



Tuesday, May 31,
2005

The burden of bearing a massive penis



Maybe half of my audience here will be familiar with this problem. You're a man, and you're hauling this massive, ummm, package around in your pants everywhere you go. Other men fear you, while the women worship you...yet at the same time, your e-mail is stuffed to bursting with strange people making friendly offers to help you make it even bigger. It's a dilemma; you think you would be even more godlike if only it were larger, but could there possibly be any downside to it? (There is a bit of folk wisdom that inflating it drains all the blood from the brain, but this is clearly false. Men who are stupid when erect are also just as stupid when limp.)

A couple of recent studies in fish and spiders have shown that penis size is a matter of competing tradeoffs, and that these compromises have evolutionary consequences. Guys, trash that e-mail for penis enlargement services—they can make you less nimble in pursuit of the ladies, or worse, can get you killed.

Spiders don't have penises, actually; the analogous structures are modified mouthparts called pedipalps that the male charges up with sperm and inserts into the female's ventral opening to inseminate her. (More details on spider sex can be found in the article **Spider Kama Sutra**). The palps of male

spiders have often evolved into quite intricate structures that are keyed to the details of the female's genital opening.

Many spiders exhibit sexual dimorphism as well, typically with the female much larger than the male. In spiders of the genus *Tidarren*, this trend is carried to an extreme, with males that may be 1% of the female's size. Here's a photo of one of these little guys clinging to his girlfriend's underside, copulating frantically (there is cause for hurry, since she might decide to eat him).

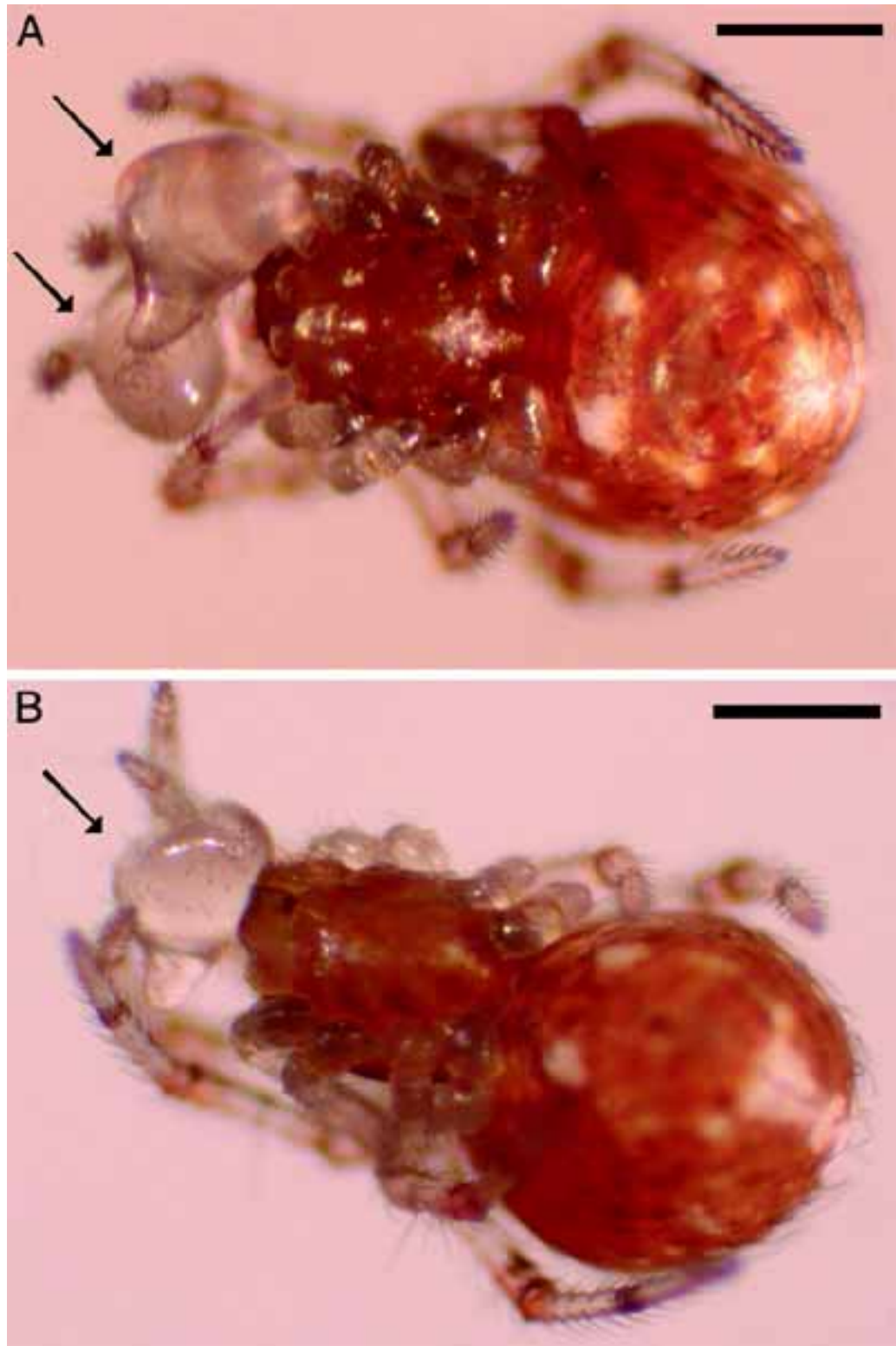
While on the one hand the threat of cannibalism might be a reason to be inconspicuous and unnoticed, on the other the male needs to make species-specific displays in order to get so intimate with his mate, and needs pedipalps that she will recognize.

