RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Hormones in Transsexuals

How do sex hormones affect human behavior? That's a tough question to address, as experimental monkeying with people's hormone levels is unacceptable. But a team of Dutch researchers at Utrecht University Hospital's Department of Psychiatry has found a population volunteering for just such manipulations. The results of the ensuing study, the researchers claim, support a powerful role for hormones.

The subjects in the experiment, headed by psychologists Stephanie Van Goozen and Peggy Cohen-Kettenis, were transsexual candidates: 35 women who wanted to be men and 15 men who wanted to become women. Each was given a battery of baseline tests measuring anger, aggression, sexual interest, spatial relations, and verbal fluency. Then, after 3 months of testosterone for the females and anti-androgens and estrogens for the males, the tests were administered again. The same tests were also given to two control groups, 20 men and 20 women recruited in an Amsterdam supermarket.

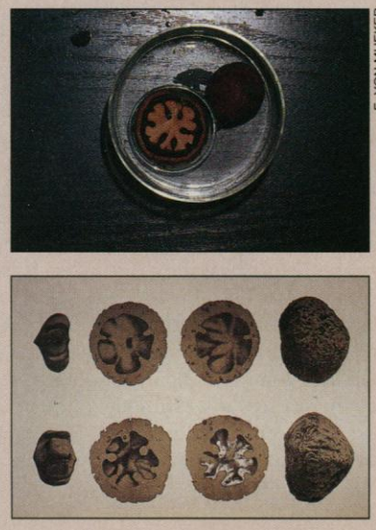
The researchers report in a paper to be published in April in *Psychoneuroendocrinology* that while not all tests yielded a consistent picture, a larger pattern did emerge. The authors write, for example, that "after 3 months of testosterone administration, [female-to-male] transsexuals were more anger prone and reported more aggressive tendencies, they had a stronger sexual motivation and arousability, and they were better in visuospatial ability and worse in verbal fluency." The results for the male-to-female group after androgen deprivation went in the opposite direction. The authors conclude that the behavior changes they witnessed "are likely to be due to the effects of the hormone therapy and not to ... [the transsexuals'] stereotypical ideas about ... the desired sex." Van Goozen says these findings are more compelling than the existing data on sex differences, which are based on correlations, because "this is the only study involving an experimental intervention."

Response among researchers familiar with the work is mixed. McGill University psychologist Barbara Sherwin, who studies how hormones affect women's sexual behavior, says the results are just what her own work would have led her to predict. "It blew me away," she says. Psychologist Brian Gladue of Cincinnati University, however, says generalizations can't be made from this study because transsexuals "are not your typical people." Gladue says, "I think the findings are interesting and suggestive but nowhere near definitive."

Ancient Trees Down Under

Botanists have found yet another "green dinosaur" in the forests of Australia's east coast. Soon after scientists located a living specimen of a conifer thought to have died out 50 million years ago, they have identified what appears to be a survivor from an ancient family of flowering trees.

The new angiosperm was identified last month by botanist Andrew Douglas, a U.S. postdoctoral researcher at the Royal Botanic Gardens in Melbourne, who had been analyzing foliage and fruits from an undescribed tree on Mount Bartle Frere in northeastern Queensland. Although nuts from the tree had been found in 1961, it was not until Douglas put its creamy flowers under a microscope that he realized it represented an extremely primitive taxon. He identified the tree as probably the sole living member of a new subfamily of the Proteaceae, flowering trees that arose in Cretaceous times (110 million years ago) and which include Australia's native nut, the macadamia. Botanists say the bizarre, often spectacular flowers in this family suggest it was among the earliest angiosperms. When Douglas cross-sectioned one of the nuts, a colleague, Andrew Rozefelds of the Tasmanian Herbarium, recalled seeing a lithograph of a fossilized nut—found in 60-million-year-old sediments near Melbourne—in an 1870 botany book. It turned out to be virtually identical to those of the new species.



