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Monthly Planet

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Editor's Note

Welcome to the first edition of the **Monthly Planet** for the 1985-86 academic year. This journal is a publication of the Environmental Center, an A.S. organization located in VU 113.

The staff of the **Planet** is a group of hard-working students, each of whom has an intense concern about the welfare of the environment. They bring to this journal good abilities to make stories which articulate these concerns. It has been a pleasure for me to be involved in their creative processes.

In this issue, there are stories about events that are happening locally, or which may have an impact on the citizens of this area. Also, we were able to include coverage of the "Pathways of Toxic Waste" Conference, sponsored by the Environmental Center. This Conference took place in the Viking Union, on November 17, 1985. ●

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Georgia-Pacific Wins Award For Energy Efficiency

by Paul Greene

Georgia-Pacific Corporation's Bellingham, Washington sulfite pulp mill designed and installed a millwide heat recovery system that has cut steam consumption by 24% and cut natural gas consumption by 700 billion BTUs/year. The energy savings have been so significant that recently G-P's Bellingham Division was one of 12 Puget Sound area businesses and institutions which were honored for excellence in energy efficiency.

The awards were presented by Puget Sound Power and Light Co., in conjunction with Energy Expo '85, an energy conference and exposition for commercial and industrial energy users in the Puget Sound Region. "These companies and institutions have made special efforts to incorporate energy efficient techniques into their day-to-day operations," said Gary Swofford, Director of Conservation and Division Services for Puget Power, a co-sponsor of Energy Expo '85. "We felt it was important to recognize their efforts, which not only save them money, but also keep energy costs down for all of our customers in the long run."

Georgia-Pacific operates a major pulp, paper, and chemical complex right below Western Washington University on Bellingham Bay. Its three pulp and paper plants have the capacity to produce 245,000 tons of bleached and semi-chemical pulp annually. In addition, the Bellingham Complex is capable of producing 83,000 tons of tissue products per year. Coronet and M-D bath tissues, Coronet and Guest Ranch facial tissues, and Coronet paper towels are all products that G-P manufactures locally.

Operation of this forest products complex had its modest beginnings 60 years ago. Pacific Coast Paper Mills constructed a small tissue manufacturing plant at this site in 1925 followed by the construction of a wood pulping plant nearby in 1927 under the ownership of the San Juan Pulp Co. Ownership of the two operations later came under Puget Sound Pulp and Timber Co., and in 1963, through a merger agreement, Georgia Pacific gained ownership of all P.S.P. & T. holdings. A chloralkali plant was installed in 1965, which produces chlorine and caustic soda for the mill as well as the open market. In 1971, a new primary treatment plant for pulp mill effluent was built.

A major upgrade for pulp production came in 1973 with the start-up of the 230 inch-wide Rauma-Repola 600-plus-tons

per day (tpd) pulp dryer. In 1976, two additional batch digesters were added, bringing the total to eight. The mill produces approximately 620 tpd of pulp, using wood purchased from contract loggers or cut on G-P's own woodlands. Round wood is chopped at the mill after de-barking. The bark is burned in hog-fuel boilers to produce 180-psi (pounds per square inch) process steam. The majority of the fiber used at the mill is hemlock, true fir, and some alder.

The mill ethanol plant, installed during WWII was built to provide alcohol for synthetic rubber. After the war, the mill took over the plant and currently is the only sulfite pulp mill in the U.S. producing ethanol. Because the mill does not have a furnace for chemical recovery, (the company does not plan to build one since it is located in the center of a city), G-P has extensively researched possible uses for spent sulfite liquor. The mill started a research laboratory in 1947 and is currently a major force in lignin chemical research. The economics of sulfite liquor recovery, which are different from the Kraft recovery cycle (Kraft recovery cycle usually used in pulp production), coupled with the environmental requirements of sulfite waste treatment, have made many sulfite pulp mills look carefully at by-product recovery.

It is traditional in the wood products industry to make useful products out of waste materials. All of the wood G-P uses to make pulp is salvaged timber or waste material from sawmills that is unfit for lumber or plywood. The mill at Bellingham is unique in that it does not use a recovery boiler to recover spent process chemicals, instead, the mill uses the spent sulfite liquor to produce ethanol, a full range of ligno-sulfates, and other chemical products. Prior to starting the mill-wide heat recovery, all mill boilers had pre-heaters and/or economizers. Boiler feed water was pre-heated using heat available in streams from the alcohol plant, and hot water from the acid plant was used on washer showers in the bleach plant. Although no individual component of the project is unique, the magnitude of energy savings achieved is remarkable considering the fact that the mill had existing energy conservation systems in place.

In the early 1980's, mill management reviewed a number of suggested energy conservation projects with an eye toward gaining energy tax credits. Once groups of projects were identified, the mill hired

Ekono and Raphael Katzen Associates International Inc. to do a feasibility study. Based on this study, management decided to proceed with the project, with the mill engineering staff doing the system design and functioning as the general contractor. Studies showed that through a system of interconnecting piping and heat exchangers the mill could reduce steam consumption by better utilizing low-level waste heat. In 1983, the mill started to implement a package of 21 energy conservation projects tied together, where possible, through hot and warm water utility networks. Several of these projects were completed in 1983. Significant savings did not occur until March 1984 with the completion of the utility networks and major contributing systems.

The major parts of the project include an Ahlstrom heat recovery boiler, special heat recovery hoods for Nos. 4, 5 and 6 paper machine Yankee dryers and two-tier hot water recovery and storage system. Research and development work for the heat recovery project began in mid-1982. When the heat recovery system was first being planned, mill personnel catalogued the processes that consumed steam and hot process water. Next, engineers looked for ways to substitute a lower cost heat source for a higher one. The underlying strategy of the heat recovery system was to assign a value to the four most commonly used process heat sources in the mill and to emphasize the use of the lowest cost heat source.

To put the plan into effect, a hot water utility was designed. Hot water was generated, collected, and segregated into two tanks, one at 80 C and the other at 60 C. By doing this, the optimum sources for generating "hot" and "warm" water could be identified. These proved to be a major source of heat savings. There are a number of processes in the mill that could produce hot water, and this hot water, in turn, could replace steam in a variety of ways. To reach a higher level of efficiency, some existing systems had to be modified or replaced. For example, the system for using waste heat in the secondary tower of the acid plant to heat water for the bleach plant was scrapped in favor of a waste heat boiler downstream from the sulphur burner. This allowed the bleach plant wastes to be used as a heat sink for lower level energy.

