Energy, Earth and Environment — The Next 300 Years

On November 11, 2006, the Geoscience Founders Society sponsored a symposium for F&M alumni and other guests at the Houston Museum of Natural Science. Dave Lehman ’68, Chair of the Society and Carol de Wet, the Director, welcomed 60-70 people who took advantage of the chance to hear a lively exchange of information and ideas between academics and people working in the energy business. The program included the following presentations:

“World Energy Outlook” — Susan Payne, Geoscience Resource Manager, Exxonmobil Exploration Company

“Ancient Forests in the Arctic — Implications for Global Warming” — Chris Williams, Department of Earth and Environment, F&M

“Impact of the Environment on Human Health” — Richard Pepino, Department of Earth and Environment, F&M

“An Overview of the Biofuels Alternative” — Richard Vincent, Director, Patriot Biofuels, Inc.

These talks were followed by a panel discussion, moderated by Robert Schwartz of the Houston Technology Center, with Christine Bradford ’92, Tom Gardner ’71, Alan Huffman ’83, Ethan Skinner ’97, and Bill Wescott ’72 as participants.

President John Fry spoke warmly about the value of the symposium as a new and very constructive mode of interaction between the College and its alumni. Finally, Roger Thomas, current Chair of F&M’s Department of Earth and Environment, made the following remarks on its behalf.

An “Investment in Knowledge with the Potential to Yield Great Returns

Benjamin Franklin has been called “the first American,” partly on account of his important role in founding the nation and establishing many of its civic institutions. But, this informal, explicitly democratic, title also acknowledges him as the archetype of American enterprise and orientation toward the future.

Franklin retired at an early age from active management of his printing business, to devote himself fully to science, public affairs, and later diplomacy. How could he afford to retire in his 40’s? He was ably supported by his wife, of course, who was his primary business manager. However, Franklin was also a very astute investor, setting up his protégées with their own printing shops, and in each case keeping a share of the business for himself.

As alumni of F&M, you may not have thought about the matter quite in these terms, but we do the same thing with our students. When each of you graduated, you left behind a part of the fruits of lively interaction with our faculty, in the classroom, in the laboratory, and in the field. The courses I teach today were shaped by interaction with many of you. You contributed to the collections of rocks, fossils, fossils and research data on which I draw, week by week, in my

teaching. And, of course, you have significantly helped to keep our program strong by your subsequent financial contributions to the College. For this we are immensely grateful.

There are many things I could say about our current program, but I want to emphasize three things: the expanded scope of our enterprise, laboratory equipment, and recruitment of excellent students.

Three years ago, we established three majors, all of which are offered through the department: Geosciences, Environmental Science, and Environmental Studies. This has been made possible by a significant expansion and some realignment of our faculty (see chart). It is not appropriate to go into the details of these programs, here. Suffice it to say that this is the sort of program, taught by the sort of staff, that John Moss foresaw, many years ago. Moreover, it is infused with the same values that John, Pete Foose, Dusty Ritter, Don Wise, Marv Kauffman and Ed Beutner have always emphasized.

(i) Nothing matters more than critical reasoning. We continue to challenge our students to assess the roles of multiple variables, to challenge existing models, and to look for hidden assumptions on which any given interpretation of a geologic or environmental problem may depend. Some of you recall my exams!

(ii) We continue to maintain a strong commitment to instruction and research in the field, locally in Pennsylvania and as far away as Oregon and California, the Bahamas, the Canadian Arctic, and South Korea.

(iii) Substantial involvement of our students in laboratory work using state-of-the-art instrumentation is of the utmost importance to us. Recently, a friend asked whether we might not make more efficient use of faculty time and college resources by contracting out much of our analytical work. In certain circumstances, we do this — when we need radiocarbon dates or some kinds of isotope data, for example. But, it is essential that our students gain direct experience, gathering their own data and learning from their mistakes, in the laboratory.

Recently, the department has purchased several new instruments, principally for use in environmental research. Dorothy Merritts and Bob Walter are developing a grant proposal that seeks funding for yet other instruments, including a particle analyzer, that will help to move us toward our goal, to establish a comprehensive, fully equipped environmental laboratory.

Meanwhile, some of our existing equipment needs to be replaced. We have established three priorities.

(i) Our X-ray diffractometer is over 20 years old. It continues to provide us with good data, but parts are no longer easily available. Sooner or later, it will be irreparable. Stan Mertzman is writing a grant proposal, to be submitted to NSF, seeking $175,000 for a new XRD. A significant match from the College will be an important factor in making this proposal competitive. We anticipate that $25,000 contributed by the Geoscience Founders Society will provide this match.

This represents an excellent use of support from the Founders, as leverage to obtain a much larger sum of money from NSF.

(ii) Our scanning electron microscope is over 10 years old, and far from state-of-the-art. Its older technology is complex, incurring frequent breakdowns and costly repairs, Carol de Wet has graciously offered to write a grant proposal to replace this instrument, during her sabbatical next year. By this means, the department hopes to obtain the larger part of the $250,000 cost of a new SEM.

(iii) Finally, the computers in our PC lab are nearing the end of their useful lives. It will take about $60,000 to replace them and link them to a high-end server. We regard this equipment as a part of our basic infrastructure, so we are seeking funds from existing college resources for this purpose.

Strong programs and fine facilities help to attract excellent, highly motivated students, as high school applicants and, like so many of our alumni, from among the many previously uncommitted students who discover their interest in geology and the environment at the College. Some of you have been actively involved in recruiting students to apply to F&M. We greatly appreciate this. Please, redouble your efforts to point potential applicants, especially students who are strong in the basic sciences, to F&M.

Benjamin Franklin had a deep, practically oriented commitment to excellence in education, which he characterized as “an investment in knowledge.” Franklin also anticipated Thomas Malthus in appreciating the significance of exponential population growth for the economy. Malthus was led by his analysis to predict increasing constraint, famine, and impending economic decline. Franklin, in contrast, pointed to the enormous unexploited resources of North America — productive land in particular — as the underpinning for growth of the American economy that would before long outpace that of the country’s colonial rulers. Franklin was very prescient. But, the real difference between Franklin and Malthus was that Franklin was an optimist and an entrepreneur. As a clergyman, Malthus perhaps expected his reward in heaven. Franklin wanted his on Earth. Franklin believed that if we invest prudently and imaginatively, taking the long view, the future — which we cannot entirely predict — will take care of itself.