

mary roach

Fig. 11.



# boonk

the curious coupling  
of sex and  
science

Fig. 8



Fig. 68



Fig. 3

'Contains everything you ever wanted to know  
about the science of sex but were too afraid to ask'

Guardian



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**BONK**

The Curious Coupling of  
Sex and Science

Mary Roach



CANONGATE

*Edinburgh · London · New York · Melbourne*

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*For Woody*

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Bonk

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## foreplay

a man sits in a room, manipulating his kneecaps. It is 1983, on the campus of the University of California, Los Angeles. The man, a study subject, has been told to do this for four minutes, stop, and then resume for a minute more. Then he can put his pants back on, collect his payment, and go home with an entertaining story to tell at suppertime. The study concerns human sexual response. Kneecap manipulation elicits no sexual response, on this planet anyway, and that is why the man is doing it: It's the control activity. (Earlier, the man was told to manipulate the more usual suspect while the researchers measured whatever it was they were measuring.)

I came upon this study while procrastinating in a medical school library some years ago. It had never really occurred to me, before that moment, that sex has been studied in labs, just like sleep, digestion or exfoliation or any other pocket of human physiology. I guess I had known it; I'd just never given it much thought. I'd never thought about what it must be like, the hurdles and the hassles that the researchers faced—raised eyebrows, suspicious wives, gossiping colleagues. Imagine a janitor or a freshman or the president of UCLA opening the door on the kneecap scene without knocking. Requesting that a study subject twiddle his knees is not immoral or indecent, but it is very hard to explain. And even harder to fund. Who sponsors these studies, I wondered. Who volunteers for them?

It's not surprising that the study of sexual physiology, with a few notable exceptions, did not get rolling in earnest until the 1970s. William Masters and Virginia Johnson said of their field in the late 1950s, "... science and scientist continue to be governed by fear—fear of public opinion, ... fear of religious intolerance, fear of political pressure, and, above all, fear of bigotry and prejudice—as much within as without the professional world." (And then they said, "Oh, what the hell," and built a penis camera.) The retired British sex physiologist Roy Levin told me that the index of his edition of *Essential Medical Physiology*, a popular textbook in the sixties, had no entry for *penis*, *vagina*, *coitus*, *erection*, or *ejaculation*. Physiology courses skipped orgasm and arousal, as though sex were a secret shame and not an everyday biological event.

One of Levin's earliest projects was to profile the chemical properties of vaginal secretions, the only bodily fluid about which virtually nothing was known. The female moistnesses are the first thing sperm encounter upon touchdown, and so, from a fertility perspective alone, it was an important thing to know. This seemed obvious to him, but not to some of his colleagues in physiology. Levin can recall overhearing a pair of them sniping about him at the urinals during the conference where he presented his paper. The unspoken assumption was that he was somehow deriving an illicit thrill from calculating the ion concentrations of vaginal fluids. That people study sex because they are perverts.

Or, at the very least, because they harbor an unseemly interest in the matter. Which makes some people wary of sex researchers and other people extremely interested. "People invariably draw all these conclusions about me, about why I'm studying this," says researcher Cindy Meston of the University of Texas at Austin. That Meston is blond and beautiful compounds the problem. If you are sitting next to Cindy Meston on a plane and you ask her what she does, she will either lie to you or she will say, "I do psychophysiological research." She loses most of them there. "If they persist, I say something like, 'Well, we use various visual and auditory stimuli to look at autonomic nervous system

reactivity in various contexts.’ That usually does the trick.”

Even when a researcher carefully explains a sex-related project—its purpose and its value—people may still suspect he or she is a perv. Last year, I was conversing by e-mail with an acquaintance who was investigating the black market in cadaver parts. She came into possession of a sales list for a company that provides organs and tissues for research. On the list was “vagina with clitoris.” She did not believe that there could be a legitimate research purpose for cadaver genitalia. She assumed the researcher had procured the part to have sex with it. I replied that physiologists and people who study sexual dysfunction still have plenty to learn about female arousal and orgasm, and that I could, with a little trouble, imagine someone needing such a thing. Besides, I said to this woman, if the guy wanted to nail the thing, do you honestly think he’d have bothered with the clitoris?

Early studies of sexual physiology came at it sideways, via studies of fertility, obstetrics and gynecology, and venereal disease. Even working in these areas tended to invite scorn and suspicion. Gynecologist James Platt White was expelled from the American Medical Association in 1851 after inviting medical students to observe a (consenting) woman in labor and delivery. His colleagues had been outraged over the impropriety of a male doctor looking at female genitalia.\* In 1875, a gynecologist named Emo Nograth was booed while delivering a talk on venereal disease at the newly formed American Gynecological Society. The sex researcher and historian Vern Bullough, in the 1970s, landed on an FBI list of dangerous Americans for his “subversive activities” (e. g., publishing scholarly papers about prostitution and working for the American Civil Liberties Union to decriminalize, among other things, oral sex and the wearing of dresses by men).

It wasn’t until the past half century that lab-based science embraced the pursuit of better, more satisfying sex. Sexual dysfunction had to be medicalized, and the pharmaceutical companies had to get interested. It’s still an uphill slog. The current conservative political climate has made funding scarce. Meston plans to seek funding to research fertility—a subject that’s easy to fund but does not interest her—simply to help keep her lab afloat. Several researchers told me they keep the titles of their grant proposals intentionally vague, using the word *physiological*, for example, in place of *sexual*.

This book is a tribute to the men and women who dared. Who, to this day, endure ignorance, closed minds, righteousness, and prudery. Their lives are not easy. But their cocktail parties are the best.

• • •

People who write popular books about sex endure a milder if no less inevitable scrutiny. My first book was about human cadavers, and as a result, people assumed that I’m obsessed with death. Now that I have written books about both sex *and* death, God only knows what the word on the street is.