It was also important to match the capacities of the two water systems to the anticipated demands to avoid having to manufacture a lower grade heat source from a higher one. A backup system was also designed to generate hot and warm water from steam when needed. Since various operations in the mill operate independently, back up sources were necessary to keep a shut-down in one area from upsetting production elsewhere in the mill.

Because the mill contains several profit centers which function almost independently, this communication between units is critical to the proper functioning of the heat recovery system. For example, managers of units that are not heat producers must let managers of units that are heat users know when maintenance shutdowns are scheduled. The most challenging aspects of this type come from interdepartmental dependence resulting from intricate cross-connections. Each system has to be designed and operated with complete energy and backup systems. Due to corporate philosophies, these various units had long operated as separate profit centers or independent units. To tie all these organizations together around an energy recovery system involved major changes in mill management style. Managing the production and consumption of steam and hot process water is the core of the heat recovery project.

Although it is difficult to summarize what is in effect an "on-going effort", the total investment has been over \$5 million. This investment was returned in less than a year. With the majority of projects completed to date, total steam consumption in the mill has dropped by 70,000 lb/hr. The total reduction in consumption in natural gas is over 700 billion BTU annually. Production increases have also occurred in two of the mill's tissue machines as a direct result of hot water being available for felt cleaning showers. These projects have been so successful that additional projects are now underway, with a goal of reducing total steam demand by nearly 100,000 lb/hr. from historic levels. Steam production from oil and gas is expected to drop by more than 160,000 lb/hr.

If you have further questions: Orman Darby -Director Public Relations, John Asmundson -Heat Recovery Project Leader.

Mount Baker Wilderness: A Compromise

by Steve Burcombe

For years there has been a conflict over wilderness in Washington. It's your classic struggle between those who would preserve nature and those who say we must exploit it for a healthy economy. A chapter in this great saga has been written right here in Whatcom County.

In 1979, a U.S. Forest Service study of roadless National Forest lands (RARE 2) was presented to the Carter administra-

tion. Its purpose was to determine what the Forest Service should do with their remaining roadless lands. The study recommended 275,000 acres of roadless lands surrounding Mt. Baker not be considered for a wilderness designation.

To protest this recommendation, the Mt. Baker Wilderness Association (MBWA) was formed. According to MBWA secretary Susan Scanga, they worked to compile evidence in favor of establishing a wilderness area surrounding the mountain.

In 1983, The Washington Lands Bill was introduced by Senators Jackson and Gorton. This bill included proposals for a number of wilderness areas around the state, including one at Mt. Baker.

According to Howard Apollonio, also of the MBWA, the association took the position that a wilderness area would support the tourism industry. According to Scanga, the MBWA wanted several stands of old-growth (virgin) timber to be protected, because the logging of these stands would be a threat to wildlife. They were also concerned that clearcutting could lead to a loss of nutrients in the soil, she said.

As the Lands Bill worked its way through Congress, the timber industry also voiced their opinion. Gordon Iverson, logging manager of the Bellingham division of Georgia-Pacific Corp. said, "This argument about the nutrients not being put back into the soil - so what? We could put fertilizer back on, which we do. But, why worry about nutrients on land if it's not producing anything anyway? And wilderness isn't." Iverson also said the Lands Bill was a threat to jobs and timber industry revenues.

Eventually the Lands Bill passed Congress and was signed by President Reagan in July of 1984. It was a watered-down version of the original, however. The Mt. Baker Wilderness was cut down to 130,000 acres from the 235,000 originally proposed.

The land left out included areas around Church Mountain and the middle fork of the Nooksack River. Another omission was on the south side of Mt. Baker itself, where 9,500 acres were placed in a National Recreation Area.

The final version of the Bill protected a number of scenic highlights in the area. These included the Tomyhoi-Selesia, Ruth Creek, and Table Mountain-Chain Lakes areas.

According to Scanga, there is always the possibility that timber sales, made in the excluded areas, might stimulate a new effort to expand the Wilderness. For the time being, however, there was no such effort under way, she said.

Protecting wild lands from development has never been easy. Generally, the size of protected areas has been a compromise between conflicting groups. The Mt. Baker Wilderness is no exception.

Mountain Bikes: The Legalities and Impacts

by David Taylor

Mountain bikes have recently become very popular in the northwest. These machines are easily set apart from conventional bicycles by their beefy, knobbed tires, triangular handlebars with motorcycle-style cantilevers, quick-release seat posts, wide gear ranges, and their ability to traverse and climb almost any terrain with ease. The issue of whether they should be allowed on hiking trails in our National parks and wilderness areas is one of the hottest controversies to date in cycling and conservation circles.

Groomed hiking trails can be ideal for all-terrain biking, since they are generally smooth and not too steep, and have some pleasant reward, such as an alpine lake or breathtaking views. Logging or other unpaved roads can also be enjoyable, but have the disadvantages of unsightly clearcuts, steep ascents, and descents made rough by cat tracks and ruts. The preferred routes, at least by this mountain biker, are river valley trails with the minimum of elevation gain. These are also the preferred trails for hiking, so conflict occurs. Backpackers generally resent the intrusion of any kind of machine on 'their' trails, especially after they have toilsomely trudged some 14 miles in two days and then must leap out of the way of a 'herd' of mountain bikers crusing effortlessly by on a half-day jaunt. The incidence of hiker-biker collisions can only increase as more and more

mountain bikes take to the trails. These are the biggest concerns among officials at the National parks offices, who have banned mountain bikes from U.S. National Parks and Wilderness Areas, except on public roads, according to Title 36, Code of Federal Regulations 4.3. The maximum penalty is a \$500 fine and six months in jail, but the usual penalty is around \$40, according to Alan Edwards, Ranger in charge of recreation in the Mt. Baker National Forest and Wilderness Area. He said that at this time Rangers haven't seen enough mountain bikes in restricted areas to be really concerned about them yet.

Another problem is that mountain bikes ridden on soft or wet trails, prevalent on the west side of the Cascades, leave a deep track that soon becomes a stream in the rain, which causes severe trail erosion and expensive maintenance costs. Horses cause similar damage, yet are allowed in many areas. Pack animals have been known to bolt or throw loads when encountering mountain bikers in the backcountry, so conflict with them is another barrier to mountain bikes in the Parks.