Perhaps I'm anthropomorphizing overmuch, but there may also be personal reasons—who wants to be so tiny that the female doesn't even notice when you're mating?



Male and female *T. sisyphoides* in copula. The minute male (indicated by the arrow) on the female's ventrum is 1% of the female's mass. (The scale bar represents 1 mm.)

Anyway, *Tidarren* has huge pedipalps. In the photo A below, they are the two gigantic balloon-like structures protruding to the left. Together, they're about the size of his head, and make up about 10% of his mass!



A male *T. sisypoides* before (A) and after (B) removing a pedipalp. Note the pedipalps overlap in the two-pedipalp condition (A), whereas the one pedipalp is carried in a central position after pedipalp removal (B). (The scale bars represent 1 mm.)

In B above, we see a curious thing. Spiders have pairs of pedipalps. Shortly after the adult molt, male *T. sisypoides* trap one in a bit of

spider silk and ***twist it off***.
Voluntarily. A kind of willing hemipenectomy. One has to cringe at the thought, but I suppose I can sympathize—if I had a pair of penises the size of volleyballs and weighing 10 pounds each attached to my cheeks, I might want to get rid of one, too.

The question is, what do the spiders gain from this truncation? Vastly improved athletic performance, it turns out.

The authors measured their peak speed in short sprints, and found that it shot up from 2.7 ± 0.2 cm/s to 3.8 ± 0.3 . They also had impressive improvements in endurance. They'd chase spiders with a soft brush until the poor fellows collapsed in exhaustion and would move no more. Spiders with two intact pedipalps would flop down after 17 min 30 s \pm 5 s. Lose one palp, and they could keep running for 28 min 30 s \pm 45 s. Even more severe, spiders with two palps *died* 53% of the time after collapsing, while the unipalp runners only died 12% of the time.

Note that these spiders have unusually massive intromittent organs, and these kinds of performance enhancements would not be achievable in people—these results have no bearing on Lance Armstrong's situation, nor should anyone fear their track coach showing up with a scalpel.

What about vertebrates, then? In another paper, the authors examined the size of the gonopodia in male *Gambusia affinis* and *G. hubbsi*, the familiar mosquitofish. The gonopodium is a modified pelvic fin that is used as an intromittent organ, and is a

penis-like structure. Different populations exhibit different sizes of gonopodia, and those size differences are retained in the laboratory, so this is a heritable property. Take a look at these representative specimens; which do you think would be more desirable to the ladies, the hunk in A, or the puny girly-fish in B?



