

Sea Grant Program Aims To Rescue Deep Blue Sea From the Devil

"The devil made me do it," Flip Wilson says. And when it comes to documenting responsibility for the pollution of the waters around Long Island, this is about as precise as it can often be pinpointed.

It is devilishly hard to fix the blame because until recently there was very little information on the state of these waters which could be used as a starting point in measuring pollution.

Some studies have been funded over the years, but there has been no concerted program with any guarantee of continuance. However, two developments are cause for hope.

The establishment of the Marine Sciences Research Center at Stony Brook with its permanent staff of highly qualified scientists and technicians was the first of these. The second and most recent was the designation of New York as a Sea Grant State, effective November 1, in a joint program to be carried out by the State University of New York and Cornell University. This program assures continuing support for

The Devil Started It All

Historically, there is a precedent for blaming the problems of Long Island Sound on the devil. Maps of the late 1700's frequently include the Sound's second name — "The Devil's Belt." According to an old Indian tale, a corruption of which is believed responsible for the name, the Devil's Belt, the evil spirit wanted to get away to Connecticut but was driven back by the residents there and forced to remain on Long Island. Angrily he hurled rocks at the distant shore. Not being in his best form that day, most of the boulders landed in the Sound, with the fallout, for some reason, being especially bad off Great Neck creating the so-called Stepping Stones rock formation. The devil, it seems, was the first of the big polluters of the Sound.

efforts to provide an ecologically sound management of the State's coastal resources.

Seven projects this year will focus exclusively on the Long Island region.

Included in this number are studies of the South Shore coastal areas, two studies of Peconic Bay, and studies aimed at improving the marine management of the west end of the Sound and a measurement of the salt and nutrient mix between the Sound and the East River in the Throgs Neck-Willets Point area.

Dr. Donald Squires, director of the Marine Sciences Research Center at Stony Brook, has been named state-wide director of the Sea Grant program which will provide \$967,935 in funding for the first year of operation. The Sea Grant Program, administered by the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce, is aimed at providing a massive, long-term program for effective conservation and development of coastal resources similar to the emphasis on agriculture in the land-grant colleges.

Dr. Squires said the initial year's projects will mainly involve environmental studies. "The state's marine environments are in such critical condition that priority must be given to their rapid improvement and to conservation of remaining resources," he noted. "From there, we can proceed to environmental management programs designed to stabilize and then improve the marine and Great Lakes environment, and to develop new ecologically sound means of utilizing coastal resources."

Two projects in marine education and training also will be a part of the Sea Grant program's first year. In one, projected manpower needs of marine-related industries will be studied in an effort to develop new marine occupations. The second educational project will aim at improving and diversifying current marine technology training programs.

The first year projects have been developed during the past year in close consultation with two Sea Grant Advisory Councils, one for the Great Lakes region and the other for the Atlantic Ocean region. "The Councils, composed of representatives of local government, industry, conservation and recreation interests, planners and other community representatives, were instrumental in developing program priorities," Dr. Squires said.

"The Advisory Councils will continue to evaluate the Sea Grant program, redirecting emphasis and recommending new research as situations warrant," he added, "in order to assure a program that is maximally responsive to New York's marine problems."

The programs will be broadly multidisciplinary in nature, reflecting, Dr. Squires said, "the fact that water resources have become everyone's concern. Marine biologists and others traditionally associated with marine studies will be involved as well as engineers, sociologists, lawyers, economists and political scientists."

During the Sea Grant program's ini-

tial year, 26 projects will be carried out, at the State University Centers at Binghamton and Buffalo, the Marine Sciences Research Center at Stony Brook, the State University Western New York Nuclear Research Center at Buffalo, the State University Atmospheric Sciences Research Center at Albany, the State University Maritime College at Fort Schuyler (the Bronx), the State University Colleges at Brockport, Cortland and Oswego and at Suffolk County Community College and Cornell.

"The combined resources of the State University and Cornell offer incredibly rich opportunities for the New York Sea Grant program to provide public service for New York State," Dr. Squires said. "Our marine and Great Lakes' resources, have been the historic key to New York's leading economic position. We have tragically wasted these resources. Now, especially with almost three-fourths of the state's population clustered in counties bordered by the Great Lakes and the Atlantic Ocean, we must approach our last great unexplored frontier, our waters, with all the knowledge and wisdom we can muster." □

See-Through Sculpture Enriches Campus

Plunked onto the lawn of the Earth and Space Sciences Building is a new see-through, walk-through, sit-in sculpture — the latest acquisition in Stony Brook's effort to enrich the campus with a

permanent collection of works by prominent artists.