Horses themselves make trails unpleasant and often unridable, due to trail deterioration and the inevitable dung that quickly gums up knobbies and is soon flung at the riders back and chin. Thus the desire for avoidance is mutual, and mountain bikers feel that they are being unfairly

singled out since they cause considerably less damage and pollution than horses.

The question of whether the use of mechanical transportation modes is aesthetic in our pristine wildernesses seems to be the underlying conflict, and the government is still struggling with the issue, trying to make both sides happy and content. Already there are plans in the works for designated off-road vehicle trails in this area. Alan Edwards mentioned that the Canyon Ridge trail, north of Glacier near the Mt. Baker Ski Area, is open to mountain bikes now although it is in rough shape. They are planning improvements to it in the near future, and plan on completing it in two years. They have other trails near Concrete that are in consideration but also in poor shape, and hope to have many more available in the next few years. There are plenty of side roads and trails outside of the Parks and Wilderness areas to ride for now, and we can anticipate more in the near future. If you have any questions about your planned routes, contact your local ranger district first to find out the legalities and feasibility factors, so you can avoid harsh penalties and unpleasant conditions. Stay away from trails in wet conditions and use caution and courtesy around hikers and horsemen, for mountain bikers must prove themselves before they can be truly accepted in the great outdoors. ●



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SPECIAL REPORT:

"PATHWAYS"

CONFERENCE

On November 17, 1985, from 9:00 AM to 4:00 PM, a group of us were treated to the "Pathways of Toxic Substances" Conference, held at the Viking Union. This Conference was put together by the creative and dedicated staff of the Associated Students' Environmental Center. Led by Bill McCord and Ilene Anderson, this diligent group contacted and obtained speakers from diverse fields, and a wide range of distances from this Campus.

It was a privilege to be present to hear the consistently competent speakers, and to take part as an observer in the many presentations. This special report to the *Monthly Planet* was compiled by Tracy Brown, Jeff Hardy, Paul Greene, and myself. In addition to this overview report, there are reports of the wide variety of panels and workshops, that were held both in the morning and afternoon sessions.

In the morning, Dr. Ruth Weiner of Huxley College, defined the issue for us. As humans produce goods, we generate substances which, if ingested, can produce severe damage to our health. These are toxic wastes. Many of these wastes can be rendered harmless through treatment and proper isolation from the "natural" human support systems; our air and water; away from the food chain which keeps us alive and well.

From our prior reluctance to foresee and forestall problems; from our reliance upon crisis management rather than upon anticipating trouble and designing safety mechanisms to render wastes non-troubling, we have created a situation in which we are forced to deal with a large volume and variety of toxic substances. These substances have been dumped in unregulated sites throughout this nation and others. In this nation alone, there are some 20,000 dump sites for toxic wastes. We are currently struggling to clean up these wastes, and have created the Environmental Protection Agency, and a host of legislation to help us with this task.

One example of this legislation is the Superfund. Administered by the Environmental Protection Agency, it is designed to stimulate work on cleaning up the dump sites. Currently, six sites are being cleaned up, with money allocated to extend the operations.

More specific information about efforts in the Puget Sound area was given by Claire Dyckman, an environmental analyst from Seattle City Light. She concentrated her talk upon the disposal of PCB's, which have been a much-favored chemical used in large components of electrical transmission equipment--mainly large transformers and capacitors. PCB's are known for their excellent resistance to breakdown by heating, while they have excellent dielectric properties, which make them able to greatly resist invasion of electrical transmission systems by stray and unwanted forms of electrical charge, such as static.

In this capacity to withstand breakdown from heat lies one of the most dangerous potentials of PCB contamination. PCB's, when not burned completely, will generate dioxins, which are among the most deadly of materials yet created. PCB's also concentrate in the fatty tissues of animals, and persist for long periods of time. Although banned from production in 1978, the utilities still use them. They have become quite widespread in the utility's systems, largely because of methods used to clean and recharge components, such as transformers. In these procedures, PCB's are mixed with mineral oil, and returned to the system.

Disposal of PCB's has been made more difficult because of inadequate record-keeping to track where the material went, and to what disposal yards.

Speaking in conjunction with Ms. Dyckman were Catherine Massimo, an engineer with the EPA, and John Funderbeck, who works with Crosby/Overton, a company which does large-scale cleanups of industrial plants. Ms. Massimo gave us some quite technical information concern-

ing the operating characteristics of various incinerators. Mr. Funderbeck made himself available for questions concerning the operation of Crosby/Overton.

At this point in the Conference, the group was invited to participate in a selection of panels and a workshop. The topics were about a variety of toxic substances and the systems we have designed to try to cope with them. Reports of these panels, as well as the afternoon panels and workshop are located in this section of the *Planet*.

In the afternoon session, Dr. Jan Koeman, Professor of Toxicology at the University of Wageningen in The Netherlands, led off with a talk and slide show concerning the work of toxicologists in The Netherlands and Africa. He stated that it was Rachel Carson's book, *Silent Spring*, which stimulated activity in the 1960's. In 1965, the first Wildlife Symposium was held in the United Kingdom, and many of the pioneers of toxic substance control were there.

In The Netherlands, Dr. Koeman has been in the forefront of wildlife protection. He and his colleagues have developed methods for identifying which species were most sensitive to changes in the pesticide levels in their environment. These indicator species have been followed for a number of years, with correlations being drawn between their reproductive abilities and the sites of their contamination.

From these correlations, recommendations have been drawn and presented to the government of The Netherlands. In recent years, because of action, there has been an increase in the populations of birds of prey. These increases indicate that pesticide residues are lowering.

Dr. Koeman also talked about some conditions in sub-Saharan Africa. There, pesticide spraying has been directed at rivers to combat *Onchocerciasis*, a disease in which humans are invaded by worms. These worms are transmitted in the larval stage to human bloodstreams by

CONFERENCE REPORT CONTINUED:

biting flies. Forests which line the rivers serve as habitats for the flies, and are also being sprayed.

As these areas are cleared of flies, people tend to move in, cut down the trees, and have their livestock overgraze the vegetation. Once the protective vegetation is removed, the rivers dry up, and fish populations perish.

There are excellent scientists in Africa, Dr. Koeman stated. They are fighting Western stereotypes that Africans are mainly ignorant natives, and are lacking in sponsorship to build programs through which damage can be assessed, and with which adequate land-use planning can be developed.

