So why does the stigma of *G. gandavensis* initially accept pollen only from its own species or from related plants. and then ultimately only from its own species? Because the stigma has cell surface receptors that positively recognize only the correct pollen, the experiments of Knox and his colleagues show. When these receptors are blocked, fertilization by the appropriate pollen cannot take place. Like many animal cell membrane receptors, plant membrane receptors are glycoproteins.

On the basis of both their own results and those of some other botanists, they theorize how cell surface receptors on the stigma help it screen for the right pollen. A first set of receptors positively identifies proteins on pollen from the plant's own species or from a related species or genus. Once identified, the pollen then proceeds to the first stage of fertilization—hydration and pollen-tube growth. Pollen from unrelated species or genera would not be recognized and would not even start this first stage of fertilization. Then the pollen that has made it through the first screening process would encounter still another set of cell surface receptors. This time only pollen from the plant's identical species would be accepted, and only this pollen would then proceed with the second step of fertilization—penetrating the cuticle with its tube.

These experiments, the investigators conclude in the August PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, also "provide an insight into the biochemical mechanisms involved in the discrimination of self from not-self in plants . . ." In other words, plant recognition does not seem to be all that different from recognition among animals, where cell surface receptors on T and B cells of the immune system acknowledge proteins as "self" or "foreign." □

Leg 49 samples youngest sea crust

The Mid-Atlantic Ridge, a huge underwater mountain chain that ranks among the major topographical features on the planet earth, is the site of the birth and the continual rejuvenation of the Atlantic Ocean basin. In its latest voyage in the Deep Sea Drilling Project, the scientific vessel Glomar Challenger has drilled into the ridge and retrieved samples of ocean crust younger than any previously recovered in the project.

Scientists on Leg 49 of the project, completed Sept. 4, bored 10 holes along the ridge, where new crust is continually being formed, and at one site drilled into a crustal layer only about one million years old. This is less than one-third the age of any crust the project had previously sampled in its eight-year history. The Leg 49 drilling took place between Iceland and just south of the Azores where Project FAMOUS was conducted last year.

The task had its difficulties. "To drill it," note Leg 49 co-chief scientists Bruce Luyendyk of the University of California at Santa Barbara and J. R. Cann of the University of East Anglia in Norwich, England, "we had to look for a pocket of sediment only one-half mile across amid the craggy mountains of the ridge crest. It then took 11 tries before we found enough sediment to stabilize the drill bit so that actual drilling could begin, after which we were able to reach 40 meters into basement."

There is great interest in understanding the complex geological processes in the mid-ocean ridges, not only because of their scientific importance as the site of crustal formation but also because they are thought to be where many ore deposits are produced. Luyendyk and Cann say what they learned about boring into young sediments will be useful in gaining understanding of these processes in the future.

Iceland is of unique geophysical importance because it is one of the few pieces of the mid-ocean ridge that rises above sea level. The northernmost holes of Leg 49 provided an opportunity to study the history of Iceland. Three holes were drilled across the ridge south of the island. The youngest hole, into crust about 2.5 million years old, revealed lavas containing abundant gas bubbles, an indication of eruption of watery magma at shallow depths. The other two holes, into crust 20 million and 40 million years old, showed fewer gas bubbles. This could be an indication that Iceland did not exist during that period of time, say the project scientists. But much more analysis of recovered cores is needed to test this theory.

One perplexing discovery was that in two holes, only a mile apart, on opposite sides of a fracture zone, lavas of very different characters were found. This could be due to chance, or it could indicate profound effects of fracture zones on nearby lavas.

Better understanding of climate change during the ice ages may come out of Leg 49's North Atlantic cores. The sediment near Iceland appears to have a gap at the time the ice ages began 3 million years ago, but the cores farther south appear to contain a sedimentary record of the entire span.

The work of Leg 49 was cut short by Hurricane Emmy, which moved across the site where the Glomar Challenger was drilling. When the ship moved to an alternate location, the hurricane followed, to waters seldom struck by hurricanes.