The gleaming white wood sculpture — 15 feet deep, 10 feet high and partially open on four sides and the top — is called "Genesis XII." The work was donated by its maker, Hans van de Bovenkamp, who teaches at the State University College at New Paltz. Mr. van de Bovenkamp is a nationally prominent sculptor who has exhibited at universities and galleries in five states and executed projects for commercial and institutional clients throughout the United States and in Puerto Rico. These projects have included an interior court for the United Nations Plaza Building and a fountain-monument commissioned by the Port of New York Authority and dedicated to former New York City Mayor Fiorello LaGuardia.

The works previously acquired by the University include a 10-foot-high bronze sculpture by Bernard Rosenthal, an 18-inch opto-chromatic work by the Swedish artist, Erich Olson, and oil paintings by Isamu Kawai, Aiko Miyawaki, and Tania.

The six works, all donated by the artists or by collectors, are valued together at more than \$30,000. The acquisition effort is intended to supplement exhibitions and other work of the Art Department. Art Professor Lawrence Alloway is Chairman of the University Arts Acquisition Committee which, along with the Stony Brook Foundation, is leading the effort to develop the permanent campus collection. □



The Life of the Ph.D. Student

It ain't easy!

Why would a 23-year-old Princeton graduate with two years' army service behind him decide, for his next five years, to work 60-hour weeks at below the minimum wage?

For the same reason that a 29-year-old father quit an \$11,000 middle-management job, took a pay cut to \$1 an hour, and forced his family to depend on monthly food stamps.

Neither decision was made out of necessity. Nor to be a martyr or masochist. Nor to serve God or help the poor.

The explanation, for Rudolf Thun and Ed McDevitt, is simply that they want to earn doctor of philosophy (Ph.D.) degrees.

They are among the nearly 1000 full-time Ph.D. candidates at Stony Brook — Mr. Thun, now 27, in the Physics Department; Mr. McDevitt, now 31, in the English Department. Like some 30,000 people who last year received Ph.D. degrees from American universities (54 of them from Stony Brook), Mr. Thun and Mr. McDevitt consider attendant personal sacrifices, social indignity or deferment of financial self-indulgence to be justified by the end.

That end, the degree, does not bring great earning power. Nor does the

Ph.D. "doctor" command the same immediate, community-wide respect as does the medical doctor. The degree does not even supply a clearcut and useful skill that will always be demanded by society, as is evident from the number of jobless Ph.D.'s pounding the pavement.

What the Ph.D. does supply — in all the arts and sciences, in disciplines from anthropology to zoology — is intensive, detailed, expert training in a specific field. It provides knowledge.

There is no doubt that, in some areas, American universities have produced more Ph.D.'s than can be absorbed by the conventional channels — university faculties and labs and off-campus research facilities for government and business. Because of these surpluses, some social commentators say the academic system has become top-heavy.

Others say, however, that a still-growing nation in a highly technological age can never have too many experts in the sciences or in the arts that help men live with their science. They say, in fact, that America's social and technological problems could be better dealt with by increasing — rather than reducing or leveling off — the preparation of Ph.D.'s in all fields.

These defenders of advanced-degree education say the supply-demand question should be resolved by change from both sides. They say society should seek new uses of Ph.D. knowledge in areas such as housing, social services, transportation and public advocacy. And Ph.D. recipients, they add, should begin serving in areas they have hitherto shunned — teaching in high schools, community colleges and colleges of lesser prestige, as well as serving in local and state government.

The general aversion to such jobs probably derives from the elitist tradition of the Ph.D. degree itself. It developed in the 19th-century German universities, where narrowly defined scholarly excellence was passed on to a limited few through intensive, personalized training. Though the kinds of Ph.D.'s and number of recipients have greatly increased and though their deployment may become much more diffuse, their intensive, personalized training continues. A look at the Ph.D. course work of Mr. Thun and Mr. McDevitt indicates how different are their academic burdens from those of the undergraduate student, who often samples a little from many diverse curricular areas.