F. VON MUEKER

Nut with a past. Cross section of nut of today resembles lithograph of fossil.

Douglas describes the new taxon as "a fantastic botanical discovery" which may cast new light on the angiosperm family tree. The find comes on the heels of the discovery of an ancient pine tree living in a patch of subtropical rain forest in Wollemi National Park, 200 kilometers northeast of Sydney. Barbara Briggs of the Royal Botanic Gardens in Sydney says the Wollemi pine represents a new genus in the family of primitive conifers known as the Araucariaceae, which arose in the ancient southern continent of Gondwana in the Jurassic period 160 million years ago. "It appears to be a true living fossil," she says. Both discoveries, says Douglas, suggest that a closer look at Australia's rain forests could reveal further treasures.

Death Star

Could a nearby supernova have caused a mass extinction of life on Earth 251 million years ago? Two neo-catastrophists, John Ellis of the European Organization for Nuclear Research and David Schramm, an astrophysicist at the University of Chicago, have dusted off this theory, first proposed in 1962 by German paleontologist Otto Schindewolf, and added some new numbers and—they claim—new plausibility.

Early theorists like Schindewolf supposed that shock waves and direct radiation from a supernova explosion would kill higher life forms. But there were problems with the theory: Such explosions would have to be close to Earth and would occur, at most, once in a hundred billion years.

Schramm and Ellis now say that explosions farther out in our galaxy can still do the job. In the January *Proceedings of the National Academy of Sciences* the duo claim that supernovae explode within 30 light-years of Earth about once every 240 million years—"significant for the biological time scale," says Schramm—and even at that distance could bombard Earth with enough radiation to destroy the ozone layer. This could pave the way for mass extinctions by exposing photosynthesizing organisms at the bottom of the food chain to lethal doses of ultraviolet radiation.

David Raup, a paleobiologist and extinction expert at the University of Chicago, questions whether the biologic effects of the ozone loss would be enough to kill some 90% of species, as happened at the end of the Permian period 251 million years ago. Still, Schramm and Ellis plan to put their theory to the test in the near future, looking for rare isotopes in sedimentary rocks from the Permian as proof of supernovae radiation.

France Gets Science Advisory Committee

François Fillon, France's higher education and research minister, last week announced the creation of a "strategic orientation committee for research." The group, to comprise 15 members chosen by the prime minister, will be "a real scientific advisory body," said Fillon, and will make specific recommendations on research the government ought to be funding. The new committee will complement the 40-member Higher Council for Research and Technology, an advisory body that Fillon described as French science's "parliament."

Formation of the committee is one of the fruits of Fillon's yearlong "national consultation" with the country's scientists (*Science*, 24 June 1994, p. 1840). They have been anxious about erosion of support for basic research but appear to have been reassured, as Fillon pledged to try to keep funding at least neck and neck with inflation. André Capron, an immunologist at the Pasteur Institute in Lille, says formation of the committee is an "extremely positive" step. "Now we can look forward to calmer times," he says.

Finis to MicroGeneSys Saga?

Last month, the Department of Defense (DOD) did an about-face that may end a prolonged battle over $20 million earmarked by Congress for research into therapeutic AIDS vaccines. Now, following pressure from scientists and the public, most of the money will be going to projects selected by a peer-review panel.

The tug of war over the $20 million dates back to 1992, when Congress appropriated the money for the large-scale testing of a therapeutic AIDS vaccine made by Connecticut's MicroGeneSys Inc. Outraged scientists criticized this as an end run around the peer-review process. So a year ago, DOD promised to spend the money on research proposals vetted by a scientific panel. But tempers flared anew when DOD announced last fall that only $9.6 million was targeted for such projects (*Science*, 14 October 1994, p. 207), and the consumer group Public Citizen asked Representative Henry Waxman (D–CA) to conduct a formal investigation. Now, says spokesperson Chuck Dasey of the Army Medical Research and Materiel Command, DOD has decided to spend $17 million of the money on projects tagged as worthy by the panel (DOD had no information on the remaining $3 million).

