big Savannah
With the finest herbs we know;
So goodbye to State College,
Farewell Patterson Hall,
And three cheers for the Big Savannah,
The best bog of all!

The Big Savannah Is Quite A Sight

(Tune: *Mademoiselle From Armentieres*)

The Big Savannah is quite a sight,
Hoop-dee-doo,
The Big Savannah is quite a sight,
Hoop-dee-do,
The Big Savannah is quite a sight,
We're studying it with all our might,
Hip-hooray and hoop-dee-doo.

In winter the land looks dead enough,
Hoop-dee-doo,
In winter the land looks dead enough,
Hoop-dee-doo,
In winter the land looks dead enough
For annual fire has burned it off,
Hip-hooray and hoop-dee-doo.

In spring the savannah comes alive.
Hoop-dee-doo,
In spring the savannah comes alive,
Hoop-dee-doo.
In spring the savannah comes alive
The grass and sedge begin to thrive,
Hip-hooray and hoop-dee-doo.

Throughout the year wild flowers ensue,
Hoop-dee-doo,
Throughout the year wild flowers ensue,
Hoop-dee-doo,
Throughout the year wild flowers ensue
Bog dandelions to asters blue,
Hip-hooray and hoop-dee-doo.

The soil is always water-logged,
Hoop-dee-doo,
The soil is always water-logged,
Hoop-dee-doo,
The soil is always water-logged
That and the fire make it bogged,
Hip-hooray and hoop-dee-doo.

We may forget the sweaty work days,
Hoop-dee-doo,
We may forget the sweaty work days,
Hoop-dee-doo,
We may forget the sweaty work days,
We'll never forget the floral displays,
Hip-hooray and hoop-dee-doo.

A Gallery Of Leaders

FROM A SINGLE PROFESSOR of Horticulture, Arboriculture, and Botany in 1889 to a department of numerous faculty, what is now Plant Biology has first included and then given rise, in whole or in part, to other departments: Horticultural Science, Plant Pathology, Microbiology, and Molecular and Structural Biochemistry. Over its 120-year history this organization has been led by 12 individuals, pictured below.



W. F. MASSEY
1889-1902



F. L. STEVENS
1902-1912



H. R. FULTON
1912-1916



F. A. WOLF
1916-1919



B. W. WELLS
1919-1949



D. N. ANDERSON
1949-1950



H. T. SCOFIELD
1950-1964



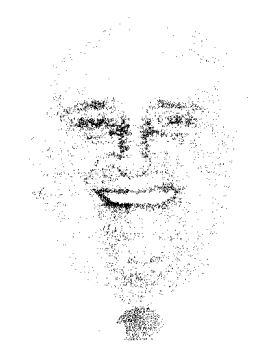
G. R. NOGGLE
1964-1976



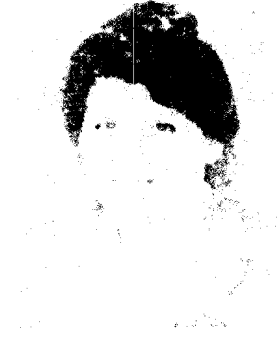
J. P. MIKSCHKE
1977-1984



E. D. SENECA
1985-1994



E. DAVIES
1995-1999



M. E. DAUB
1999-

Plant Abuse!

Contributed by "Saintpaulia ionanthus"

I, AS THE MOST SENIOR MEMBER of a group of plants of the household of a particular graduate student, would like to protest. I protest the treatment of myself and my chlorophyllous roommates and demand that we be treated with respect! We are not part of any experiment and therefore, unlike the many relatives of the lowly cabbage that you so called "scientists" torture regularly, our rights must be considered. As humans seem to have great difficulty noticing the concerns of other species, I will list here the abuses the plants in my household regularly endure to make them more obvious. I pray that these are not experiences common to your plants. First let me list the offenses to our physical health.

1. We are starving! We are so leggy, they would surely accept us on a runway in Paris. You make excuses for closing those blinds and drawing the curtains like safety and security and seeing the computer screen. Not sufficient. Plant nutrition is paramount!

2. We are tired of either dehydrating or drowning. Watering schedules should not be based on your convenience.

3. FERTILIZER PLEASE. You keep wondering why we don't bloom and grow when you are not willing to provide us with anything we need. Good ole' N P and K would be nice to see again.