Following this presentation was one by Dr. Prakash Bakre, an Assistant Professor at the Department of Zoology at the University of Rajasthan in Jaipur, India. Dr. Bakre talked about climatic and cultural conditions which affect the productivity of agriculture and the protection of wildlife and humans in India.

India is located in a part of the World which is subject to an annual monsoon (wet) and dry cycle. During the wet season, there is a great deal of rain, which produces flooding of fields. These floods attract large flocks of birds. Additionally, the water attracts people looking for places to wash their trucks. This washing contributes fuel-oil contamination to the fields.

During the dry season, which is very dry and very hot, the fields dry up. Evaporation creates upward pressure on the capillaries in the soil, and salts, located in the sub-soils, are attracted to the surface, where they increase the salinity of the soils. Additionally, during this season, the people haul away the fertile topsoil which has been accumulated during the floods. All of these actions tend to degrade the quality of the agricultural soils.

Dr. Bakre further talked about the Vishnoi, a group of people who hold the lives of animals in very high esteem. In their mythology, the gods used animals for transportation, riding wild tigers and other animals. In this relationship, there is a great depth of cultural responsibility which the Vishnoi act upon.

Dr. Bakre related an incident which demonstrates the commitment the Vishnoi have to their beliefs. A king of one of the provinces dispatched some troops to cut down some trees near a Vishnoi village. The villagers interceded by stepping between the trees and the soldiers. As one would be killed by an axe-blow, another would take his or her place. About a hundred were killed before the king was notified, and recalled his troops. The trees stand there yet.

Anyone caught harming wildlife near a Vishnoi village is subject to be disposed of.

Wild animals, when hunted near these villages, will run to the huts of the villagers, seeking and getting sanctuary.

According to Dr. Bakre, the development of avian toxicology is still quite rudimentary in India. Laboratory equipment needed for detection of pesticides is still lacking, as is support from educational institutions. Degrees at the Masters' level in toxicology are still quite rare. There are cultural practices which need to be examined for potential hazardous output of toxic substances. One example of these practices is the burning of coal in open cooking fires. This burning liberates mercury into the atmosphere, and can be quite harmful to breathe.

The catastrophe by Union Carbide at Bhopal has stirred a much high sensitization concerning toxic substance pollution in India. Dr. Bakre estimates that the number of deaths was in the range of 10,000 to 12,000. We wonder at the media coverage in this nation which set the figure at about 2500.

The afternoon session concluded with a variety of panels and a workshop. We congratulate the staff of the Environmental Center, the speakers, and the dedicated group of participants who came out on a Sunday to attend this very informative and stimulating Conference. ●

WORKSHOP/PANEL REPORTS

HOUSEHOLD WASTE

Bellingham is lucky that Whatcom County is one of two counties in Washington that has an active "household dangerous waste collection program." Workshop number 2 was conducted by Bill Englander of the Bellingham Department of Public Works. When Bill joined the Department, he became very interested in a program that had been at a standstill for over two years.

In 1982, the Department received an unusually high number of inquiries as to what could be done with extra pesticides that either wouldn't be used, or were unsafe to be used. The Department did design a storage facility in response to these inquiries. Unfortunately, that's as far as things went, because the problem of household dangerous wastes falls into a gray area.

By law, household chemicals that can be sold over the counter are exempt from any laws that are designed to govern industrial



676-6724

384-1565

toxic wastes. That is to say, they can be thrown away in any manner and usually find their way to the local dump or land fill and from there can reach the environment by a number of different pathways. It is ironic that these hazardous household products warn of danger and urge precaution and specific instructions be followed when using, yet, when we are through using them, we simply throw them in the trash or let them pile up on shelves, naive to the danger these products have to others, ourselves and the environment.

In 1984, Bill was able to get the ball rolling again. A toxic waste disposal site at Arlington, Oregon agreed to contribute trench space for hazardous household wastes from Whatcom County. Crosby and Overton, an industrial clean-up operation in Bellingham, agreed to ship the hazardous household chemicals at no charge. The Department of Public Health and, more specifically, the Community Health Center at 509 Girard in Bellingham became the contact point and focus for the project.

Heavy-duty toxic waste disposal containers lined with plastic were added to the now built storage facility at the Department of Public Health and the program was initiated.

The workshop with Bill outlined the history and initiation of the program. In addition, he showed slides that illustrated the genuine need for such a program and also showed key elements of the program. If you haven't checked out your shelves lately, it may be a good idea. The type of dangerous household waste that you may want to get rid of, and that the Department of Public Health can take, include: old paint, acetone, turpentine, pesticides, old oils, acids, bases, **old medicines**, household cleaners; as a matter of fact, if you bought it over the counter, they will probably take it. For safety purposes, there are a few stipulations: first, in order to be classified household waste, the amount must be less than five gallons; second, you must have the manufacturer's original label telling exactly what you have; and, finally, it must be a hazardous household waste product that can be deemed potentially harmful to humans, animals, and the environment. If you think you may have some potential household dangerous waste, contact the Department of Public Health at either number: 676-6724 or 384-1565.

Paul Greene

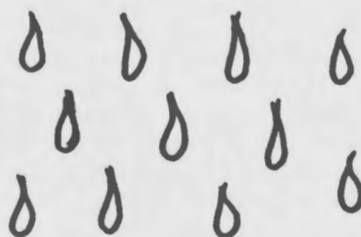


ACID RAIN

Workshop #3 was conducted by David Taylor, the Washington State Department of Ecology Acid Rain Program Manager. Acid rain has been recognized as a major form of pollution for many years, especially in Europe and the East coast where the effects have received much attention and study. Emissions of sulfur dioxide (primarily from Gas and Oil refineries, factories, and metal smelters) and **nitrogen dioxide** (from cars and fossil fuel power plants) can be converted in the atmosphere to sulfuric acid and nitric acid. These acids then can be carried long distances by the winds before falling back to earth in rain and snow that can be as acidic as lemon juice.

Acid rain has caused growing concern and numerous political squabbles over the damage that it can do to food crops, trees, materials, buildings, and aquatic life in the

United States, Canada, Western Europe, Scandinavia, and Japan. Here in Western Washington, we have a unique set of meteorological and geological factors that interact to create some unique acid rain problems. First, the rain that falls in Western Washington is already very acidic (avg. pH of 4.9 - 6.4) when compared with rain water in inland areas. The reason for this is that as frontal systems move inland, they pick up dust and gas molecules that may chemically react with the acidic moisture droplets and effectively work as buffering agents making them less acidic. David pointed out this is clearly the case in Eastern Washington where there is no significant acid rain problem.