I *am* obsessed with my research, not by nature but serially: book by book and regardless of topic. All good research—whether for science or for a book—is a form of obsession. And obsession can be awkward. It can be downright embarrassing. I have no doubt that I’m a running joke at the interlibrary loan department of the San Francisco Public Library, where I have requested, over the past two years, papers with titles like “On the Function of Groaning and Hyperventilation During Intercourse” and “An Anal Probe for Monitoring Vascular and Muscular Events During Sexual Response.” Last summer, I was in a medical school library xeroxing a journal article called “Vacuum Cleaner Use in Autoerotic Death”<sup>\*</sup> when the paper jammed. I could not bring myself to ask the copy room attendant to help me, but quietly moved over to the adjacent machine and began again.

It’s not just library personnel. It’s friends and family, and casual acquaintances. It’s Frank, the manager of the building where I rent a small office. Frank is a kind and dear man whose build and



seeming purity of heart call to mind that enraptured bear in the Charmin commercials. He had stopped by one afternoon to chat about this and that—the Coke machine vandal, odd odors from the beauty school down the hall. At one point in the conversation, I crossed my legs, knocking over a copy of a large hardback that was propped against the side of my desk. The book slammed flat on the floor, face up. *Atlas of Human Sex Anatomy*, yelled the cover in 90-point type. Frank looked down, and I looked down, and then we went back to talking about the Coke machine. But nothing has been quite the same since.

I like to think that I never completely disappear down the pike. I like to think that I had a lot of miles to go before I got to the point where I was as consumed by the topic as, say, William Masters was. Masters is dead, but I met a St. Louis social worker who used to work in the same building with him. This man told a story about a particularly troubling case he was working on. The father in the case had told him, that morning, that he wasn't all that concerned about his wife gaining custody of their children, because if it happened, he would go and slit their throats. The case was being decided in court the following Monday. The social worker wanted to call the police, but worried that it would be a violation of confidentiality. Distraught, he consulted the only other professional he could find in the building that morning. (It happened to be Thanksgiving.) It was Dr. Masters.

Masters directed the social worker to take a seat on the other side of his enormous rosewood desk and the man unrolled his dilemma. Masters listened intently, staring at the man from beneath a hedge of chaotic white eyebrows. When the social worker finished talking, there was a moment of quiet. Then Masters spoke: "Have you asked this man whether he has difficulty achieving or maintaining an erection?"

Years ago, I wrote for a women's magazine that tolerated the wanton use of first person among writers such as myself. One month they ran a first-person piece written by a young woman who had vaginismus. I was acquainted with this woman—I'll call her Ginny—and her piece was tasteful and competently written. Nonetheless, I could not read it without cringing. I did not want to know about Ginny and her boyfriend and their travails with Ginny's clamping vagina.\* I would be seeing her at the magazine's holiday party in a few weeks, and now I'd be thinking *clamping vagina, clamping vagina, clamping vagina* as we dipped celery sticks and chatted about our work.

Sex is one of those rare topics wherein the desire for others to keep the nitty-gritty of the experiences private is stronger even than the wish to keep mum on one's own nitty-gritty. I would rather have disclosed to my own mother, in full detail and four-part harmony, the events of a certain summer spent sleeping my way through the backpacker hotels of South America than to have heard her, at the age of seventy-nine, say to me, "Your father had some trouble keeping an erection." (I had it coming: I'd asked about the six-year gap between my brother's birth and mine.) I remember that moment clearly. I felt like Alvy in *Annie Hall*, where he's standing on a Manhattan sidewalk talking to an elderly couple about how they keep the spark in their marriage, and the old man says, "We use a large, vibrating egg."

I've been tripping over the cringe factor all year. It is my habit and preference, as a writer, to go on the scene and report things as they happen. When those things are happening to subjects in social research labs, this is sometimes impossible. The subjects are queasy about it or the researchers or the university's human subjects review board, and sometimes all three. There are times when the only way to gain entrée into the world of laboratory sex is to be the queasy one yourself: to volunteer. These passages make up a tiny sliver of the book, but writing them was a challenge. All the more so for having dragged my husband into it. My solution was to apply the stepdaughter test. I imagined Lily and Phoebe reading these passages, and I tried to write in a way that wouldn't mortify them. Though I've surely failed that test, I remain hopeful that the rest of you won't have reason to cringe.

I promise, no vibrating eggs.

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\* Incredibly, Victorian physicians practiced gynecology and urology on women *without looking*. Even a catheter insertion would typically be done blind, with the doctor's hands under the sheets and his gaze heading off in some polite middle distance. Fortunately, budding M. D.'s were allowed to look upon—and rehearse upon—cadaver genitals, and that is how they learned to practice the Braille edition of their craft.

\* They don't mean to tidy up afterward. See p. 208.

\* FYI, it's the newest use for Botox. Because what paralyzes your brow-knitting muscles will just as effectively paralyze your clamping vagina muscles.

## The Sausage, the Porcupine, and the Agreeable Mrs. G.

### *Highlights from the Pioneers of Human Sexual Response*

Albert R. Shadle was the world's foremost expert on the sexuality of small woodland creatures. If you visit the library at the Kinsey Institute for Research in Sex, Gender, and Reproduction, in Bloomington, Indiana, you will find six reels of audio recordings Shadle made of "skunk and raccoon copulation and post-coitus behavior reactions." (Nearby you will also find a 1959 recording "Sounds during heterosexual coitus" and a tape of the "masturbatory sessions" of Subject 12725, which possibly explains why no one ever gets around to listening to the raccoons.)