4. Get the salt out. You know that salt is accumulating from that hard water and the little bit of

fertilizer you gave us a whole year ago. Flush it out with some nice H2O.

5. If you ever, ever drop any of us again and break off our roots "by accident", the man upstairs and I are going to have a little talk. I contend that God does not appreciate careless homicide (or herbicide).

And now let me list those to our mental health. I know you like to pretend that plants don't have feelings or minds. I sometimes think that about humans, too.

6. You barely ever talk to me and NEVER sing or dance for your plants. We're getting depressed and feeling NEGLECTED.

7. When you do talk to us you only talk about yourself and never about your wonderful plants. You could tell me how beautiful I am and how much you appreciate me, you know!

8. I'm bored and under-stimulated. Maybe some animals to observe, or wind, or something besides the window pane getting warmer or colder.

9. Dust me! It's disheartening to feel dirty and unappreciated. I feel like a little ragamuffin. So do all my green brothers.

AND MOST OF ALL...

LOVE US!

Thank you, and Merry Christmas.

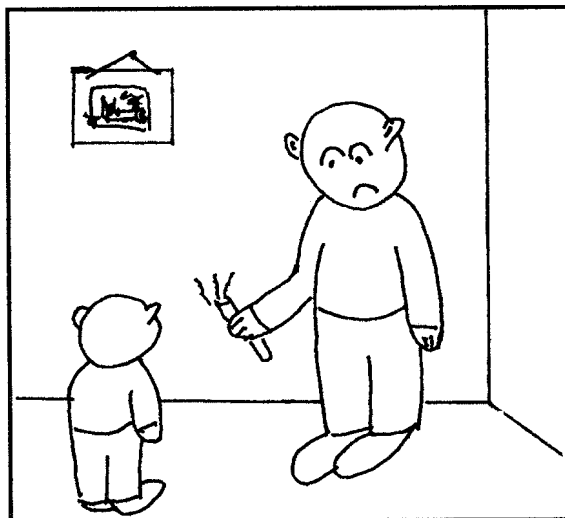
Love,

Planty

The Best Day To Start An Experiment

By An Old Hand

THE BEST DAY TO START an experiment is Tuesday. That is because of its place in the week. Monday is a very difficult day at best: the last weekend is just over, the next one is as far away as it can get, and you're not yet ready to start anything. Wednesday is halfway through the week and by that time there is already far too much to do. By Thursday you are getting tired of everything and are ready for a break. On Friday the weekend is at hand and you are in no mood to begin something. So Tuesday it is.



"I want to go right into DNA research, but my stupid dad says I should finish fifth grade first so I have something to fall back on."

Sudoku Solutions

BOTANIZED

N	I	E	O	Z	B	T	A	D
D	Z	O	T	N	A	B	I	E
B	T	A	E	D	I	Z	O	N
T	N	D	A	I	O	E	B	Z
E	O	Z	B	T	D	I	N	A
I	A	B	Z	E	N	O	D	T
O	B	T	D	A	Z	N	E	I
A	E	N	I	B	T	D	Z	O
Z	D	I	N	O	E	A	T	B

GYNOECIUM

E	I	U	N	C	M	G	Y	O
M	N	C	Y	O	G	I	U	E
Y	G	O	I	E	U	M	N	C
U	O	I	E	M	Y	C	G	N
N	E	G	O	I	C	U	M	Y
C	Y	M	U	G	N	E	O	I
G	M	N	C	Y	E	N	I	U
O	C	Y	G	U	I	B	E	M
I	U	E	M	N	O	Y	C	G

INVOLUCRE

I	N	L	O	E	C	R	U	V
R	U	E	L	V	N	C	O	I
O	V	C	I	R	U	L	E	N
E	O	R	U	L	V	N	I	C
U	L	V	N	C	I	O	R	E
C	I	N	E	O	R	U	V	I
V	E	O	R	N	L	I	C	U
L	R	I	C	U	E	V	N	O
N	C	U	V	I	O	E	L	R

TRICHOMES

H	T	O	M	S	E	I	C	R
E	C	S	R	T	I	H	O	M
R	M	I	H	O	C	T	S	E
T	E	R	C	I	O	M	H	S
I	O	H	S	M	R	E	T	C
M	S	C	E	H	T	O	R	I
C	I	E	O	R	H	S	M	T
O	R	M	T	E	S	C	I	H
S	H	T	I	C	M	R	E	O

Saving Money With A Wood Stove

Submitted Anonymously

(Not counting costs of pollution and global warming.)