As these already acidic frontal systems enter Western Washington, they encounter several large pockets where nitrogen/sulfur dioxide emissions are very high. These include Vancouver (WA), Centralia, Olympia, Tacoma, Seattle, Everett, and an especially large source at Anacortes and Bellingham. During the Fall, Winter, and Spring, the prevailing weather systems carry their acidic load and dump it in the Cascades which tend to comb the moisture out of Pacific Fronts. When acidic snow melts quickly and dumps large quantities of acid (as runoff and melt) in nearby bodies of water that have no other source, it doesn't take long to change the pH level, not only affecting the entire lake or pond but an entire watershed.

Almost the entire workshop was spent concentrating on this aspect of the acid rain problem. The state received a substantial amount of money to study this problem in the Cascades. They proceeded to do so, causing quite a bit of controversy by using helicopters, which not only are offensive to wilderness areas, but may have had an effect on experiment results. The State Department of Ecology has been conducting its own study of the effects of acid rain on high alpine lakes and watersheds. These studies haven't been going on long enough to provide much information. These studies have concentrated on the area between Snoqualmie Pass and Glacier Peak. Goat Lake is a lake in the study area that has been in the news lately, as it has almost been sterilized by the unusually high acidity of its waters.



According to David, the rock south of Snoqualmie Pass is of a nature that it provides more alkalinity as it weathers. Factors such as these contribute to a lake's sensitivity. There are 700 headwater lakes in the Washington Cascades. Out of 129 lakes in the state's study area, over 60 were judged to be very sensitive. Another factor that makes the North Cascades particularly susceptible is that they are very young steep-sloped mountains. In this kind of terrain, there is very little land area, often having no soil, that buffer groundwater before it enters a lake or watershed system.

In conclusion, David covered some of the aspects of the acid rain problem in Western Washington that need more attention. First of all, the state needs to shift more resources towards the study of the acid rain problem in Western Washington as we have our own particular factors and conditions. A greater understanding of material processes is required before the state can accurately establish "target levels." The large amount of rainfall we receive also means there is a high deposition of acids in rain and snow. In addition, the large rainfall means that acids don't get the long-range transport that occurs in other areas. There are a large number of sensitive lakes in the Cascades. Finally, while many other places where acid rain is a problem can rightfully blame neighboring states or countries for the acidity of the rain that falls there, Washington is responsible for its acid rain problem.

Paul Greene



TOXICS IN WATER

Panel two covered toxic substances in our water systems. The speakers in this discussion were Dave Bader from the Whatcom County Department of Health, Robin Mathews, an aquatic toxicologist from Huxley's Watershed Studies Institute, and Dave Coffman, from the Mt. Baker Watershed Association. All three were well versed in the local issues of water quality.

Dave Bader described the groundwater resources of the county, and defined some of the problems involving toxic substances. The health department oversees testing of water in the county and identifies problems with toxicity, sets recommended and enforced limits. If the recommended limits are exceeded, the department will notify the people involved of the potential risks and recommend action. In Bader's view, "the recommended limits seem to be causing more stress and strain than they are worth." The potential risks at these levels are so low that people may be doing themselves more harm just worrying about the quality of their water. He suggested that perhaps one enforceable safe limit would be more appropriate.

Robin Mathews spoke on surface water contamination and, more specifically, the pathways toxins take to get into our water supply. Point source pollution, she explained, comes from distinguishable points like a pipeline from a factory, sewage treatment plant, or storm drain system. Non-point source pollution has no distinct outfall for treatment and so creates problems difficult to remedy. Residential, urban, and agricultural runoff all contribute to this type of pollution, adding heavy metals, salts, pesticides, and nutrients supporting unwanted growths in our surface water.

Finally, Dave Coffman talked about the role of citizen's groups in the protection of surface waters. The Mt. Baker Watershed Association looks closely at programs for roadside spraying and small hydroprojects to determine their effects on water quality. Most of the watershed land according to Coffman, is owned either by the Department of Natural Resources, the Forest Service, or the timber companies. The group is interested in controlling the activities of these public and private groups to protect the water.

Jeff Hardy



NUCLEAR WASTE: "NO BEST SITE"

The topic of selection of the nation's first high-level nuclear waste repository was discussed by Huxley professor Dr. Ruth Weiner and Gerry Pollet of WashPIRG. Both speakers perceived many problems in the manner in which the Department of Energy has gone about finding a site. Hanford, Washington is being considered as one of the five potential sites for the repository, with much controversy. "There is no best site for a national high-level waste repository," says Dr. Weiner, "only somewhat better and somewhat worse sites."

When the D.O.E. released its Mission Plan, the document which sets up agency guidelines for site selection, it was met with much criticism because of the way in which the agency intends to carry out this task. Dr. Weiner noted, "The D.O.E. has stated, if they nominate three sites that is all they have to do." She talked about how this would go against the Nuclear Waste Policy Act of 1982, the initiating document passed by Congress to find a site. Dr. Weiner went on to say, "if there was a flaw in one or two of the three finalist sites, one could be nominated by default."

Gerry Pollet urged for public involvement to insure that in the process of site selection, the agency is held accountable. He also stressed concerns about the Mission Plan, saying, that as part of that document, the D.O.E. intends to select a primary site as being suitable before it is investigated for its scientific worth. He views the selection of Hanford as a site for consideration "based solely on political reasons." WashPIRG is working on a letter writing campaign to urge the state of Washington to file a law suit against the D.O.E..

In closing, both speakers emphasized the need for public involvement in the waste disposal issue. "We may not have been around when the decisions were made to create this stuff," noted Dr. Weiner, "we are here today and we must do something about it. It is everybody's problem."

Tracy Brown



CONSUMER POWER

In this panel, Bill Englander of the Bellingham Department of Public Works, Jenny Via, a concerned citizen, who works in Science Education at WWU, and Dan Rothwell, who works at WWU in the Communications Department, each gave their views about the most effective ways that consumers can use to control the proliferation of toxic substances. Mr. Englander repeated some of what he discussed in his workshop on household wastes. The main ideas he expressed were that we can control the process by becoming knowledgeable about what certain products do, and then read labels with an eye towards being more selective. We can educate ourselves and others about household toxic chemicals, and make use of the household toxic waste disposal program run by the City of Bellingham.