Representative laboratory-reared *G. affinis* males derived from predator-free (A) and predator (B) populations. Arrows indicate the gonopodia. Note the larger gonopodium in A. (Bar, 5 mm.)

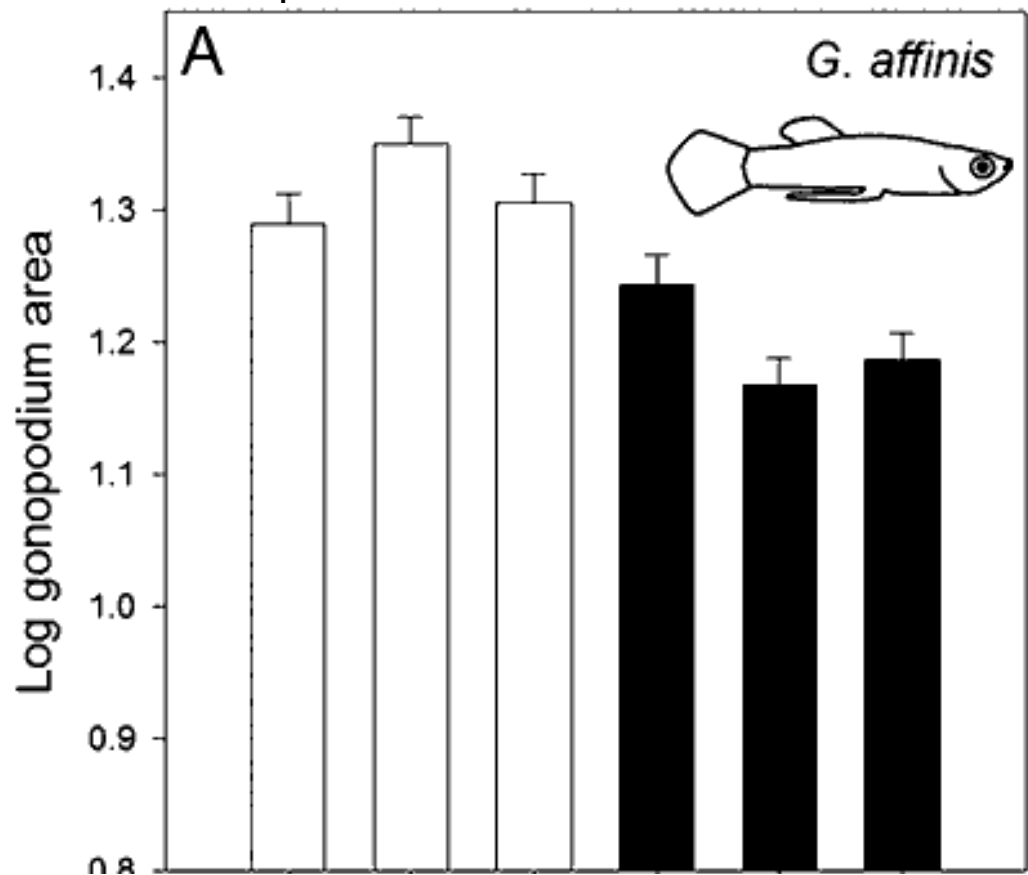
The authors tested whether size makes a difference in a clever way, with fish porn. You can show fish videos of other fish, and they react to the images as they would to the real thing, approaching and trying to interact with them. They showed female fish two videos of a male fish, one unretouched, and the other completely identical except that the gonopodium was digitally enhanced to be 15% larger.