Shadle was a biologist at the University of Buffalo in the 1940s and '50s, back before biology had figured out most of the basics of life on earth. While today's biologist spends the days peering through a scanning microscope at protein receptors or sequencing genomes, the biologist of the fifties could put some animals in a pen and watch them have sex. Said Shadle in a 1948 *Journal of Mammalogy* article on the mating habits of porcupines, "Many facts about these interesting animals await discovery." It was Shadle who dispelled the myth that porcupines have to have sex face-to-face; the female protects the male from her spines by flipping her tail up over her back as a shield.

Here is another fact Shadle discovered by watching Prickles, Johnnie, Pinkie, Maudie, Nightie, and Old Dad in the University of Buffalo porcupine enclosure: One of the males, when sexually aroused would "rear upon his hind legs and tail and walk erect towards the female ... with his penis fully erected." (Why do I think it was Old Dad?) This was followed by what Shadle describes as an unusual "urinary shower," the particulars of which I'll spare you. Additionally, an amorous porcupine may hold about "on one front leg and the hind legs, while he holds the other front paw on his genitals."

My point is that if you want to understand human sexual response, then studying animals is probably not the most productive way to go about it. However, for many years this was in fact the way scientists—wary of social censure and career demerits—studied sex. As always, before science gets its nerve up to try something out on a human being, it turns first to animals. And it took science a very long time to get its nerve up to put sexually aroused human beings under scientific scrutiny. Even the fearless Alfred Kinsey logged weeks on the road filming animal sex for study. One particularly productive field trip to Oregon State Agricultural College yielded 4,000 feet of stag film featuring cattle, sheep, and rabbits, though no actual stags. Given the brevity of most animal liaisons, the lessons learned were rudimentary. Basically, what it came down to was that, regarding sex, humans are just another mammal. "Every kind of sexual behavior we had observed or known about in humans could be found in animals," wrote Kinsey colleague Wardell Pomeroy, who obviously never dropped in to the Yahoo Clown Fetish Group.\*

Quite a few scientists in the forties and fifties drove the animal bus way past simple observation

and on into the laboratory. I don't want to delve into these experiments because (a) they don't tell us much about people, and (b) they're ghastly. A study that concludes that "removal of the eyes and the olfactory bulbs and deconstruction of the cochlea fails to abolish copulatory responses in the female cat or rabbit" may tell us something about sadism in human beings but not a whole lot about human copulation.

Many people think that the first to dip a toe in the potentially scalding waters of research in human sexual response was William Masters (aided by his associate—and, later, wife—Virginia Johnson). But long before Masters and Johnson and Kinsey became household names, Robert Latou Dickinson was undertaking the unthinkable, in his sunny, cheerfully appointed gynecology practice in Brooklyn Heights, New York. Beginning in 1890, as part of each patient's initial examination Dickinson would take a detailed sexual history. His patients ran the gamut of turn-of-the-century womanhood; though plenty were well-to-do, he carried a caseload of charity patients as well. Some of these histories were astoundingly intimate.

### *Subject 177*

1897—... At 16 ... slept with another girl—they masturbated each other—suction on her nipples .... Coitus first at 17 and ever since—masturbation was vulvar, vaginal, cervical, mammary .... Friction against clitoris gives strong pleasure—best is from friction on clitoris to start, then friction against cervix with index finger of other hand .... Clitoris not very large but erectile—she has used a clothespin and sausage ....

Dickinson writes in the introduction to one of his books that he was inspired and emboldened by "the frank speech" of some of his tenement house patients. Not only were these women at ease talking about their sexuality, but a few eventually allowed him to make observations (with a nurse in the room, always).

### *Subject 315*

1929: Week after period demonstrated climax: legs crossed—her 2 fingers making about inch stroke about 1 to 2 a second—not hard pressure but sway of pelvis and contraction of levator and thigh adduction—rhythmically once in 2 sec or less. Second orgasm, no levator throb—most of desire and feeling outside but "I like inside too."

It might be tempting to dismiss Dickinson as an iconoclastic pervert, but nothing could be further from the truth. He simply believed that lame sex destroyed more marriages than did anything else, and that "considering the inveterate marriage habit of the race," something ought to be done. It was Dickinson who ushered the clitoris into the spotlight. He was an early proponent of the more clitoris-friendly woman-on-top position. Through measurements and interviews he debunked some persistent clitoral myths. For instance, that the bigger ones are more sensitive, and that good girls don't play with them. (Masturbation, he wrote, was "a normal sex experience.")

It was Dickinson's work that inspired Alfred Kinsey to pursue sex research. Kinsey had been, at the time, applying his bottomless research energies to gall wasp speciation. According to Kinsey biographer James Jones, Dickinson—then in his eighties—gave Kinsey his first contacts in the gay and lesbian communities and turned over dozens of case files of "unorthodox"\* patients he'd come across through the years.

Last but, okay, least, we have Dickinson to thank for the innovation of the relaxing picture on the

gynecological exam room ceiling. The courtesy was inspired by a grueling afternoon spent staring at the blank ceiling above Dickinson's dentist's chair. I may be dating myself (a turn of phrase that no longer hits my ears as a euphemism for masturbation), but back in the early eighties, no women's health center was complete without the ceiling poster of a ring of redwood trees shot from below. So ubiquitous was this image that I cannot, to this day, look at a redwood and not feel as though I should scoot down a little lower and relax.

The first research scientist to make the case for bringing sexual arousal and orgasm into the form and confines of a laboratory was the psychologist John B. Watson. Watson is best known for founding, in 1913, the psychological movement called behaviorism. It held that human behavior, like animal behavior, was essentially a series of reactions to outside events, an entity easily shaped by reward and punishment. Watson's fame, in no small part, derives from his willingness to study human behavior in a laboratory setting. Most of his subjects were children, most notably Little Albert (no relation to Father Albert), the eleven-month-old boy in whom he conditioned a fear of white rats. But Watson saw no reason not to bring adults into the lab as well.