Ms. Via is a strong proponent of maintaining sources of pure drinking water. She discussed some of the inadequacies of Bellingham's treatment of wastes and drinking water. She suggested that we promote more rigorous legislation, educate ourselves about what goes into our water, and, if necessary, obtain a purification system for home usage.

Mr. Rothwell emphasized that the key to controlling toxic waste is how we live; what we consume. He told us that banning products was not an effective method. We need to work on programs that make it easier for us to change. An example of this kind of program is recycling that can be easily adapted to home implementation. Further, he introduced the concept of public commitment; that we should design ways to actually reward ourselves for progressive behavior. Reliance upon making people feel guilty is generally not effective, especially if overdone. We rebel when we are given too many "gross-out" messages. This kind of approach could easily boomerang, and render us ineffective. ●



ORV Park Sought on Sumas Mountain

by Jeff Hardy

During the summer, when many students were on vacation, a proposal to develop an off-road recreational vehicle park on Sumas Mountain surfaced and has remained afloat ever since. The proposal came as another step in Whatcom County's search for a suitable site on which to build a park, using available state funds. The funds come from a 1% fuel tax and ORV licensing stickers which are earmarked specifically for the development and maintenance of trails for ORV use. The current plan involves 125 miles of trails and 5,500 acres of land on the southeast side of the mountain.

Currently, the Whatcom County Parks Board (which makes decisions on departmental policy) decided to prepare an Environmental Impact Statement, and have selected a local Bellingham consultant to handle it. The Parks Department is expected to apply soon for a special use permit and is now negotiating with the Department of National Resources to reach an agreement for funding of the study. Meanwhile, the parks department is gathering information on the site to be used by the consulting firm.

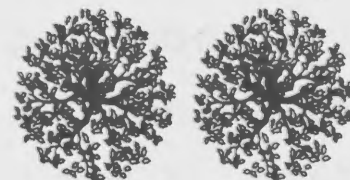
There are many people involved in seeing this proposal through state and county procedures. Vic Teshera, is the ORV coordinator for the parks department and is a county sheriff. He grew up in the county and feels that Whatcom County is going to need a facility like this. "I watched areas like Paradise Lakes disappear to development," he says. But he is concerned about non-park ORV use for two reasons. The first is that ORVs, unmonitored, will sometimes use sensitive areas. These need to be protected. His second concern is about the timber industry, which owns much of the land used for recreation in Whatcom County. As the timber corporations reduce their northwest operations in favor of the more profitable southern pine forests, there is a growing feeling that these lands will, in Teshera's opinion, be gated and eventually sold to developers. The decrease in recreational land will place increasing pressure on the land remaining. The park would be a way to control this increased use.

But alongside these considerations, there is a great deal of concern, particularly among the local citizens in the nearby town of Deming and around the base of the mountain, over the effects such a development will have on their community. A Seattle firm was hired by the parks department to complete an Environmental

Impact Analysis which they did in June 1985. On August 14, a coalition of local citizens called the Save Sumas Mountain group presented the parks department with a rebuttal to the analysis, claiming it to be inadequate in assessing the impacts on the environment and the local community. Among their concerns are those for noise, increased crime, increased erosion, trespassing on private property, and disturbance to wildlife. The local residents are not the only ones concerned. John Brown, a Huxley student and ORV enthusiast is also concerned. "I would like to see it (the park) go in, but not without some sort of assessment. Though 4-wheeling is a form of recreation, tires are definitely not ecology savers and those trucks are going to be all over the hill." The biggest concerns are for the water supply and the local fisheries, already hurting from erosion. The mountain's glacial soils are vulnerable to erosion and the high rainfall of the area increases the pressure for the soils to erode severely.

The Environmental Impact Statement process will continue with the hope that this new information will clarify some of the questions surrounding the proposal. Encouraging is the fact that people on all sides of the issue are showing some concern for the environment.

Persons wanting to get involved in the proposal are encouraged to do so. Internships are available through the Save Sumas Mounting Group. Contact Judy Osborne at 398-2122 or Ruth Weiner 676-3520. Those wanting to get involved in the EIS process, working with the Whatcom County Parks Department contact Lynn Robbins 676-3509 or Bill Summers 676-3968. ●



Editor:

SAGA's "ECO CUP" is a misrepresentation of ecology and conservation. It represents much of the popularization of environment to the detriment of the environment.

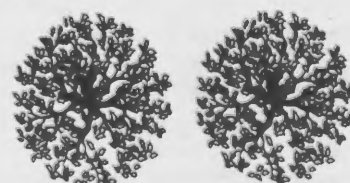
The beige and green, lidded coffee cups promoted by SAGA last school year is PLASTIC, a petro-chemical product. The petro-chemical industry is one of the greatest sources of toxic substances. It also reinforces the generating of toxic chemicals in our environment.

Those who originally purchased these cups for \$1.00 were given Coffee Club membership status. This amounts to a perpetual discount on every cup of coffee purchased when these cups are presented. Hence, every purchaser is rewarded continually for supporting SAGA's special, petro-chemical deal. The specious argument is that it is better than buying a new styrofoam cup each time coffee is bought. Certainly the good intentions deserve some credit, though they're environmentally naive.

If SAGA is really concerned about eco-cupping, may I suggest that every person that shows up with their own ceramic cup be allowed the same discount per coffee serving. I tried without success.

SAGA also does not allow consumers the option of using the less deleterious (to the environment) paper cup, because it doesn't hold the heat as well as styrofoam. Maybe consumers use other factors in their decisions, like deciding to make a small, positive gesture for environmental quality without passing another useless law...like choosing a biodegradable paper cup or using a ceramic cup.

--Bill McCord



Environmental Education: State Program Struggles

by Becky Spithill

Operating as part of the office of the Superintendent of Public Education (S.P.I.), the Washington State Office of Environmental Education is located in the Shoreline School District in North Seattle, and acts primarily as a resource facility for public schools and public school personnel interested in environmental education.

In 1976, the office of S.P.I. included in its statutes a requirement that students be exposed to environmental studies in some way.

However, local districts are free to determine the methods by and extent to which the statute is implemented. School districts' acceptable compliance to the statute could range from a presentation on an environmental topic by an individual from outside the school to the development of curriculum based on environmental education concepts, Dave Kennedy, Science Supervisor for the Office of S.P.I. said.