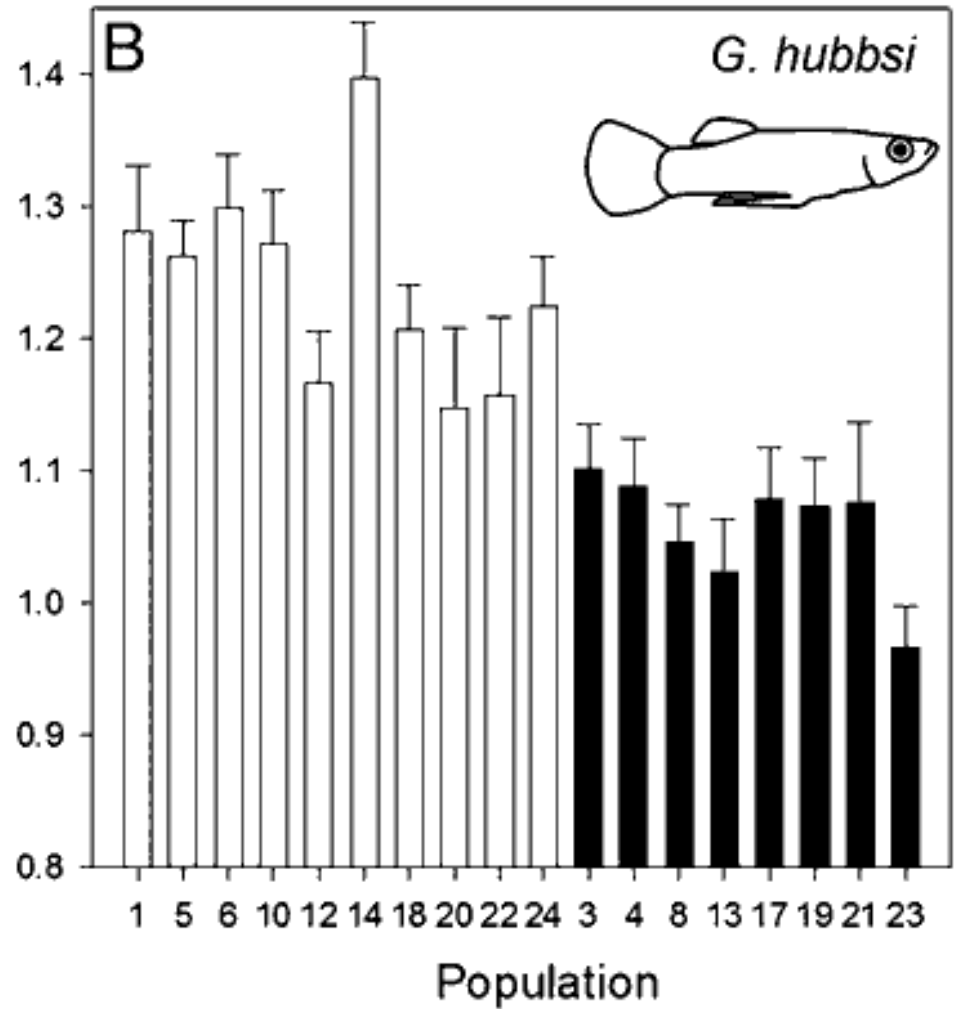
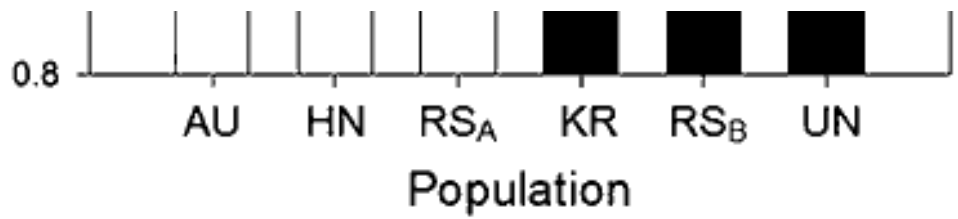
Given a choice, females flirted with the large-gonopodium male 81% more often than the small-gonopodium male. You knew that would be the case, didn't you?