Mr. Thun's course work included a year of classical physics, a year of methods of mathematical physics, a year and a half of quantum mechanics, two years of elementary-particle physics, a year of quantum field theory, one-semester courses in solid state physics and statistical mechanics, and special studies in research methods and Ph.D.-thesis preparation.

Mr. McDevitt's Stony Brook course work, which he hopes to finish by this spring, will include a year's study of old English and one-semester courses in medieval literature, Chaucer, the use of classical epic tales in English literature, 18th-century literature, William Faulkner and at least one still-unchosen course. Mr. McDevitt, unlike Mr. Thun, took a master's degree before coming to Stony Brook. His M.A. work — undertaken through one year of part-time and one year of full-time study at Northeastern University in Boston — included courses in research methods, medieval literature, 18th-century English literature, 19th-century American writers, and separate courses in the 20th-century poets Wallace Stevens and W. H. Auden. His undergraduate major, at Tufts, was English.

After completing the course work and the examinations that many Ph.D. students spend months preparing for, the student must then submit a lengthy dissertation, or thesis, on a specific area within his specialty.

Mr. Thun, as an experimental physicist, has spent about two years working on one experiment, which is the basis of the thesis he is now writing. Its title is "The Neutral Missing Mass Spectrum in $n-P \rightarrow n-P^+$ Neutral at 13.4 GEV/c," in which "GEV" means billion electron volts and "c" means

the speed of light. The two-year experiment, which he helped Stony Brook professors devise and perform at the Brookhaven National Laboratory's giant proton accelerator, helped amass some undramatic but scientifically essential data on behavior of the subatomic particles called mesons.

Mr. McDevitt has not yet pinpointed what his thesis will be, but it will deal with the 18th-century narrative satires of such writers as Henry Fielding, Samuel Johnson, Laurence Sterne and Jonathan Swift.

Mr. McDevitt, his wife and two children live in Port Jefferson in a small, two-bedroom \$209-a-month garden apartment. He receives \$3400 a year for a teaching assistantship, under which he teaches a three-hour-a-week composition course that demands another nine hours in preparation. He has not taken to borrowing money, but he has spent all his savings, has needed medicaid health services for his family, and couldn't meet food needs without the \$106 worth of federal food stamps he buys each month for \$48. Despite the strains on himself and his wife, however, he does not regret having left his \$11,000-a-year claims supervisorship with a large insurance company, where his work-week was about 30 hours shorter than the 68 hours he now averages.

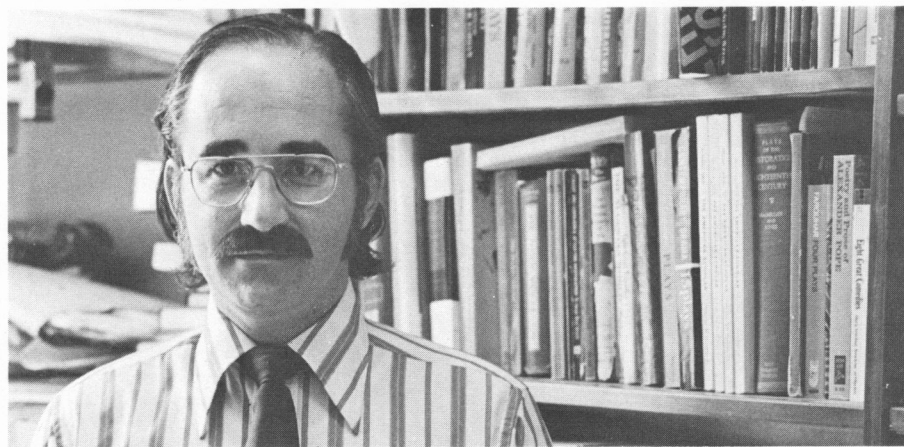
"I was working for a company that had \$26 billion in assets. I couldn't really see the purpose of spending my time trying to help it grow. I didn't feel terribly independent or significant. Teaching, too, has problems — one never knows, for instance, if he's having any effect in imparting even the rudiments of rational process — but I'd rather work out those problems than the ones associated with raising corporate assets to, say, \$27 billion."

