

occurred, the Stanford report* concludes that science advisers are valued not just for the quality of their advice but also to give the appearance of legitimacy to political decisions—"An adviser often finds himself playing the role of high priest whose ministrations during the preparation of a policy are supposed to make the policy immune from political attack." The report, which is the product of a year-long student-faculty workshop at Stanford, describes, in language more colourful than usual for academic prose instances of "disturbing reports which have leaked through cracks in the strict wall of secrecy with which the administration has surrounded its advisers". These include a report by the AEC's Advisory Committee on Reactor Safeguards which in 1956 declined to guarantee the safety of a nuclear power plant at Lagoon Beach, Michigan (the report was suppressed, the reactor suffered a serious meltdown); the report of an Ad Hoc Review Committee set up by President Nixon in 1969 to review the SST programme (the committee concluded that the noise of the aircraft would be intolerable but the programme went ahead nevertheless); a report by the President's Science Advisory Committee expressing concern about the dangers of triggering off earthquakes with underground nuclear explosions (the report was suppressed for nearly a year during which the Atomic Energy Commission implied the committee's findings had been reassuring); reports by panels of the National Research Council on the safety of cyclamates which recommended on four occasions that use of the sweeteners should be controlled (the Food and Drug Administration persistently ignored the advice); and other reports on the efficacy of the anti-ballistic missile system, hazards of DDT and the possibility of teratogenic effects caused by the herbicide 2,4,5-T.

The authors of the Stanford study are two physicists, Frank von Hippel, now at the Argonne National Laboratory, and Joel Primack, now at Harvard University. Their interpretation of the cases they have studied is that a science adviser should accept that his primary responsibility is not to the person or agencies he is advising, as in a lawyer-client relationship, but to the nation as a whole. Other guidelines offered for consideration are that an adviser should speak out when he believes information is being needlessly withheld and public debate hampered, and should make public the areas on which he is advising and the general nature of the information to which he has access. Another guideline bids an adviser to give on request to responsible opposition groups whatever

* *The Politics of Technology*. By Frank von Hippel and Joel Primack. Copies obtainable from SWOPSI, 590A Old Union, Stanford University, Stanford, California 94305. Price \$7.50.

information he legally can, "including his opinion on whether any secret information of which he is aware vitiates their arguments".

SANTA BARBARA

Oil Damage Surveyed

by our Washington Correspondent

THE Santa Barbara oil spill of January 1969, often cited in the same breath as the Torrey Canyon disaster as an exemplary technological insult to the environment, may not be entirely worthy of its place in contemporary ecological folklore. According to an 18-month survey of the biological aftermath of the spill, the damage to the fauna and flora in the Santa Barbara Channel was much less than had been predicted and was often hard to distinguish from other influences.

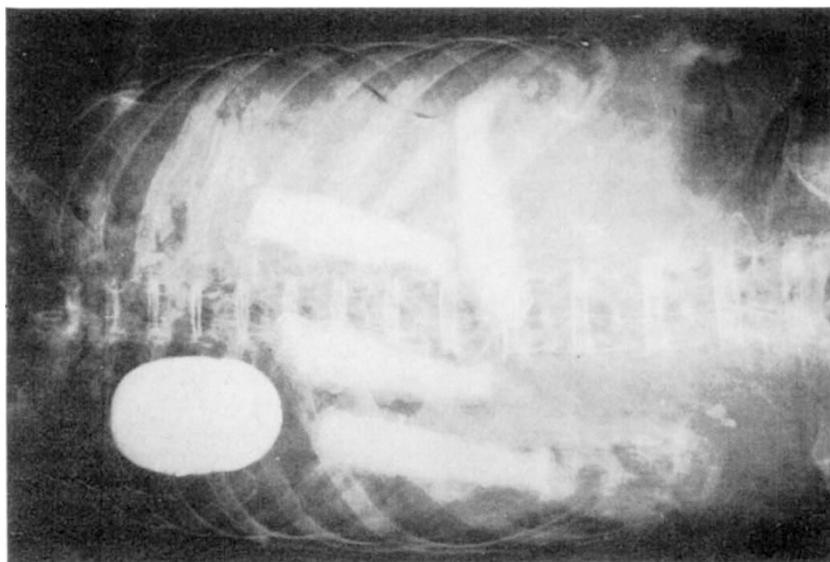
The bulk of the oil, amounting to perhaps a million tons, escaped after one of the wells of an offshore drilling platform ran out of control. The well was cemented 11 days after the blow-out, but further oil continued to escape from the site of a former natural seepage apparently reactivated by the drilling operations. A study carried out by a 20-man team based at the Allan Hancock Foundation of the University of Southern California attributes rather slight damage to the oil spill, the only serious casualties being sea birds and a species of barnacle, *Chthamalus fissus*. Other kinds of marine life may have been harmed to a lesser degree

but minor effects are hard to assess because of lack of precise knowledge about the situation before the spill.

A preliminary report of the findings prepared by Dr Dale Straughan states that there was "very little mortality" in the Santa Barbara area due directly to the oil probably because the more toxic fractions are also the most volatile and disappear after a few days of floating on the open sea. Mortality among the barnacle species *C. fissus* was probably caused by the animals being physically smothered by the oil rather than by chemical effects. The fish catch in Santa Barbara Harbor was lower than usual during the six months after the spill but the commercial catch for the wider area including the Santa Barbara Channel and the Channel Islands was no different from the same period in 1968. There is no evidence of damage to plankton and no evidence definitely attributable to the spill of damage to benthic organisms. A survey of sandy beaches during the year following the spill failed to pinpoint any damage from pollution. But some 4,000 birds, mostly pelagic species, died during the two months after the blow-out.

Full results of the study are to be published soon in book form. The study was financed by grants to the Allan Hancock Foundation of \$242,000 from the Western Oil and Gas Association and \$12,000 from the Sea Grant Programme. The Western Oil and Gas Association, Dr Straughan said last week, attached on conditions to the use of its money.

Ribcage Treasures



A large heart scarab and four Sons of Horus statues revealed inside the ribcage of Queen Nofretet (circa 1080 BC), wife of King Herihor. The jewellery was revealed in the course of an X-ray examination of 29 mummies in the Cairo museum by Dr James E. Harris and a group from the University of Michigan. Other jewellery, covered by resin or inserted into the body cage so as to escape the attention of grave robbers, was found on the mummies of Seti I, Thutmose III and Amenophis I. The objects are said to be the first royal Egyptian jewellery to be discovered since the opening of Tutankhamen's tomb in 1922.