Before you rush to open those

penis-enlarger ads, though, that advantage doesn't come for free. They also measured burst-speeds in startle-escape responses, the fast tail-flick dart fishes use to get away from the lunge of predators... and the large-gonopodium fish were significantly slower. That large object hanging off the fish represents a good bit of drag, reducing speed, maneuverability, and endurance, and may also be something to catch the eye of predators.

This study went a step further and looked to see if gonopodium size has consequences in the real world. They sampled populations from lakes and ponds that were either free of piscivorous predators (the open bars in the chart below), or contained beasts that would chow down on *Gambusia* (the black bars), and measured gonopodium size. Males in predator-free waters had gonopodia that were on average 12% larger than their more harried conspecifics.





Divergence in gonopodium size, controlling for body size, between predator regimes in *G. affinis* (A) and *G. hubbsi* (B). Data were pooled across years for both species. Least-squares means \pm 1 standard error from ANCOVAs are depicted. Open bars represent predator-free populations, and filled bars represent predator populations.

The lesson is clear. If you live in an environment where you can afford to be slow and lazy, sexual selection can take over: the females will preferentially mate with the fish with the larger gonopodia, driving up the average size over generations. If you have to be nimble and swift to stay alive, natural selection will cull out the males with oversized genitals.

Langerhans RB, Layman CA, DeWitt TJ (2005) Male genital size reflects a tradeoff between attracting mates and avoiding predators in two live-bearing fish species. PNAS 102(21):7618-7623.
Ramos M, Irschick DJ, Christenson TE (2004) Overcoming an evolutionary conflict: Removal of a reproductive organ greatly increases locomotor performance. PNAS 101 (14):4883-4887.

Posted by **PZ Myers** on **05/31 at 12:27**

PM •  • 

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Comments:

#1: **Nomen Nescio** —
05/31 at
12:53 PM

[...] nor
should anyone
fear their track
coach showing up
with a scalpel.

perhaps we *shouldn't*, but
now that the mental image
has been planted, how are
we supposed to *stop*?

#2: **Geral Corasjo** —
05/31 at
01:09 PM

Do you
believe the
same thing
happens with breasts for
women too, since we're on
the sexual thing today? ;)

Perhaps the guys are more
attracted to larger ones, but
back in the day when you
had to run from predators,
the women with larger ones

were perhaps too slow.. so theres an inbetween equilibrium like the fish's penis.

Odd topic today, odd topic.

#3: **Burt Humburg** —
05/31 at
01:10 PM

Actually, track coaches back in ancient Greece would have showed up with a scalpel... to remove the spleen!

Sherwin Neufield has a great book called *The Mysteries Within* that talks about the history of spleen awareness and research. Essentially, the pain in your sides you feel when you run used to be thought to be the result of the spleen acting up. So, the ancient Greeks removed it. Apparently, the phrase "Running like a man despleened" was quite the phrase.

BCH



#4: **coturnix**
— 05/31 at
01:30 PM
Oh-oh, it is time for penis-blogging

again!

Nice examples of evolutionary trade-offs. Thanks.

#5: **Steve R**
— 05/31 at
02:01 PM

Whoever "intelligently designed" the copulation mechanism of spiders was one sick dude.

#6: **Jeff Chamberlain**

— 05/31 at
02:53 PM
Superb. Still
yet again.

#7: **The Bad Astronomer**

— 05/31 at
03:42 PM
First of all,
this is the
funniest

article I have seen from you
yet. Brilliant!

Second, you scientist you,
you didn't account for all the
controls. I suspect that any
impediments of a larger
member as it pertains to
flight or sprinting would be
substantially mitigated by
the use of underpants. Or,
failing that, some other sort
of restraining garment.

I am not sure if such things
are available for spiders,
though I wonder if such
things can be bought on the
web. They are in fact
available for mosquito fish,
however. They're called
codpieces.

#8: **Aaron F.**

— 05/31 at
03:51 PM

"I suspect
that any
impediments
of a larger

member as it pertains to
flight or sprinting would be
substantially mitigated by
the use of underpants. Or,
failing that, some other sort
of restraining garment."