Since its inception in 1971, use of the Washington State Office of Environmental Education has increased, according to Tony Angell, Director of the Washington State Office of Environmental Education.

The office, which operates under a legislatively allocated budget of \$80,000 a year, does not automatically advise the state's public schools regarding environmental education, Angell said.

The office provides a number of resources which public school curriculum directors and teachers may use. In addition, it conducts workshops to teach educators the concepts and methods contained in the environmental education curricula that are available.

A school district may or may not choose to apply one or more of these available curricula in their existing education programs. Bellingham Public School curriculum integrates these kinds of resources in its science program only. However, by definition, environmental education should "...be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective," as identified by the 1978 National Leadership Conference on Environmental Education.

Angell confirmed that the Bellingham Public School District is not alone in con-

fining environmental education to the realm of science. He said that public schools typically use science as the framework for any teaching of environmental concepts. It might be expected that such piecemeal application of environmental education, that of teaching environmental education in only one subject area, while better than no environmental education at all, most likely is limited in its effectiveness as an instructional tool.

The Washington Office of Environmental Education, as it now operates, is not in the position of directly motivating and then instituting a more integrated approach to environmental education in public schools, and the Office of S.P.I. is not instilling that kind of direct control into the Office of Environmental Education. Consequently, school districts, administrators and teachers are not as strongly encouraged to use environmental education, in areas other than science as a means of educating children.

Angell did, however, cite a few examples of teachers who had utilized two or more subject areas to integrate the concepts of environmental education. The office makes available curricula that integrate several subjects under a given environmental topic, such as SLEUTH, (Strategies and Lessons to Eliminate Unused Toxicants). This program is a detailed teaching unit developed by educators in cooperation with the Municipality of Metropolitan Seattle for grades 4-12. In addressing an environmental problem, SLEUTH serves to teach not only science, but reading, writing, and a number of skills such as hypothesizing, problem solving and analysis.

Angell said that he believes the necessity of environmental education curriculum is generally recognized, except by the most uninformed of individuals. Angell's percept that most people realize the importance of environmental education is, I believe, a debatable one. While a need for environmental education is indeed recognized by the Bellingham Public Schools (as an overview of the curriculum bears out), the way in which it is presented could expand to include subject areas other than science and hence satisfy the definitional concept of environmental education.

This does not lead me to believe that the individuals who develop the curriculum of Bellingham Public School are any less informed about environmental concerns. It seems more likely that they may be only uninformed about the scope of environmental education. If this is the case, the Washington State Office of Environmental Education could take a more active role in informing educators and the public at large as to the importance of and the uses of environmental education. ●

Students Join In Production Of Textbook

by Becky Spithill

In 1982, the first edition of *Toxic Substances in the Environment* was published by the Kendall/Hunt Publishing Company. The text, designed for teaching high school students, was written by Dr. Ronald J. Kendall of Huxley College and a group of Western students involved in a seminar class on educating the public about toxic substances.

"It is worth all of our best efforts to protect ourselves and the environment from the harmful effects of toxic chemicals." This recommendation concludes the preface of the second edition, which was published in 1983.

As a vehicle for employing environmental education in schools, and specifically as an introduction to the study of toxicology for high school students, the book has met with limited success, due in part to problems of distribution, and the difficulty of introducing new resources into existing curriculum.

As complimentary copies for review, 294 copies of the text were sent to colleges and universities in the United States. Five colleges have shown a definite interest in using the book. According to Tia Leber, a 1985 Huxley graduate who earned her problem series credit by assisting in its distribution, "The low number of acknowledgements may have been due to the readability of the text. It was written primarily for young adults of middle school age."

In order to incorporate new resources into the curriculum of Bellingham Public Schools, a course outline, including the objectives, time frame and the recommended text must be submitted to the Curriculum Committee for their viewing and approval prior to its entering the classroom. Leber further pointed out that the curriculum itself undergoes major revision every seven years, and the Curriculum Committee meets approximately once a year.

The administrative rigors involved in the introduction of a new resource such as this book can be formidable, and are perhaps best addressed by interested teachers who are more familiar with the technicalities and processes of the educational system in which they teach. Furthermore, many school districts, including Bellingham, suffer from budgetary obstacles in the purchasing of new textbooks.

Problems with distribution and eventual use in the classroom notwithstanding, the text has received positive acclaim to its potential usefulness in the classroom.

The text was recommended by a number of individuals representing prestigious organizations including the National Wildlife Federation, the Washington State Office of Environmental Education, and the National Audubon Society. Reviews of the book appeared in several publications, such as *Earthwatch Oregon*, *Rain: Journal of Appropriate Technology* and *Clearing: Nature and Learning in the Pacific Northwest*.

Associate-Editor for Kendall/Hunt Publishing Company, Marial Damaskin, displayed the text at the Washington Science Teachers Conference held at Western this October. Damaskin said she noted a "fair amount of interest" in the book as a direct result of its availability at the conference. The greatest interest was displayed following Kendall's hour-long presentation on toxic substances, which also served as an opportunity to introduce the book to high school science teachers who were not previously aware of it.

Figures for the total number of sales, along with information about the schools which are currently using the text are not available at this time. The major interest in the book probably now stems from how it is used in the classroom and if it is used in an environmental education context.

Tony Angell, Supervisor of the Washington State Office of Environmental Education, said that although the office has approximately 20 copies of the book for loan purposes, he was not aware of the particular teachers who had chosen to use the text or in what ways they were using it.

Such information, if readily available to public school teachers, could further facilitate the increased distribution of the text. With more detailed information about lesson plans and activities to augment the concepts presented in it, teachers may find it more convenient and accessible to incorporate a toxic substances unit into their existing curricula. ●

WashPIRG is Student Activism Within The System

by Tracy Brown

Student activism has taken on many different forms over the years. During the 1960's students expressed their concern for the issues they felt were important in very vocal ways. By staging sit-ins, walk-outs, protests and marches, students across the country brought attention to such issues as the Vietnam War, civil rights, a variety of environmental concerns, as well as issues of student empowerment.

Students fought for control of their own lives and as citizens, not just students, wanted respect for their actions. This was a hard struggle, since most college administrations across the country have worked to stifle student control and power, traditionally viewing students as "children" unable to make decisions or manage their own affairs.