Leg 49's achievement of drilling into the youngest ocean crust contrasts nicely with Leg 50's goal of drilling into the oldest ocean crust (SN: 9/4/76, p. 151). That work, northeast of the Canary Islands, is just now getting underway. □

'Science court' idea: Toward a test

With all the awkwardness one would expect of a colloquium between two groups so different in their training and daily practice, nationally prominent scientists and lawyers meeting this week to find a better way of resolving scientific disputes groped their way toward establishment of a science court. Though they could not even agree on the proper name for such a fundamentally new kind of institution, the participants generally expressed enthusiasm for trying it out.

The idea for the science court, in its present form, is the brainchild of Arthur Kantrowitz, chairman of Avco Everett Research Laboratory. Nearly 10 years ago he proposed an "institution for scientific inquiry" to isolate the scientific components of a controversial issue and subject them to the scrutiny of cross-examination. The principle would be to bring both sides of an issue together in face-to-face confrontation, where spurious claims could be challenged, gaps in knowledge delineated and decision-making speeded up.

As the present system of "expert" panels, public hearings, impact statements and ad hoc studies slowly bogged down in scholarly quibbling and legal red tape, other voices were added to Kantrowitz's, calling for some simpler, more direct procedure. Eventually, a Presidential task force was formed to study the question. Its interim report in SCIENCE (Aug. 20) set forth a tentative list of procedures and proposed a series of experimental trials to test the court concept.

At the heart of the proposal is a system by which opposing sides of some purely technical, but disputed issue would be presented by opposing "case managers." In a debate on nuclear power, for example, a spokesman for the Sierra Club might face one from the Atomic Industrial Forum. These adversaries would argue their respective cases before a panel of judges, selected for suitability to both sides, who would eventually issue an opinion. The judges would be scientists from fields related enough to give them insight, but who were not caught up in the present dispute. A separate referee—probably a scientist advised by a lawyer—would conduct the proceedings.

Ground rules for the proceedings would differ in several respects from those of a normal court. Evidence would be admitted or excluded according to the rules of science, which are designed to elicit facts, not those of law, which are designed to protect people. Value-laden opinions would neither be admitted nor produced, and the final judgment would be simply a statement of which scientific facts had been adequately supported. It would be left for other agencies to apply these facts to policy decisions.

Some of the early criticism that greeted this proposal claimed that the science court would be just another elitist institution. Barry Commoner was quoted by the New York Times as saying the court was "a very serious attempt to reintroduce authoritarianism in science," and that he saw "no reason to change the present system" of judging the validity of scientific facts. Thus one reason for holding this week's meeting, at the Xerox Center at Leesburg, Va., was to smoke out potential opposition and correct specific weaknesses in the proposal before conducting an experiment. The colloquium was sponsored by the Department of Commerce, the National Science Foundation, and the AAAS.

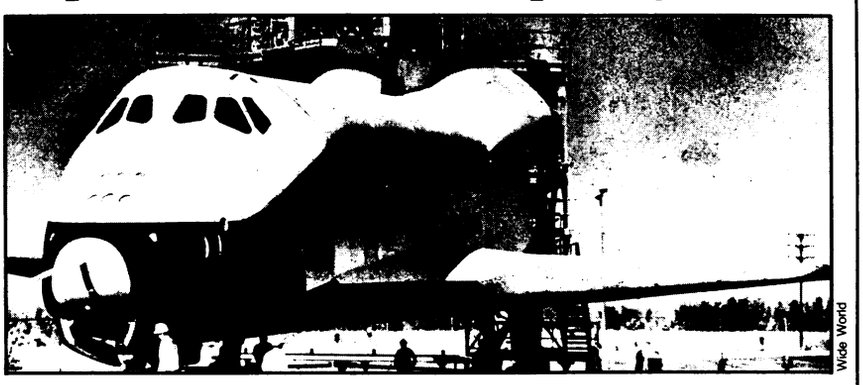
The most wide-ranging criticism came from anthropologist Margaret Mead, who nevertheless supports the idea of establishing a new institution to adjudicate technical disputes. The term "science court," she says, conjures up visions of yet another expensive Washington institution with an entrenched bureaucracy and bad architecture. Reaching a verdict of guilt, encouraging the confrontation of adversaries bent on winning, or allowing interest groups to finance their side's advocate "are all incompatible with scientific discourse and the methods of science."

The key to success, she says, is to maintain an attitude of seeking the truth—not "winning"—and that this will require a new kind of professional, trained in the skills of cross-examination, but devoted to the spirit of science.