Watson chafed at science's reluctance to study human sexuality as it studies human nutrition on other planets or porcupine sexuality. "It is admittedly the most important subject in life," he wrote. "It is admittedly the thing that causes the most shipwrecks in the happiness of men and women. And yet our scientific information is so meager .... [We should have our questions] answered not by our mothers and grandmothers, not by priests and clergymen in the interest of middle-class mores, nor by general practitioners, not even by Freudians; we ... want them answered by scientifically trained students of sex ...."

Watson's original scientifically trained student of sex may or may not have been Rosalie Rayner, a nineteen-year-old student of his at Johns Hopkins University, with whom he was carrying on an affair. A friend of Watson's, Deke Coleman, says Watson and Rayner "took readings" and "made records" of Rayner's physical responses while they had sex, which would make the pair America's first experimental sex researchers (and first subjects) in the laboratory study of human arousal and orgasm. Coleman further claimed that Watson's wife found the notes and data from the experiments, and that these were used as evidence in the ensuing divorce trial.

Watson's biographer Kerry Buckley dismisses the story about the trial as innuendo. Watson was indeed having an affair with Rayner, and the affair did, to use Watson's phrasing, shipwreck his life. When he refused to stop seeing Rayner, he was asked to leave the university and never again managed to work in academia. But Buckley says there is no evidence to support the rumor of the arousal study making an appearance in the trial. (Mrs. Watson's lawyer did, however, introduce as evidence a cache of love letters, quoted in a different biography of Watson, by David Cohen. Watson expresses his feelings as only the father of behaviorism could do: "My total reactions are positive and towards you. So, likewise, each and every heart reaction.") Buckley is also dubious of the allegation that Rayner and Watson studied their own sexual responses.

Though it would appear that Watson did study *somebody's*. In 1936, a box with John Watson's name on it was discovered in a basement on the Johns Hopkins campus. Inside the box were four scientific instruments. One was a speculum; the other three were a mystery. In the late 1970s, yet another historian, working on a *Journal of Sex Research* article about Watson, heard about the box and contacted its keeper, stating that he wanted to get an expert opinion on the instruments. A photo was taken and mailed to a team of sex researchers in California. "The bent tube with a cage-like end certainly was [an] instrument to insert into the vagina ...," began the researchers. I believe they were right, though I got the sense that an egg beater might have produced the same reply.

The amazing thing about Watson is that, offered a choice between, on the one hand, holding on to

respect, prestige, financial security, and tenure at Johns Hopkins and, on the other hand, holding on to the source of his heart reactions, Watson went with the girl.\* Human behavior isn't quite predictable as the behaviorists made it out to be.

a decade would pass before medical research summoned its courage and hooked up its instruments to live human sex. It was 1932. The researchers, Ernst Boas and Ernst Goldschmidt, knew better than to publish their results in a journal. Their findings appeared quietly on p. 97 of their book *The Heart Rate*. If you are extremely interested in the things that raise or lower a person's heart rate, and exactly how much they raise or lower it, here is a book for you. For example, did you know that "defecating can briefly bring your heart rate down by eight beats per minute? Or that when a heterosexual man dances with another man—and here I like to picture the two Ernsts in a vigorous foxtrot—his heart rate may rise twenty beats per minute less than it rises when he dances with a woman? The authors include no data on what reading *The Heart Rate* does to one's heart rate, but personal observation puts it solidly between "sitting" and "sleep."

It was Subject No. 69 who agreed to go No. 2 while under cardiac surveillance, and it was also 69 who had sex with her husband, Subject 72, while tethered to the scientists' equipment. Boas and Goldschmidt used a cardiometer, which looks from a picture to have been assembled from pieces of Mr. Peabody's Wayback Machine and the control panel of a B-10 bomber. Subjects wore electrodes held in place by black rubber straps encircling their chests. Boas and Goldschmidt include a photograph of a naked female chest modeling the black rubber harness, lending a glint of illicit eroticism to their otherwise staid endeavor. I'm guessing it's Subject 69's bare bosom on display. Goldschmidt's wife Dora is thanked in the acknowledgments for her contributions to the "experiments that extend over a good part of the day and night," so I'm going to go even further out on a limb and speculate that Subject 69 is Dora and that Subject 72 is hubby Ernst.

Because that's what researchers did back then. Rather than risk being fired or ostracized by explaining their unconventional project to other people and trying to press those other people into service, researchers would simply, quietly, do it themselves.

Whoever the couple was, their heart rates during the encounter ranged from a low of about 80 to a rather shocking 146,\* the latter recorded at the third of Subject 69's four orgasms. From the standpoint of sex research, Boas and Goldschmidt's documentation, in 1932, of a woman's multiple orgasms is of far more interest than the rather obvious fact that one's heart beats a lot faster during sex. Alfred Kinsey's data on the prevalence of multiple orgasms, revealed twenty years hence, was met with skepticism on the part of certain segments of the populace who were still adjusting to the notion that women were orgasmic at all. In part, this has to do with the social conservatism of the era. The twenties and thirties were a much looser time than the forties and fifties. I came across a 1950 journal article in which a team of researchers, G. Klumbies and H. Kleinsorge, had recruited a woman who could bring herself to orgasm five times in quick succession. But the authors weren't studying the phenomenon of multiple orgasms; it was a simple study of blood pressure during orgasm. The subject—"our hypersexual woman," as the researchers called her—had been recruited, it would appear simply for the efficiency and productivity of her orgasmic output. And because she could do it hands-free. (She was using fantasy.) The team had found a way to do its study without recruiting people to have sex at the lab (a risky undertaking in the fifties) or appearing to condone masturbation. "Development and subsidence of the orgasm reflex took place without any physical interference," Klumbies points out in the very first paragraph. In other words, *it's okay—she didn't touch herself*.