ITEM	COST
Stove, pipe, installation, etc.	\$458.00
Chain saw	149.95
Gas and maintenance for chain saw	44.00
Used pickup truck, stripped	12,379.00
Pickup truck maintenance	438.00
Replace rear window of pickup (twice)	310.00
Fine for cutting tree in state forest	500.00
Fourteen cases Michelob	126.00
Fine for littering	50.00
Charge for towing from creek	50.00
Doctor's fee, removing splinter from eye	45.00
Safety glasses	29.50
Treatment, broken toes from dropped log	125.00
Safety shoes	49.95
New carpet for living room	800.00
Painting of walls and ceiling	110.00
Log splitter	150.00
Fifteen acre wood lot	9,000.00
Taxes on wood lot	310.00
Replace coffee table (burned while drunk)	75.00
Divorce settlement	33,678.72
Total first year costs	58,878.12
Less savings on conventional fuel	-72.37
Net Cost of First Year of Wood Burning	\$58,805.75

Plant Anatomy Explained. Part XIX

The Parts and Layers of a Root

THE ROOT OF A PLANT is the section that goes down, usually into the dirt where it holds the plant fast. The root is usually not green like some other sections, so food is usually not made in it but just used. Various things enter the plant from the dirt through the root, but other things enter through other sections from the air, where the root usually isn't. Things can leave the plant, too, but that is not part of this explanation.

The first root of a plant is a tiny thing at the bottom of the first stem, or at the bottom of a section which is much like a stem but goes by another name. The end of this tiny thing has a cover which protects it if it pushes through the dirt as the root gets longer. Little bits of this cover get scraped off as the root pushes, but the cover stays there because new little bits of it keep forming.

Behind the cover is a baby part of the root which never grows up but keeps on making new little bits which make more root. Behind this baby part is another part in which the new little bits stretch out and so make the root longer than it was before. Behind this stretching part is the main part of the root that comes to have layers of different sorts in which different things happen.

The outside one of these layers, which coats the baby part and the stretching part as well as the main part, is made of just one thickness of little bits. Over the stretching part, though, some of the little bits of this layer may stick out some into the dirt like threads or hairs. These threads or hairs may be important in things getting into the root from the dirt, especially common water but also thing that are in the water such as parts of salts.

The second layer inside the outside layer usually has a large number of little bits and so is thicker than the outside layer. It usually has some spaces between the little bits too. The most inside face of this second layer is only one little bit thick and is special because each of its little bits has a strip of fatty stuff around it. This is important because of the effect of these fatty strips on how things move across that inside face to what is inside it.

Next inside the second layer with its special most inside face is a third layer. This one may be continuous or may be broken up into strands by what is inside it. This third layer is important because now and then groups of its little bits may here and there become organized into

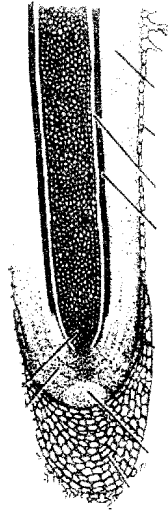
new baby parts that make side roots. These side roots grow out through the layers outside the third layer into the dirt beyond. And the same thing may happen in the third layers of these side roots, making side roots to them, and so on and on.

Inside this third layer is a fourth one that usually isn't a layer at all, but rather is made of strands of pipe-like little bits that carry food down from the top of the plant that sticks into the air where the food is made. The food keeps all of the living little bits of the root alive, unless it is their nature to die anyway.

Inside the fourth layer, or maybe between its strands if it is in strands, is a fifth layer. This one is made of many little bits, most of which die as they grow up and so are empty enough to carry water and salt parts that got in from the dirt up to the top of the plant in exchange for the food that comes down in the fourth layer. In many plants the fifth layer fills the middle of the root, but in some other plants there is a sixth layer of little bits that makes the middle.

In some plants the root lasts long enough to get wider and wider in the oldest area of the main part. This happens because some little bits between the fourth and fifth layers start producing new little bits there that make the fourth and fifth layers thicker and thicker. As this happens the layers outside the fourth layer get broken up and die off. Before they all die off, however, some little bits of the second layer start making new little bits that become a new outside layer of this older area. The new little bits of this new outside layer die after they become covered with fatty stuff that seals off the root, and so things can't get in or out of this older area unless it comes to have cracks. Even then there will be some new fatty covered little bits made which seal the root off again after all.