For fish? Maybe. But sorry,
spiders... I would guess that
their situation is a simple
matter of $F = ma$.

Just out of curiosity, do you
know what confidence level
the error bars on those

graphs represent? I was surprised out how clean the results were!



#9: **Jeebus**
— 05/31 at
04:45 PM
Steve R:

Whoever "intelligently designed" the copulation mechanism of spiders was one sick dude.

Please send me a check for \$1700...

...to pay for the repair of my laptop, upon which you caused me to spit my carbonated beverage.

#10: **Ron Sullivan** —
05/31 at
06:47 PM

I have another question

about *T. sisyphoides* and it's not even about that amusing species name. Does the male always or even usually amputate the same pedipalp -- say, right or left -- and, if not, is there any hint about how he chooses which one?

Does he eat it or just leave it behind?

Never mind the ten-pound cheek penises (which would make it necessary to gird one's loins for dinner, I suppose) or the coach with the scalpel; I'm awed before the image of grown scientists chasing spiders around with a brush.

Dang, you guys have all the fun! But what do you want to bet they had grad students do the chasing?

#11: **Lars** —

05/31 at
07:05 PM

I am not
sure if
such things are
available for
spiders, though I
wonder if such
things can be
bought on the
web. They are in
fact available for
mosquito fish,
however. They're
called codpieces.

Eurgh. What a stinker.

Wish I'd thought of it first.

#12: **Richard
G.**

Buchanan

— 05/31 at
07:11 PM

Sorry, but I
am reminded

of:

A soon to be groom, who
deems himself inadequate,
visits a world famous
specialst who gives him a
bottle of medicine with the
caution to take it one
tablespoon at a time until he
is satisfied with his length.
The groom drinks too much
on his wedding night and
downs the whole bottle.
Weeks later, he and his wife
visit the specialist who sees
his member is now dragging
on the floor. The specialist
says he will have to operate.
The wife asks "How long will
he be on crutches?"
"Crutches? says the
specialist, to which the wife
replies "You are going to
lengthen his legs, aren't
you?"



#13:

coturnix —

05/31 at
07:46 PM

This reminds me of a sci-fi story, "Big", by Leah A. Zeldes (from the collection "Women writing science fiction as men"). It begins:

"It all started with a spam"

The technology was nano, and he ended up as an immobile appendage on one end of his enormous member. Of course, he could not track down the Nano-Tech website that sold him the stuff (in order to ask for a counter-treatment).

(the sign-in word is "boys", of course)



#14: **PZ**

Myers —

05/31 at
08:05 PM

They say it's entirely random

which one the male rips off, and they don't say anything about what he does with it; it's mostly chitin, so I imagine it's just left behind. It's a bit disturbing that you think eating it would be appropriate.

I imagine chasing spiders with a brush got really boring after the first ten minutes.

#15: **Dr**

Pretorius —

05/31 at
08:17 PM

I wonder what they told their non-scientist friends after work?

"So Bob Scientist, what did you do today?"

"Well, I spent a half hour chasing a spider around with a little brush..."

This sort of story really just makes science sound exactly like working a temp job, to tell the truth.

Oh, and

If you live in an environment where you can afford to be slow and lazy, sexual selection can take over...

This is yet another reason I should have picked a non-academic career. Stupid sexual selection...

#16: **Ron Sullivan** —

05/31 at
08:44 PM

It's a bit disturbing that you think eating it would be appropriate.

(shrug) Well, efficient. Food's food. I mean, IIRC some mammals eat the placentae after they give birth. There's the hormone rush, and the usefulness of not leaving unnecessary spoor, but the nutrition would be useful too.

Um, no, I've never been around one of those hippie placenta feasts, though I know where to find recipes... "Just like liver!"

And heck, it's only chitin on the outside, like most of the critters they'd eat anyway. Looked comparatively

meaty to me. Hey, has anyone had a look inside the discards to see if they dry out at all before amputation?