Another way to get around the seeming impropriety of laboratory fornication was to so thoroughly bedeck your participants in the trappings of science that what they were doing no longer looked like sex. As was the case in R. G. Bartlett, Jr.'s 1956 study "Physiologic Responses During Coitus



Picture a bed in a small “experimental room.” On the bed are a man and a woman. They are making the familiar movements made by millions of other couples on a bed that night, yet they look nothing like these couples. They have EKG wires leading from their thighs and arms, like a pair of lustful marionettes who managed to escape the puppet show and check into a cheap motel. Their mouths are covered by snorkel-type mouthpieces with valves. Trailing from each mouthpiece is a length of flexible tubing that runs through the wall to the room next door, where Bartlett is measuring the breathing rate. To ensure that they don’t breathe through their noses, the noses have been “lightly clamped.” On either side of the bed are buttons for the pair to press, signaling “intromission, orgasm, and withdrawal.” When I first read this I pictured an ATM keypad, with different buttons for each event. Then I realized it was simply one button, which I imagined as being attached to a buzzer providing a madcap game show air, as though at any moment a disembodied voice might ask them, for \$500, to name Millard Fillmore’s vice presidential running mate.\*

I understand why Bartlett did not include photographs in his *Journal of Applied Physiology* article but I have not forgiven him.

None of the trappings of the Respectable Scientific Endeavor were on hand during the project Alfred Kinsey referred to as “Physiological Studies of Sexual Arousal and Sexual Orgasm.” No one was hooked up or plugged into anything other than his or her partner. The studies took place on a mattress laid out on the pine floor of Kinsey’s attic in Bloomington, Indiana.

Kinsey is of course best known for his daring, encyclopedic surveys of sexual behavior. (In the 1940s and early ’50s, Kinsey—with colleagues Wardell Pomeroy, Clyde Martin, and Paul Gebhard—interviewed 18,000 Americans about their sex lives and published his findings in two groundbreaking, best-selling, ultimately career-tanking volumes.) But Kinsey, a biologist by training, was interested in the physiology of sex, not just the habits of its practitioners. In 1949, Kinsey had plans to set up a dedicated experimental laboratory as part of the Kinsey Institute when it moved to a large building. He wanted, in essence, to do what Masters and Johnson would do ten years down the road: observe, document, and understand the responses of the human body to sexual stimulation.

The lab never materialized. Kinsey must have sensed it was too risky to go public with such an undertaking. So he went ahead in secret. Thirty couplings—some heterosexual and some homosexual—and a similar number of “masturbatory sessions” were observed and filmed in the attic of Kinsey’s house. Kinsey had hired a commercial photographer named Bill Dellenback, whose pay, not entirely fraudulently, came out of the institute’s budget for “mammalian behavior studies.”

Because the work was done in secret, Kinsey didn’t recruit his subjects from the public at large. Outsiders—including, says Pomeroy, several “eminent scientists” who had visited the Institute—were filmed if they volunteered and if it was felt they could be trusted, but for the most part, it was an inside project. Kinsey wanted Dellenback to film his own staff. There are three ways to read this sentence, all of them true. Dellenback filmed Pomeroy and Gebhard having sex with their wives and sometimes other people’s wives, and he filmed them masturbating. He filmed Kinsey himself masturbating, in one instance, by pushing a swizzle stick\* up his staff. Dellenback himself, says Kinsey’s other biographer James Jones, reluctantly agreed to masturbate at an attic gathering, though he drew the line at filming himself.

It is difficult to read about the attic sessions and not suspect that there was at least an undercurrent of something beyond research going on up there. Jones describes Kinsey as a voyeur. But the passage Jones uses to illustrate Kinsey’s voyeurism, to me, makes an equally strong case that he was simply a biologist studying sex as obsessively as he had studied gall wasps.

... Kinsey was virtually on top of the action, his head only inches removed from the couple’s

genitals .... Above the groans and moans, Kinsey could be heard chattering away, pointing out various signs of sexual arousal as the couple progressed through the different stages of intercourse. In [his colleague] Beach's estimation, no observer had a keener eye for detail. Nothing escaped Kinsey's notice—not the subtle changes in the breast's skin tone that accompanied tumescence during arousal, not the involuntary twitch of the muscles in the anus upon orgasm—Kinsey saw everything. At one level, it was all very analytic and detached. As Beach looked closer, however, he was certain he detected a gleam of desire in Kinsey's eyes, a look that grew more intense as the action built to a climax.

I wanted to see the purported gleam and decide for myself. I wanted to watch one of the films. Did Kinsey look like a scientist doing research, or did he look like a Peeping Tom? Was he taking measurements? Jotting down notes? Perhaps I could see those too. I contacted Shawn Wilson, the likable gatekeeper for the Kinsey Institute's library and special collections. He replied that if—Wardell Pomeroy states in his book—notes were taken and data compiled from the sessions in the attic, the institute did not have them. The films themselves, he said, were “not available”—meaning, I think, that they still exist but very few people, and certainly not Mary Roach, get to watch them. In his email, Wilson referred to the footage as “the Kinsey stag film,” a fitting enough description, but not one that contributed greatly to its status as scientific documentation.

Kinsey didn't publish research papers about what he learned from watching his colleagues, but he did include it in his second sex volume, in the chapter “Physiology of Sexual Response and Orgasm.” There can be no doubt, in reading this chapter, that Kinsey had a biologist's eye trained upon the proceedings. A Peeping Tom might have noticed that “the anal sphincter may rhythmically open and close” during orgasm, but only a biologist would have noted that people's earlobes swell when they're aroused, or that “the membranes which line the nostrils may secrete more than their usual amounts of mucus.” Who but a biologist would have documented the activity of the salivary glands with the approach of orgasm? “If one's mouth is open when there is a sudden upsurge of erotic stimulation and response,” Kinsey writes, “saliva may be spurted some distance out of the mouth.”