Mr. Thun, who lives in a \$225 Nesconset garden apartment with his wife and two children, has been able to avoid severe financial strain through a \$4000 teaching assistantship and another \$2000 a year from the G.I. bill. Since his senior year as a physics major at Princeton, he has known that becoming a working physicist was his goal; so he takes his prolonged student life philosophically:

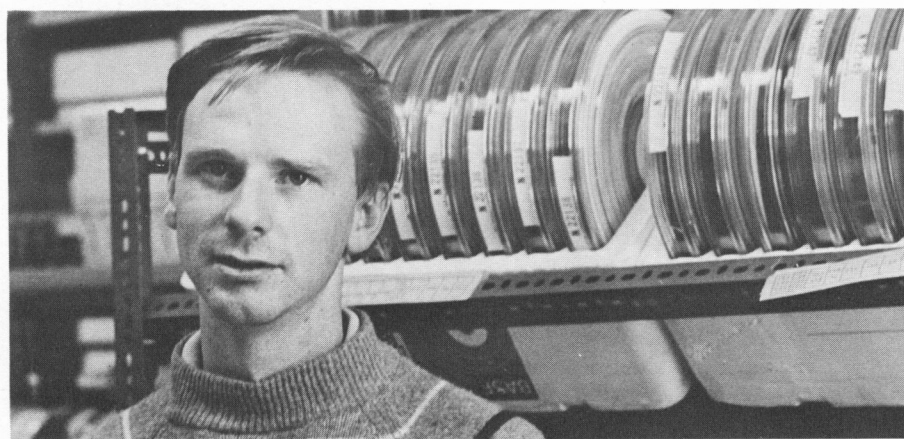
"The Ph.D. is a social requirement for someone who wants to become a professional in the field. Unless you're an absolute genius, the chances are you won't get a position affording any appreciable freedom over the use of available resources unless you put in the apprenticeship. That you end up with the degree isn't important in itself; that just happens to be part of the historical development of this apprenticeship."

After almost five years of an apprenticeship that meant 60-hour weeks, much night and weekend work and close study with some of the experts in his field, Mr. Thun will begin work next year as a post-doctoral researcher at Stony Brook at the modest salary of

Ed McDevitt, English Ph.D. candidate



Rudolf Thun, physics Ph.D. candidate



\$10,000 annually — much less than is earned by many other skilled tradesmen after their apprenticeships. Again, though, he's not complaining:

"I enjoy doing fundamental research, which is the main attraction of Ph.D. work," he says, adding, "Science is one of the few activities with a historical chain — you build on what went before. Now our work with mesons doesn't appear to have anything to do with society's problems, but think about the people who fooled around with electricity 100 years ago; or just 30 years ago, those who did high-energy beam experiments. Now the beams are used in medicine and cancer treatment. One of the nice things about this work, I guess, is precisely that you don't know what will come of it."

Mr. McDevitt knows that a literature scholar might feel even more hard-

pressed to justify his work than a physicist; but he thinks such justification should never even be asked. He says art describes its own usefulness — the reflection it inspires is of great "use" to humanity — and that the teacher of literature, therefore, is greatly useful to society.

Despite the financial and emotional strains of the Ph.D. apprenticeship, despite the lack of on-campus housing for married students, and despite the pique aroused, both on and off campus, when grown men and women are occasionally treated as children, there is no sign that the apprenticeship is losing its appeal.

At Stony Brook, 25 Ph.D. programs are now enrolling close to 1000 Ph.D. candidates, almost 15% of the University's full-time student body.

—Sam Segal □



DOES TV ENCOURAGE IT IN CHILDREN?

Saturday morning. Johnny stares intently at the tube. Bam! Bam! OOOOwoof! Cowboy Bob knocks Nasty Ned into oblivion, sweeps up Miss Lulubelle and rides off singing into the sunset. Fade-out to a commercial.

What has Johnny learned?

He might have learned that the "good guys" (like Cowboy Bob) are rewarded for their aggressive behavior, a lesson which could cause Johnny to behave in an aggressive manner at some later time, according to Dr. Robert M. Liebert, associate professor of psychology. Dr. Liebert recently completed a report on the effects of televised aggression on children's behavior for the National Institute of Mental Health. Working with Dr. Robert A. Baron, a psychologist from Purdue University, he analyzed available data on violence and television. The two psychologists concluded: "The present entertainment offerings on the television medium may be contributing, in some measure, to the aggressive behavior of many normal children. Such an effect has now been shown in a wide variety of situations."