The ten-minute boredom threshold is why I thought of grad students. There's a great story about how They figured out that trees gain trunk girth faster if they're allowed to sway in the wind. Yeah -- stake X trees so they're immobile, send out the grad students to untie half of them and shake them for Y minutes every day, retie, measure after a semester or two. Probably good for grad-student biceps enhancement too.

Trackback: Click the green dinosaur on your way out, Okrent #17:

Tracked on: **Majikthise**
(66.151.149.25) at 2005 05
31 20:56:43

Read Paul Krugman's replies to departing Public Douche Bag, Daniel Okrent, formerly of the New York Times. Here's a fine snippet of Krugman's long suffering anti-
invective: Moreover, I not only played fair with my readers, I urged them to check



#18: **jaimito**

— 05/31 at
10:12 PM

I am not a
scientist and
my job
description

does not include chasing spiders with a brush nor shaking trees. An enhanced penis *may* reduce my girl-chasing-around-the-table fitness, but on the other hand, it also *may* save me that exertion. It seems to me I am going to answer that ad.

Trackback: Spider

Sensational #19: Tracked
on: **PhaWRONGula**
(72.9.234.70) at 2005 05 31
22:16:23

What is the matter with Mary Jane? She's smiling so broadly, almost insane. There's secrets she's finding it hard to contain— What is the matter with Mary Jane? What is the matter with Mary Jane? She's writhing and moaning, but not from ...



#20: **jaimito**
— 05/31 at
11:24 PM

Size is important, that's settled. But I heard

colour is even more important! Painting birds of a more vivid colour cause them to become irresistible for females. Red, it appears, is specially attractive. Also some of our primate cousins have evolved spectacular purple penises. Does it work? Let it be no misunderstanding! My interest is strictly academic!

#21:
Pericles —
06/01 at
02:41 AM
Jaimito,

Primate purple prose!! There was a chap I heard about who paid both a substantial price and then the ultimate price for a large penis. He spent many thousands of dollars for an enlargement and looked forward to exercising his new weapon. The morning after recovery, he hopped out of bed and pole vaulted from the 5th floor.

Pericles

#22: **That Girl** — 06/01
at 07:58 AM

If you really want an interesting experiement, ask the women you know to rank their lovers in order of how good they were in bed. Then to rank them in order of penis size. I have found that although most women will SAY they like a large penis, size has nothing to do with how they are rated as lovers and in most cases, the larger the penis the worse the lover. I have never done an official study, but it's a fun and fascinating game anyway.

#23: **Molly, NYC** —
06/01 at
10:09 AM
it's mostly chitin . . . <i>

<i> Food's food

. . . which is why the thrifty T. sisypoides goes for Pedipalp Helper™, for a great-tasting dinner the whole clutch will love.



#24: **Jeremy Osner** —
06/01 at
11:08 AM
it's mostly chitin . . .

I read this as "chitlins" as spent a while trying to figure out what you meant by that...

#25: **Jody** —
06/01 at
12:12 PM
PZ--

Have you ever taught, or thought about teaching, a class simply on "Animal

Sex?" Think of all the unsuspecting college students you could sucker in, thinking they're getting an easy "A" by watching copious copulation programmes: sitting there in the dark, waiting for you to press play on the VCR, and leaping back in shock as a Tidarren twists its ummm... balls off?

Who said teaching isn't fun?

#26: **Jeremy**

Henty —

06/01 at

04:35 PM

The Bad

Astronomer

wrote: I

suspect that any impediments of a larger member as it pertains to flight or sprinting would be substantially mitigated by the use of underpants.

I reply: I used to practice aikido and I can testify to the value of taut underwear. Aikido doesn't involve actual flight, but it does require taking falls from a height. Loose shorts allow the male gonads to ricochet off the inner thigh in a most eye-watering manner.