Kinsey didn't supply the average distance covered by the saliva, but I wouldn't be surprised if he calculated it. Some years earlier, he measured the average distance traveled by ejaculated semen. Three hundred men, recruited by a well-connected male prostitute, were paid to masturbate on film at the home of an acquaintance of Kinsey's in New York City. Physicians at the time were claiming that “the force with which the semen is thrown against the cervix,” quoting Kinsey, was a factor in fertility. Kinsey thought it was bunk, that semen was rarely spurted, squirted, or “thrown,” that it mostly just slopped onto whatever surface was closest. In three-quarters of the men, as Kinsey anticipated, that is what it did. In the remainder, the semen was launched anywhere from a matter of inches to a foot or two away. (The record holder landed just shy of the eight-foot mark.) Not one of the two sheets were laid down to protect the Oriental carpets.

Kinsey's original plan had been to film 2,000 men ejaculating. It would be easy to think that Kinsey—who was enthusiastically, though not publically, bisexual—was bringing all these men in because he enjoyed watching them. But if you knew much of anything about Alfred Kinsey, you might, alternatively, take this as an example of the famous Kinsey overkill. In all, the Kinsey team interviewed 18,000 Americans about their sex lives, but Kinsey's hope had been to keep going until they'd talked to 100,000. In his gall wasp days, Kinsey traveled 32,000 miles and collected 51,000 specimens.

With sex research, unlike, say, engineering or genome research, almost everything a scientist does can appear—to the uninformed or close-minded outsider—to be motivated by a perverse fascination with the subject. When, in fact, there's a clear logic to these things. That Kinsey filmed gay ma

prostitutes and their pals for his ejaculation/fertility study could be viewed as a reflection of his own sexual fixations or it could be viewed as simply the most expeditious approach. If you needed three hundred men willing to perform sexually in exchange for quick cash, in 1948, whom would you turn to? In his chapter about the attic sessions, Pomeroy explains that Kinsey's team simply "found it easier to obtain the consent of homosexual couples." (By "homosexuals," he means men. "We were unable to obtain any lesbians," Pomeroy says, as though perhaps they hadn't been in season, or his paperwork wasn't in order.)

Kinsey is admittedly a bit of an extreme case, and it is easy to understand the suspicion that he was, perhaps at the very least, as Jones put it, mixing business with pleasure. Even Kinsey's colleague Clyde Martin, now eighty-eight, was uncomfortable with the attic project. Martin refused to be filmed having sex with his wife—or anyone else. "I was not in favor of that," he told me. "I was not part of that. I was married at the time, and I had a wife I loved very much."<sup>\*</sup>

On the other side of the mattress is Wardell Pomeroy, who was adamant about the scientific purity of the project. "The layman can scarcely imagine viewing a sexual scene without having feelings, either of stimulation or of disgust, depending on the state of his inhibitions," he wrote in *Dr. Kinsey and the Institute for Sex Research*. "We experienced neither emotion .... Speaking for myself I cannot recall a single instance of sexual arousal on my part when I was observing sex behavior, and I am certain this was equally true of Kinsey ...."

To be fair to Kinsey, it should be pointed out that gay men weren't the only special-interest group he recruited. Stutterers, amputees, paraplegics, even those with cerebral palsy were observed. Kinsey wanted to document the full spectrum of human sexuality, but it was more than that. He believed these people might have things to teach us about the physiology of sex. And he was right. These groups alerted Kinsey—and the scientific community as a whole—to the complicated and crucial role of the central nervous system in sex and reproduction. Kinsey had noted that a stutterer in the throes of sexual abandon may temporarily lose his stutter. Similarly, the phantom limb pain some amputees feel temporarily disappears. Even the muscle spasticity of cerebral palsy may be briefly quieted. The body's limiting factors seem to get shut off.<sup>\*</sup> The organism is driven toward nature's singular goal—conception, the passing on of one's genes—and anything that stands in the way is pushed into the background. Sensory distractions become imperceptible: noises go unheeded and peripheral vision alerts but disappears—a fact some prostitutes use to their advantage, working with "creepers" who emerge from the shadows when the action heats up and go through the john's pockets as easily as if he were unconscious.

The most dramatic example of this biological priority shift is a sexually mediated disregard for pain and physical discomfort. Whatever ails you pretty much stops ailing you during really hot sex. Fevers and muscle aches, Kinsey claimed, briefly abate. Temperature extremes go unnoticed, which must have been a relief for the couples in Kinsey's attic, as it was, depending on the season, either very hot or very cold up there. Handily, the gag reflex is eliminated, even "among individuals who are quite prone to gag when objects are placed deep in their mouths." (Objects! Har.)

To explore the limits of this phenomenon, Kinsey observed and filmed sadomasochistic sex. Which makes sense, but at the same time leaves the reader just a tad bit queasy. Kinsey's "experimental data" indicated that arousal can render a person "increasingly insensitive to tactile stimulation and even sharp blows and severe injury." If there are cuts, he says, they bleed less. In his discussion of temperature extremes, cigarette burns make a cameo appearance. He is occasionally coy about the source of these injuries, but more often he is baldly straightforward: "The recipient in flagellation or other types of sadomasochistic behavior may receive extreme punishment without being aware that he is being subjected to more than mild tactile stimulation"—surely a source of comfort to anyone who read the toothbrush footnote on p. 33.

It was 1954 when William Masters embarked on his own investigation of sexual physiology. Kinsey was under fire from conservatives. The Rockefeller Foundation, partly because of its funding Kinsey's work, was the subject of a congressional investigation. (As a result, the foundation pulled Kinsey's funding. He died less than two years later.)