This is the general scheme of the parts and layers of a root. But there may be differences because different kinds of plants may be different, some more so than others. Some roots, for example, may stick into the air rather than into the dirt, and some of these may be green and make food. Also some roots may come to be in places on the plant other than the first root or its side roots. So you have to be sure to understand the particular root of the particular kind of plant that you happen to be interested in.





Newspaper Headlines To Think About

Which The Writers Thereof Obviously Did Not

**Man Kills Self Before
Wife and Daughter**

**SOMETHING WENT WRONG AT
JET CRASH, EXPERT SAYS**

**Police Begin Campaign to
Run Down Jaywalkers**

**PANDA MATING FAILS; ZOO
KEEPERS TO TRY AGAIN**

**Miners Refuse to Work
After Death**

**JUVENILE COURT TO TRY
SHOOTING DEFENDANT**

War Dims Hope For Peace

**STRIKE NOT SETTLED
SOON MAY LAST AWHILE**

**Cold Wave Linked To
Low Temperatures**

**LOCAL COUPLE SLAIN; POLICE
SUSPECT HOMICIDE**

Red Tape Holds Up New Bridges

**MAN STRUCK BY LIGHTNING
FACES BATTERY CHARGE**

**New Obesity Study Seeks
Larger Test Group**

**ASTRONAUT BLAMED FOR
GAS IN SPACECRAFT**

**LOCAL HIGH SCHOOL
DROPOUTS CUT IN HALF**

**Hospital Sued by Seven
Foot Doctors**

And the winner is:

**TORNADO RIPS THROUGH
CEMETERY; HUNDREDS DEAD**

CASH FOR CREDIT: NEW MEASURE TO SOLVE PLANT BIOLOGY FISCAL CRISIS?

Plant Biology, Athletics Agree On Recruiting Pact

By Sally Cornia

In accordance with a recently signed cooperative agreement the department of Plant Biology and Athletics will work together to recruit undergraduate athletes who will major in plant biology.

Formulated after almost a year of intensive study, the new arrangement is designed to increase enrollments in plant biology and at the same time boost the scientific literacy of student athletes. Such athletes will be offered a special option in the plant biology curriculum in which classes are taught only in the off-seasons of the students' sports.

Plant biology faculty members will accompany athletic representatives on their recruiting trips, and the department will host special activities when prospective athletes visit the university. These activities will include discussions on such topics as campus parking regulations and the location of the library.

A plant biology spokesperson was enthusiastic about the new arrangement. "Unlike most plant biology alumni," he said, "such athletes who turn pro after their college careers will be able to contribute significantly to the department endowment."

For The Latest News Of
The Department
Check The Leaf Litter Tweets
On Twitter

FRIENDS OF DEPARTMENT WITH NEW PLAN

Money Would Raise Students' Grades

Faculty May Not Approve

By "Tapp" Root

If a proposal by a department support group is implemented, students taking courses in Plant Biology will have a way to assist the department in this time of fiscal stress and at the same time improve their test scores.

According to the plan, any undergraduate student who contributes at least fifty dollars to the Plant Biology Enhancement Fund may choose to raise his or her scores on any two course examinations by ten points each. Any graduate student who gives at least thirty dollars may raise one test score by five points. These opportunities will recur each semester.

The proposed policy is the result of over two weeks of deliberation by the Friends of Plant Biology, an unofficial organization the purpose of which is to promote and assist the department. The suggestion of this group is designed to assist the department in meeting instructional exigencies occasioned by university and state budget-trimming. So, according to a Friends spokesperson, money raised in this manner would be used strictly for instructional purposes, including refreshments for seminars and graduate oral examinations.

Institution of the policy by the department faculty, however, will apparently face tough opposition. Dr. Rebecca Boston, chair of the Course Standards Subcommittee of the departmental Committee on Academic Excellence and Classroom Maintenance, has already announced that she will fight the proposal. Also asked to comment, influential professor Dr. Wendy Boss said, "I've seen a lot of dumb ideas around here, but this one beats all. If this takes effect, I retire the next day."