"Children learn from watching," Dr. Liebert explains. "When we learn how

to do something, we often learn it by observing people who do it well. This is what we call observational learning." Can children, then, learn aggressive behavior by observing it on television? According to Dr. Liebert the answer is "yes."

Dr. Liebert says the television industry has answered critics' charges that excessive violence in children's programming has a negative effect on children's behavior with the contention that if the "bad guys" are shown being punished, then children will not imitate them. However, he maintains, if aggressive behavior by the "good guys" is perceived by the child as being rewarded (as when Cowboy Bob rides off with Miss Lulubelle after punching up Nasty Ned), it might have an adverse effect on the child's later behavior.

"When the child asks himself if he is a good guy or a bad guy, he usually considers himself a good guy, as most of us would if we asked ourselves that question," Dr. Liebert says. If the child has learned from television shows that the good guys are aggressive, he may follow that model and behave aggres-

sively himself, Dr. Liebert contends.

Another example of how aggressive behavior might be learned (and perhaps later employed) involves crime plots in television shows. "For example," Dr. Liebert points out, "many television shows about criminals imply that the crime would have succeeded except for a slip-up by the criminal, a slip-up which is almost always explained so the viewer, in effect, could avoid making a similar error if he were committing the same crime."

In their analysis of studies done on the question of violence and children's behavior, Drs. Liebert and Baron sought to determine, on the basis of the available evidence, three things: (1) whether children were exposed to aggressive actions and role models through television programs they watch, (2) whether they learn, remember, and can reproduce at least some of the aggressive material to which they have been exposed, and (3) whether their behavior later is influenced by such learning and exposure.

The question of whether children are exposed to violence seems clearly to be answered in the affirmative, based on analyses of the content of several types of children's shows. The evidence suggests that violence content in children's shows (especially in cartoons) is at a high level, and also indicates that children spend significant portions of their viewing time engrossed in such shows, Dr. Liebert says. Recent evidence, say the two psychologists, also has shown that high violence programs are among young children's favorites.

The question of whether children learn, remember and reproduce the aggressive acts they see on television also can be answered in the affirmative, according to Drs. Liebert and Baron. "Research has repeatedly and reliably shown that children can learn and reproduce a variety of novel physical and verbal aggressive responses through the mere observation of such behavior as it is exhibited through a television console," their report says.

On the question of children's behavior being negatively influenced by aggression they see on television programs, Drs. Liebert and Baron refer to several studies finding significant correlation between aggressive behavior in children and the level of violence in the television programs they watch.

Another publication of the National Institute of Mental Health, they point out, lists 18 experimental studies from eight different research teams which had the following criteria in common: they exposed one or more groups of students to films or television programs displaying violence or aggression; they had control groups of students exposed to films or television sequences without the aggressive content; they had at least one dependent variable which might tap subjects' propensity for aggressive behavior at some later time.

"Of the 18 investigations, 16 (88%),

accounting for seven of the eight research teams, presented statistically significant evidence which supports the hypothesis that viewing aggression can instigate subsequent aggression among observers," Dr. Liebert said.

Three additional experiments conducted specifically for the National Institute of Mental Health also support that hypothesis, according to Drs. Liebert and Baron, who conducted one of the experiments themselves. In their experiment, children in the 5-6 and 8-9 age groups were exposed either to an episode from a televised crime show, or to a highly active but nonviolent sports sequence of the same length. After seeing the programs, the children were presented with a series of situations in which they could either help or hurt another child who, they were told, was playing in another room. They could "hurt" the child they thought was in the adjoining room by pressing a button, and were told that the longer they pressed the button, the more it would hurt the child. They could "help" him by pushing another button. "Despite the brevity of the aggressive sequences, the absence of a strong prior instigation to aggression, and the clear availability of an alternative helping response, children exposed to (the crime show) sequence made hurting responses of significantly longer duration than those exposed to the highly active but non-aggressive control program," they concluded.

In summing up his report to the National Institute of Mental Health, Dr. Liebert says that "experimental studies preponderantly support the hypothesis that there is a directional, causal link between exposure to TV violence and an observer's subsequent aggressive behavior." He cautions, however, that other factors influence a child's behavior. Although a few studies have suggested that seeing aggression reduces overt aggressive behavior in viewers through some kind of vicarious release, Dr. Liebert claims such studies are "rare enough to be called anomalous."