Given the political climate, it was exceedingly brave of Masters—then a gynecologist at Washington University in St. Louis—to undertake such a project. This was to be a large (nearly 700 participants), nonclandestine observational study of human sexual arousal and orgasm. To try to get funding and permission for such a venture in 1954 must have been, well, like trying to do it in 2000. Understandably, Masters went to great lengths to appear as scientific, objective, and morally upstanding as he could. His hiring of a female associate, Virginia Johnson, helped ward off accusations of impropriety (though she was mainly brought on board, Masters said, as a sort of “interpreter” to help him understand a woman's subjective experience of sex). Where Kinsey had actively sought out people on the fringes of American sexuality, Masters made a point of screening out “all individuals with sociosexual aberrancy.” (The team observed gays and lesbians in the lab but did not include them in the sample for this project. More on them later.) The 276 couples who came to his lab were heterosexual, and they were married. Most of them worked or taught at the university. The work was done under the auspices of the Reproductive Biology Research Foundation—no mention of sex—and it was done in a laboratory setting, amid scientific instruments and professionals in white lab coats.

Yet, at the core of it, you had couples fornicating on film. You had women and men masturbating in front of other men and women. You had a man scrutinizing—whether in person or by watching footage—the genitalia of women having orgasms. Moreover, you had prostitutes serving as your best test. Masters and Johnson interviewed 145 sex workers and from them chose the cream of the crop—eight women and three men with “obvious intelligence, diverse experience in prostitution, ability to vocalize effectively, and ... a high degree of cooperation”—to come down to the lab and help the team hone their investigative techniques. (Kinsey had avoided using female prostitutes for his observational studies, because, he said, they readily and convincingly faked orgasms.\* Masters didn't have to worry about his prostitutes faking it. His subjects were rigged up to a machine that measured heart rate and blood pressure—essentially a lie detector. Heart rate and blood pressure, it turns out, are more reliable indicators of orgasm than they are of deceit.)

Masters and Johnson launched their book-length write-up of the project, *Human Sexual Response*, in 1966. (Medical journals had rejected the team's papers, deeming them pornographic.) “The hate mail was unbelievable,” Masters recalled during a talk at the 1983 meeting of the Society for the Scientific Study of Sex. “For the next year and a half, we had extra secretaries ... just answering mail ....”

Eventually, the rancor cooled, and the book went on to become an enduring bestseller and a classic in the field. It is hard to say which contributed most to its acceptance: the cloak of formal science that Masters so assiduously pinned to his work, or the simple fact that times had changed. Nineteen sixty-six was worlds away from 1954.

Unfortunately, the cloak of science was pinned so tight that the book kind of suffocates. A couple under observation is a “reacting unit.” An orgasm is rarely just an orgasm; it's “orgasmic phase expression” or an “orgasmic release of sexual tension.” A woman who has one during half her sexual encounters is experiencing “a 50 percent orgasmic return.” Porn is “stimulative literature,” and not getting it up is a “failure of erectile performance.”

If you can machete through the lingo and the obfuscated writing, you will find an extraordinary body of work. Kinsey—and everyone else who came before—missed a variety of extraordinary things.

going on between a woman's legs. Take, for instance, the outer labia. Overlooked and ignored, they were thought of simply as packaging. Kinsey was dismissive of the labia majora's role in the sexual chain of events, saying there was no evidence that they "contribute in any important way." Masters and Johnson noticed that, in fact, they do contribute. While other parts swell and even protrude during arousal—because of the extra blood in the tissues—the outer labia thin and flatten. They also, as observed, pull away from the "vaginal outlet."<sup>\*</sup> Masters speculated, in characteristic multisyllabic manner, that this might be "an involuntary neurophysiologic attempt to remove any external impediment to the anticipated mounting process." They're making way for the big guy.

No one had expected this, possibly because their inner cousins expand so much. The labia minora enlarge by two or three times their normal diameter. They also, as both Masters and Dickinson observed, change color, turning pink, bright red, or, occasionally, in women who've given birth, a deep wine color. In all of the 7,500 female sexual response cycles that Masters and Johnson watched, no woman who had an orgasm failed to display this "florid coloration" just beforehand. If a man wants to know whether a woman is faking her orgasms he could, barring some logistical hurdles, look for this "sex-skin reaction." Which, by the way, is not to be confused with the "sex flush" (red blotch that may appear on a woman's chest when she's aroused). And the "sex flush," in turn, has nothing to do with the "urge to void during or immediately after intercourse."

Here's something else no one but Masters had noticed. The clitoris hides at a certain point in the proceedings. In the stage of arousal just before orgasm, the visible portion of the clitoris retracts under its tiny foreskin. It disappears from view, potentially creating great confusion and consternation on the part of the person doing the stimulating. Masters points out that the clitoris, at this point, is likely to be too sensitive for direct contact anyway. The shroud of academia pulls away like a foreskin, revealing the readable writer within: "In direct manipulation of the clitoris there is a narrow margin between stimulation and irritation."

Masters and Johnson provide a similar service for men. In the penis chapter,<sup>\*</sup> they describe what they called "postejaculatory glans sensitivity." For many men, once they've ejaculated, continuing thrusting on behalf of their partner is chivalrous but exceptionally uncomfortable. The solution to the oversensitive glans scenario, be it penile or clitoral: "Vocalization." Speak up. Throughout *Human Sexual Response*, the researchers encourage open and straightforward communication between partners. It comes as no surprise that they moved on to sex therapy (giving, not getting) following the eleven-year physiology project. Their therapy techniques and writings—as well as the hundreds of therapists they inspired—are the answer to every person who questions the point of Masters and Johnson's lab work. It is hard to overestimate the value of a simple anatomical explanation for a frustrated couple's complaint. Imagine a woman who's been harboring resentment toward her husband for pulling out as soon as he's done (and she isn't). Were she to learn that her man is not so much insensitive as oversensitive, her resentment would diffuse or, at least, hang its hat on something other than his penis.