As the colloquium progressed and other objections were raised to both the semantics and procedures of the original proposal, "science court" grew to "scientific and technical board of inquiry," and legalistic complications sprouted apace. Public interest lawyer James S. Turner talked of the difficulty in keeping the new institution from becoming "the supreme court of science," thus shutting off research funds for scientists with dissenting views. Still, he said, early face-to-face confrontation on technical issues might speed up the regulatory process, where debates on social policy "are being inhibited by the scientific community's inability to speak articulately."

In the end, of course, whether the science court (or board, or whatever) gets off the ground depends on whether a government agency wants it enough to pay for it. General murmurs of praise, though no money, were offered at the meeting by various high officials, including presidential science adviser H. Guyford Stever, Secretary of Commerce Elliott L. Richardson and Environmental Protection Agency Administrator Russell E. Train. Kantrowitz told SCIENCE NEWS he is hopeful that some sort of pilot project can be started within a matter of months, probably at a university, with funds from the National Science Foundation. □

Space shuttle: An enterprising debut



The heart of the National Aeronautics and Space Administration's "space transportation system" of the future made its formal debut on Sept. 17, when it rolled out of its assembly hangar at Rockwell International's Palmdale, Calif., facility. To be launched from a pad like a conventional rocket, the space shuttle will deliver and retrieve a variety of manned and unmanned payloads, returning to earth glider-style on a pair of stubby, swept-back wings. There is less than unanimous opinion about whether the shuttle's reusability will live up to its original economic justification. Even within NASA, sources cite predicted costs from $20 million per launch to more than twice that. But it has the job, and it's spectacular. It is just possible, however, that one of the huge vehicle's more important contributions to the space program was reflected at the rollout by the name printed on its side in stern, sans-serif type: Enterprise.

It is already an oft-told story. The space agency was all set to name the first shuttle "Constitution," but more than 60,000 letters to NASA and the White House from fans of television's "Star Trek" prompted President Ford to overrule the agency and name it after the interstellar spacecraft of the series. Opinions within NASA run from "great!" (Trekkies are everywhere), to indifference, to (in the words of a high NASA official), "Here come the exploiters." The majority, at least, seems to feel that, good or bad, it doesn't make much difference. I disagree.

Like the letter-writing campaign that once saved the TV show from cancellation, the "Enterprise Incident" was, in part, a managed affair. Many avid Star Trek fans circulated petitions, urged friends to write and generally struggled to get out the vote. But what matters is that in the surprisingly isolated world of the space program (despite its occasionally spectacular press), it worked.

Star Trek is not the point. It would have been the same if all those letters had asked for the shuttle to be named "Pinocchio." The point is that a whole lot of people asked something of the space program—and got it. The operative difference here between Trekkies and others interested in space seems only to be that the Trekkies know that it can pay to stand up and be counted.

Except for Trekkies, space enthusiasts (and there are many of them) are an unaccountably reticent lot. Many attendees at meetings of the American Astronomical Society's Division of Planetary Sciences, often depending for their lives' work on data provided by NASA's interplanetary spacecraft, seem surprised anew, year after year, at pep talks warning that they'd better make themselves heard or risk running out of data to work on. Astronomers sat on their hands for nearly two years before the off-again-on-again status of the Large Space Telescope panicked some of them into a little serious, organized support.

A 1974 column I wrote in SCIENCE NEWS about the wonders and importance of the first manned lunar landing evoked a huge reader response in an almost unanimous agreement, but a large percentage of the respondents also indicated that they thought themselves to be virtually alone in their concern. Trekkies, however, have been referred to in some quarters as the "lost space constituency," the primary difference being only that they are aware of one another and of the strength of their numbers.

The space shuttle will leave the ground for the first time next February, when it will be tested, unmanned, while bracketed to the top of a 747 jet. In May, it will be carried aloft with a crew, with untethered landing tests scheduled for July, and its first orbital mission is targeted for March of 1979. Naming it "Enterprise" was no big deal; NASA itself had considered the name, though for reasons of the name's distinguished naval history. But perhaps by the time the shuttle reaches that first orbit, the country's space enthusiasts will have thought of something else they want badly enough to ask.

—Jonathan Eberhart