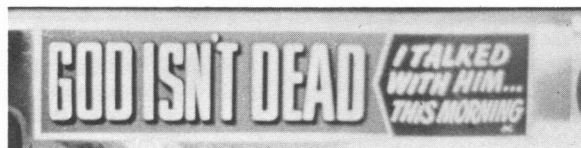
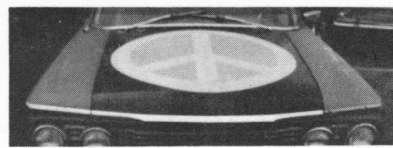
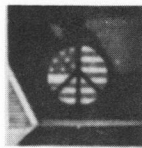
What can we expect in children's television in the future? Dr. Liebert says he is heartened by shows like "Sesame Street," which he says, teaches children in a positive manner without stressing violence (although he points out that there is some aggressive behavior in some of the programs, for instance where a big letter of the alphabet eats up a smaller letter).

"All of our research shows that television is a uniquely effective teacher, and that children will learn from television's offerings — commercials, news and entertainment — whether we have intended them to or not," Dr. Liebert says. "Thus," he sums up, "our aspirations as 'television consumers' should not simply be to eliminate the noxious and offensive, but rather to encourage the productive and worthwhile. Only responsible sponsors, supported by parents themselves, can do that."

—Brad Berthold □

SIGNS OF THE TIMES

More parking-lot evidence of the varied wit, wisdom and whimsy (take your pick) of the University community.



Stony Brook Has A Romance with the Moon

Ever since July of 1969, when Apollo XI astronauts brought scientists their first samples of lunar rock, Stony Brook has had a romance with the moon.

This has meant couriers hand-carrying the precious samples from Houston to Long Island. It's meant precisely pre-measuring car routes, down to the second, to insure that samples could be sped from the atomic reactor to a laboratory before the short-lived radioactive particles decayed beyond usefulness. It's meant working around the

clock, for days on end, to operate and monitor the University's ultrasensitive mass spectrometer and related equipment. And, ultimately, it's meant sharing in the adventure of unraveling the ancient history of the moon and entire solar system.

The lunar courtship grew in intensity as the Stony Brook rare-gas analysis team, under the direction of Dr. Oliver Schaeffer, chairman of the Earth and Space Sciences Department, was again listed among the leading investigative teams to study the moon rocks from the Apollo XII and XIV flights. After Apollo XV, the romance became more intimate when the Stony Brook team was chosen as the only one in the country — and one of two in the world

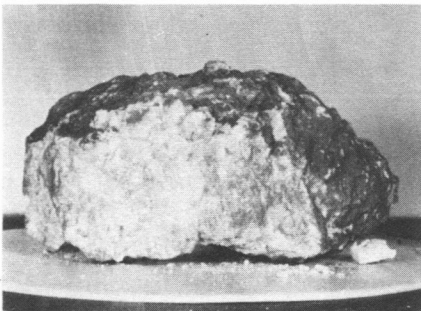
— to determine the age of the so-called "genesis rock."

The rock got its name because of hopes that it would prove to date from the earliest era of the moon, which, like the solar system itself, is generally considered to be about 4.55-billion years old. When Astronauts David Scott and James Irwin spotted the white, crystalline anorthosite rock — which geologic training had led them to believe might be the oldest rock variety on the moon — their cries of excitement were carried throughout the world.

Almost two months later, those cries were echoed by scientists and the world press as the Stony Brook team revealed that the "genesis rock" was, indeed, the oldest yet recovered from

the moon. Its age was set at 4.15-billion years, with the possibility noted that subsequent Stony Brook tests might allow an upward assessment of age — perhaps to 4.35-billion years. Previously, most moon rocks ranged in age from 3.3 to 3.8-billion years, with the oldest dated at 4.0-billion years.

The rock's examination was led by Dr. Liaquat Husain, a 29-year-old nuclear chemist from Pakistan. His colleague was Dr. John F. Sutter, a 28-year-old geologist. For the past year, both men have worked as research scientists with Dr. Schaeffer, who is now on sabbatical leave at the Max-Planck Institute for Nuclear Physics, in Heidelberg. □



ROCK OF AGES A rocky romance has come to a pleasant conclusion with the discovery by Stony Brook scientists that their beloved stone is 4,150,000,000 years old, older than any other yet recovered from the moon.

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