

ment of Science in Detroit last week.

According to one of the collaborators, William A. Shear of Hampden-Sydney College in Virginia, older fossils of land animals (400-million-year-old millipedes) are known from Scotland, but the New York sample is much more diverse and contains animals that were more fully adapted to terrestrial life. Five species have been identified with certainty, Shear says, and the sample may contain as many as 15 different animals, depending on how the fossil fragments are finally interpreted. The ancient bugs had developed primitive lungs — called “book lungs” because of their shape — and some had also developed tracheal tubes — the earliest evidence of such an adaptation, according to Shear. The evidence that so many animals had fully adapted to breathing air indicates that the transition from water to land must have taken place much earlier, according to a second co-worker, W.D. Ian Rolfe of the University of Glasgow.

The New York fossil sample is unique because it contains exclusively land ani-

mals, according to Shear. The two other sites where fossilized land animals have been found — the Scotland site and a slightly younger German site — have revealed a mix of aquatic and terrestrial animals, suggesting swampy environs. All three present-day sites were part of what is called the Old Red Continent, which 400 million years ago rested on the equator, according to Shear. Because no similar evidence for early terrestrial adaptations has been found on other ancient continents, Shear says, it appears that animals — at least these particular groups of animals — made the transition to land in the tropical environment.

All of the fossils represent animals that are now extinct, probably for more than 200 million years, according to Shear. But some are “remarkably similar” to modern forms, Shear says: the mite can actually be assigned to a living class of animals, indicating an amazing degree of evolutionary stability, the centipede looks very much like a modern centipede, he says, and one of the arachnids resembles the existing

daddy longlegs. Another of the collaborators, Edward L. Smith of the California Academy of Sciences, has indentified another of the fossils as a machlid, or silverfish; if it is indeed a silverfish (others on the team are less sure), it would be the oldest known insect ever found.

One of the most exciting things about these fossils, Shear says, is the “exquisite detail” that has been preserved — including minute hairs and sense organs. In contrast to the work in Europe, Bonamo and Grierson extracted their fossils by dissolving rock with a strong acid that leaves the fossils intact. The method can also be used to obtain fossilized plants (indeed, Bonamo and Grierson discovered the animal fossils by accident while looking for plants); what this means is that scientists will for the first time be able to study in minute detail a truly terrestrial ancient ecosystem. Of the animals studied so far, all except the mite were carnivores, suggesting the existence of soft-bodied land animals during the same time period.

—W. Herbert

## Task force on science communication and secrecy gets rolling

In an attempt to examine the ongoing controversy surrounding the question of restrictions on scientific communication, a National Security Council-sponsored task force will in a few weeks begin interviewing industry and university scientists on the matter. The results will be reviewed by select scientists in secret, and some scientists fear that the task force's conclusions and recommendations will remain secret as well.

The survey is part of a review of efforts to control the flow of militarily critical technology from the United States to the Soviet Union. “Our mutual concern is to arrive at a policy that is acceptable to the research community and does the job required,” explained Louis T. Montulli, until recently an analyst at the White House Office of Science and Technology Policy. Montulli spoke last week at a panel discussion at the American Association for the Advancement of Science (AAAS) annual meeting in Detroit.

The NSC's interagency task force on technology transfer, called for in a February presidential directive, is an attempt to bring order to a confused, controversial export control program. According to Montulli, about 44 groups scattered across 14 government departments and agencies are involved in executing the administration's present policy.

In the new attempt to streamline operations and clarify policy, one task force study group is examining the role that all types of scientific and technical communications play in technology transfer. The review covers all means of communication, from conference speeches and patents to exhibits and air shows.

The group plans to send out a question-

naire this summer to collect opinions on the issue from researchers. After analyzing the replies, it will formulate “a detailed description of the problem and a draft set of policy and implementation recommendations.” The resulting document, before its scheduled release at the end of the year, will be reviewed by selected representatives of the scientific and technical community, in the course of “very private conversations,” Montulli said.

However, some scientists are concerned that the NSC may choose to keep all or part of the final document and policy directive secret. Furthermore, panelist Stephen Unger, a computer scientist at Columbia University, is worried that the largely secret review process would inevitably lead to recommendations for increased research secrecy.

To counter this trend, Unger said, the U.S. Congress ought to make a strong statement on the need for openness in scientific communication. Recently, during debate on revising and extending the Export Administration Act, which authorizes export controls on sensitive technologies, House and Senate committees did just that. The House committee, for instance, has passed an amendment affirming the need to protect “the ability of scientists and other scholars freely to communicate their research findings.”

Rosemary Chalk of the AAAS Scientific Freedom and Responsibility Committee noted that several events during the past year have already negatively affected the work of researchers, students and officials in universities and industry (SN: 4/2/83, p. 218). Although information on the numbers involved is impossible to obtain, both Chalk and Unger suggested that individual

researchers have, on occasion, voluntarily withheld new research findings in the belief that such work might fall within, or close to, areas of current concern to the government. Some companies, particularly those having contracts with the Department of Defense (DOD), have issued more stringent guidelines governing the public release of company research results. The guidelines affect even subsidiaries that are not DOD-funded.

Moreover, a DOD policy, spelled out last September, required that all new DOD research contracts allow researchers to submit their papers for publication at the same time that they submit them to DOD for review. Despite this policy, the U.S. Air Force, for one, still reserves the right to review, censor and hold, for indefinite periods, papers before they are circulated to anyone else.

Chalk also described a case in which U.S. Customs officials seized several shipments of magnetic computer tape scheduled for delivery to the Soviet Union. The tapes, from the Institute for Scientific Information (ISI) in Philadelphia, contained scientific bibliographies. “These shipments were seized not because of the sensitivity of the bibliographic information but because of the quality of the magnetic computer tape itself, which exceeded the criteria currently listed in the Commerce [department] export control guidelines,” Chalk said. The solution to ISI's dilemma may involve shipping the information on 20-year-old, poorer-quality tapes.

Chalk concluded, “There is much about the secrecy issue that remains a mystery.” More and more scientific groups are becoming concerned.

—J. Peterson