The increase means that at least five more peer-reviewed proposals will be funded, doubling the number of projects supported. The head of the panel, John Moore of the Aaron Diamond AIDS Research Center, says, "I'm pleased that the whole situation is resolved."

KIRK BORNE/NASA

Hit-and-Run. This head-on collision between two galaxies—a "rare and spectacular" view, according to NASA—was recently captured by the Hubble Space Telescope. The true-color image shows the Cartwheel galaxy, 500 million light-years away, beginning to recover after an intruder smashed through its center, causing a giant ripple of energy to radiate out and creating billions of new stars. Scientists say either of the two galaxies at right may have been the intruder—the blue one because it looks tousled and has new star formation, and the other because it has no gas, consistent with the possibility that it was stripped of gas while passing through the Cartwheel. The spiral structure that presumably characterized the Cartwheel galaxy before the collision is beginning to re-emerge. The image is "by far the best picture ever taken of a ring galaxy," says astronomer Steve Maran of the American Astronomical Society.

More Kudos For DNA Repair

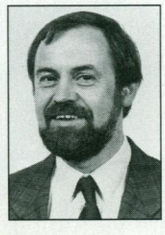
DNA repair enzymes were crowned "Molecule of the Year" by *Science* (23 December 1994), and now two scientists who study those enzymes have won a more tangible honor: a medical research prize that will net them more than half a million dollars.

The Geneva-based Louis Jeantet Foundation for Medicine announced last week that two key researchers in the field of DNA repair, Dirk Bootsma and Jan Hoeijmakers of Erasmus University, Rotterdam, Netherlands, will be among the five recipients of its 1995 Prize for Medicine, which carries with it 2 million Swiss francs ($1.6 million).

"This was a complete surprise," says Bootsma. "The coincidence of the *Science* [story] and the prize is marvelous." The work was not always so rewarding. The two scientists began investigating these enzymes in the 1960s, and Bootsma recalls that "I almost stopped working" in the field in the 1970s because of the "lack of interesting results." Recombinant DNA technology changed all that, and one big scientific payoff came in 1984, when the duo cloned the first gene for a human DNA excision repair enzyme.

The other recipients of this year's prize are Peter Goodfellow of Cambridge University and Robin Lovell-Badge of the National Institute for Medical Research in London for their work on the genetics of sex determination, and Peter Gruss of the Max Planck Institute of Biophysical Chemistry in Göttingen, Germany, for his work in vertebrate developmental genetics. The prizes will be awarded at a ceremony in Geneva on 21 April.

Bootsma



Hoeijmakers

Camouflage for Bio Survey

What's in a name? For the National Biological Survey (NBS), it could mean the difference between life and death. Last week, as part of a strategy to save his embattled agency, U.S. Department of the Interior secretary Bruce Babbitt renamed the survey the National Biological Service.

In October 1993, Babbitt transferred 1360 biologists and other scientists from four Interior agencies to the new office, which he hoped would beef up long-term ecological research and inventory every animal and plant species in the United States. Critics in Congress, however, have charged that the survey's true aim is to curtail commercial development by finding endangered species and fragile habitats in people's back yards; their concerns have prevented the NBS from obtaining official sanction from Congress (*Science*, 20 August 1993, p. 976). Now the situation has worsened: Last fall, the Republicans suggested axing the NBS to save about $167 million a year.

The new moniker jibes with NBS efforts to downplay the significance of its inventory activities, which account for 13% of its budget. "The NBS goal is to provide a service—access to the most current and complete biological science information available," says survey—er, service—Director Ronald Pulliam.

But to congressional sharks moving in for the kill, a wounded fish by any other name smells just as fishy. Says a Senate Republican aide: "Its name may have changed, but our opinion hasn't."