#27:

BotanicalGirl

— 06/01 at

07:20 PM

*you think
you would be
even more*

godlike if only it were larger, but could there possibly be any downside to it? (There is a bit of folk wisdom that inflating it drains all the blood from the brain, but this is clearly false

Well, not entirely false. I knew a guy (not in THAT way, but well enough to trust him) who was big

enough that he would get light-headed if he tried to keep it up for too long. Maybe it was just his particular physiology, but quite a bit of blood can be involved there.

Nice writeup! Quite an interesting read...

Trackback: smarter than I #5: Deep Throat edition #28: Tracked on: **decorabilia** (72.9.234.70) at 2005 06 01 20:47:42
Your posting has been included in the most recent "Smarter than I" carnival.

#29:
aquishix —
06/02 at
11:30 AM
#22: *That Girl* — 06/01
at 07:58 AM

If you really want an interesting experiement, ask the women you know to rank their lovers in order of how good they were in bed. Then to rank them in order of penis size. I have found that although most women will SAY they like a large penis, size has nothing to do with how they are rated as lovers and in most cases, the larger the penis the worse the lover. I have never done an official study, but it's a fun and fascinating game anyway.

I've found(via my personal, unstatistical, anecdotal evidence) that the opposite is true. Most women spread the meme that penis size is unimportant, but they're being disingenous. Then again, maybe I'm well endowed *and* a good lover...

Sorry. I couldn't let this claim go completely

uncontested. =)

#30:

aquishix —

06/02 at
11:31 AM

#16: *Ron
Sullivan* —
05/31 at

08:44 PM

It's a bit disturbing that you think eating it would be appropriate.

(shrug) Well, efficient. Food's food. I mean, IIRC some mammals eat the placenta after they give birth.

Yes. I've witnessed a cat do this after giving birth to a litter of kittens.

#31: **fwiffo**

— 06/02 at
01:21 PM

It's possible that the spider would eat the

pedipalp - and those are huge friggin pedipalps. Spiders sometimes will amputate injured limbs by grabbing them with their fangs and yanking them off to prevent themselves from bleeding to death (their hemolymph clots very poorly, but a clean break where the leg joins the body shuts off a sort of "valve"). They will sometimes consume part of the leg afterwards. I've observed tarantulas chewing up and apparently consuming part of their molted skin (though most will just toss it aside and ignore it). Their primary prey, insects, are largely chitin too (though they don't really consume the chitinous parts.)

On the other hand, a mature male spider may be completely uninterested in

eating at all. Most don't live very long by their nature. Cannibalization by the female, like with mantids, is largely exaggerated even though it does happen, but the males still wear themselves out and die pretty quickly compared to the females. Female tarantulas of some species, for instance, have been known to live decades.

Some species of spiders are more opportunistic than others too - tarantulas have been observed feeding on roadkill in the wild, and they've been observed eating hot dogs or even bagels in captivity.

(Note: most of my experience is with theraphosidae (tarantulas), and might not apply to the endowed fellow in this article).

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bold, <i>italic</i>,</p></div>

http://pharyngula.org/index/weblog/comments/the_burden_of_bearing_a_massive_penis/ (22 of 24)6/2/2005 8:47:05 PM

Info

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That is Ms. T. rex, buster
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No self-respecting squid would
be caught dead looking like
this!
Thoughts on the Middle
East, History, and Religion</
b><P> Juan Cole is Professor
of History at the University of
Michigan<P>
The burden of bearing a
massive penis
SCSUScholars: Thoughts on
the passing scene from an
economist and a few guests at
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stcloudstate.edu/~se_cread
State University. imminent

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Submit the word you see
below:



Next entry: **No self-
respecting squid would be
caught dead looking like
this!**

Previous entry: **So bad it's
good**

<< **Back to main**

Science and Society: Musings
That's Our George...

on Science, Society,
Philosophy, Psychology and
Feel like something's missing?
whatever else takes my fancy

Evolving Thoughts: Evolution,
culture, philosophy and
Bidding war!

chocolate! One man's
continuing struggle to come to
terms with impermanence...
"Humanus sum, nihil
humanum a me alienum puto"
- Terence

Glorfindel of Gondolin: Law,
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