Here's another example. Masters and Johnson discovered all manner of physical changes going on in women's vaginas when they're aroused. "Advanced excitement" prompts a portion of the vagina to expand. One theorized purpose is to create an "anatomic basin" to hold the semen near the opening of the uterus and thereby up the odds of conception. But the expansion can have an unwanted side effect: "The overdistended excitement-phase vagina gives many women the sensation that the fully erect penis is 'lost in the vagina.'" Sometimes to the extent that the woman mistakenly thinks it's gone limp.

Some of you may be wondering—and some of you really, really may not be—how Masters made his pioneering vaginal discoveries. Two answers. Sometimes subjects were asked to masturbate with an open speculum in place—as Dickinson had had women do years before—while the researcher

peered intently up their midline. But Masters didn't want to limit his findings to the arousal and orgasms of masturbation. He wanted to know what was going on with the cervix and the vagina during a typical round of bonk. Obviously, there are logistical problems here. You can't see the hangar where the airship's in the building. William Masters needed a penis that could see.

And so he had one built.



\* Six hundred forty-two members and counting.

\* For example, the pedophile who dabbled in incest (seventeen relatives, including Grandma) and bestiality. Kinsey's inclusion of this man's observations of preadolescent orgasms—and his tacit acceptance of the man's behavior—got him into a pot of hot water that he never really got out of.

\* Watson married Rayner and spent the remainder of his career in advertising. Cohen describes a market research assignment early on in Watson's career at the J. Walter Thompson agency. The mighty John B. Watson was going door-to-door in towns along the

Mississippi River, interviewing people about their feelings about rubber boots. Which is not, I suppose, all that far off from career in psychology.

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\* It may comfort you to know that the autopsy data on fatal heart attacks during sex suggest that they are rare. In 1999, a team of German researchers reviewed 21,000 autopsy reports and found only 39 cases. It may or may not comfort you to know that “most cases sudden death occurred during the sexual act with a prostitute.”

Sex researcher Leonard Derogatis cautions that autopsy statistics are misleading. When men die during sex with their mate (or opposed to in a motel room with a stranger), there usually is no reason to do an autopsy. If conjugal sex is taking place, say, three times as often as illicit sex, posits Derogatis in “The Coital Coronary: A Reassessment of the Concept,” then those 39 deaths would reflect a truer figure of 156. Derogatis estimates 11,250 sex-related sudden deaths in the United States each year, putting it on a par with hepatitis C, brain cancer, and food poisoning.

\* A trick question! Fillmore had no vice president and he never ran for office. He came into power when Zachary Taylor died, and failed, despite repeated efforts, to win a second term. Random quotes suggest his oratory skills might have been the problem. Fillmore’s last words (upon tasting a soup): “The nourishment is palatable.”

\* More famously, Kinsey employed a toothbrush (bristle end first) for this purpose. This, among other things, caused Jones to describe Kinsey as a masochist, driven by the demons of his repressive upbringing. A past director of the Kinsey Institute told Kinsey’s other biographer, Jonathan Gathorne-Hardy, that he viewed the urethral insertions simply as an idiosyncratic form of self-stimulation and that everything else was conjecture. Gathorne-Hardy was invited to the Kinsey Institute fiftieth-anniversary bash, and Jones was not.

A toothbrush, by the way, is alarming but not all that unusual. *Urological Oddities*, a 1948 compendium of memorable cases, includes an “elderly fellow” with a corsage pin that got away from him, a man who died from infection after inserting a twig from the family Christmas tree, and a farmer who “lost a rat’s tail.” There is always an explanation. The man toting three sets of three-inch surgical steel forceps, for example, insisted that Nos. 2 and 3 had gone in in an effort to remove Nos. 1 and 2, a story that collapsed upon examination, when all three turned out to be in there handle-first. As embarrassing as these hospital visits must have been, they pale in comparison to the Houston man who was taken away, on his back in an ambulance, with a large water tank from a public commode stuck on his penis. “The patient had attempted intercourse with the water-tank hole,” reports B. Bayer, M.D., in one of those rare, shining moments when urology approaches high comedy.

\* Martin’s brief and somewhat reluctant affair with Kinsey was made public in both the recent Kinsey biographies. If you bring up homosexuality, he will quickly change the subject but appears to bear no grudge against his former boss. “I must say, working with a man like Kinsey is a tremendous stimulation,” he told me, not choosing his nouns as carefully as he might.

Martin made use of his unique talents, going on to do interviews of his own at Johns Hopkins University. But while Kinsey used his data to promote tolerance and expand notions of sexual “normalcy,” Martin pulled a 180, looking for links between promiscuity and disease. His work helped uncover the link between sexually transmitted disease and cervical cancer.

\* The able-bodied, as well, Kinsey observed, enjoy expanded physical prowess under the influence of sexual arousal: “The doubling of the body which is necessary in self-fellation ... may become possible for some males as they approach orgasm.” Or, according to a 2001 *Hustler* article, as they master the yoga pose “the plow” (on one’s back, legs flipped up and over the head). Further tips can be gleaned by renting *Blown Alone* or other videos starring superlimber porn star Al Eingang. Wikipedia says that the god Horus was said to engage in autofellatio “every night because ingesting his own semen kept the stars in their places.” Only gods get away with excuses like that.

\* How did he know this? It’s not what you think. He and a colleague would on occasion hide—with the women’s permission—in brothel bedrooms, jotting down observations. At least I think they hid. It’s possible they drilled a hole in the wall or rigged up something more high-tech, but I enjoy picturing the two of them peering from behind a set of lurid velour draperies. Because that’s the kind of sicko I am.

\* You need a floor plan to keep track of the vaginas in *Human Sexual Response*. There are vaginal floors, vestibules, platform barrels, and outlets. Are people having sex, or are they just visiting Crate and Barrel?

\* “The Penis.”



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