In the early 1970's, Ralph Nader, a consumer protection activist, was gaining notoriety on college campuses. On his lecture tours he proposed the notion of students working within the system instead of outside it to instigate change. He encouraged students to form their own groups to make changes in the political system. With the abundance of resources on a college campus this made good sense. Students in Oregon, after hearing Nader speak, decided to start an organization which would do research, organizing and lobbying on a variety of timely issues of 'public interest.' This was the formation of the first Public Interest Research Group (PIRG).

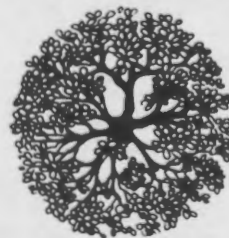
Students realized that of primary importance in the functioning of any effective organization is a stable and accountable funding system. This is why they decided the best way to insure consistent funding was to tax themselves on campus. But they also wanted fellow students to have an option to withhold money from the PIRG if desired because of issue disagreement. Student activities fees are generally assessed to all students whether they want to fund these activities or not. By using the existing structure of tuition fee collection on campus, PIRG funding became a special kind of activity fee. With this funding, the group was able to hire a professional staff of organizers to help students start internships, conduct effective research and to

organize activities on campus. The strength of the PIRG lies in its stability and continuity provided by staff members. Now there are nineteen states and two Canadian provinces which have PIRG's.

The Washington Public Interest Research Group, WashPIRG, was founded in 1976 at the University of Washington. Now the state's largest consumer and environmental advocacy group, it is one of the few student organizations which is represented on a state-wide level, with campus chapters at U. of W., Evergreen State College, W.W.U. and a state office in Seattle. WashPIRG has been instrumental in passing many pieces of legislation over the years. It is one of the leaders in the fight to insure that Hanford, Washington will not be the site of the nation's first high-level nuclear waste dump. Students have passed legislative acts and memorials in the state on this issue. WashPIRG has also worked extensively on utility rate reform, consumer protection and public disclosure issues.

The WashPIRG chapter here at Western is deeply indebted to those students of the past which worked long hours to get a chapter here. After a struggle of more than ten years, last spring, WashPIRG was approved by the trustees of the college to officially be on campus.

Now as students and citizens concerned about the environment and quality of life, we must do more than just learn about issues, take exams and enter the job market. At this time more than any in our lives we have the ability to do work which could produce positive change. We now have a structure (in the PIRG) unlike the students of the 60's, to activate our energy and our idealism and to work on meaningful issues. Students before us have gained many accomplishments to insure that we today have better control over our lives. We now have the freedom, power and responsibility to enrich both our educational experience and citizenship skills and to build for a better community. ●



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PLANET INTERVIEW WITH JOHN MILES

edited by Jeff Hardy

During the summer break, John Miles took over as Dean of Huxley College. The following is an interview done last summer, by Arnie Klaus, then acting editor of *The Planet*.

Planet: How is Huxley preparing students for environmental careers?

Miles: When we planned our curriculum, we had an eye towards the options and opportunities that exist out there. So we have divided up the subject matter, training a person for a particular role in society, but with an eye toward an education that is going to prepare that person to be a critical thinker and to be a participant in the decision making processes in the society. We have aimed in two specific directions, toward educational roles on one hand, and toward a more technical role in environmental science on the other, and we have organized our course work accordingly.

Planet: What careers do you see developing as environmental issues become primary?

Miles: I think environmental issues are already primary in the sense that you pick up the newspaper on any given day and you will find an article that deals with what we generally define as environmental issues. What we have seen in the last few years is the emergence of career opportunities related to energy, assessment of environmental impact, toxic substances, and a shrinking resource base. I would expect the toxic substances area to continue, and indeed all of those areas to continue.

Planet: Huxley has been a topic of concern for its low student turnout. Why is this happening when environmental issues are occurring every day?

Miles: I think several things are happening. Number one, throughout the history of the college we have attracted a relatively high percentage of our student body from across the United States. At one time we had almost 40% of our students come from out of state. What has happened in recent years has been a rapidly increasing tuition, and this has particularly affected our state. I see a correlation between the reduction in enrollment here and the increasing tuition, particularly with the out of state students. This indicates that within the state there has not been a high degree of interest in environmental studies. Another factor has to be the career orientation that students have these days, and the ideal that they want to go out and get a job. How else can we account for the tremendous numbers of students that are knocking down the doors of the college of business and economics

and vocational programs such as accounting, computer science, and so forth. I don't know if those are areas that intrinsically interest students, but they are perceived by students as being areas of opportunity. It must be that environmental studies are not perceived by students as being areas of opportunity. Actually, this is not true. We have a fairly high placement of our graduates. In a recent survey sent out to graduates of the last five years, of the 50% that answered, 70% have found jobs relating to their training inside of two years after graduation. So there are certainly job opportunities out there, although clearly they are not as well defined as the jobs of an accountant.

Planet: Does this mean an environmental student oriented toward an environmental career has to be more entrepreneurial?

Miles: Perhaps there is a bit more adventure in getting a job than for a student graduating in accounting. You know what you are going to do if you are an accountant. My personal experience with students is that they graduate, and they may have a rough time finding those first jobs, but they find them. Also, one of the things we have found is a very high satisfaction, on the part of our responses, both with the job and with the background and training our students have received. We also found that as a group they weren't highly paid. So as a student, if their goal is to be wealthy and join the yuppies, then perhaps this is not an area to go into.

I think the third factor (effecting enrollment) is the misconception in many peoples minds about Huxley; that it is a place where only technical work is going on and you need to be a scientist by inclination and aptitude. We do have parts of our curriculum that are aimed at technical careers and to do these options you do need to be oriented toward science and math. But we also have parts of our curriculum that are oriented toward other things such as education and social science. So a similar intensity of aptitude of mathematics and sciences is not necessary. We only require basic exposure to biology, chemistry, and algebra in order to understand some of the basic core material that comprises environmental studies.

Planet: Ruth Weiner became Dean for her strength in becoming involved in front-line environmental issues. Dr. Mayer became Dean with the notion of integrating a stronger science and business oriented approach. What will

characterize your tenure as Dean?

Miles: In particular, I think I will strive to achieve a balanced curriculum in the sense that we work toward a balance between the liberal education goals and the career oriented goals. Balanced also in the sense that we have a truly interdisciplinary foundation and curriculum for all of Huxley, that integrates the scientific and social scientific elements of understanding environmental problems. I do not intend to make any dramatic changes. One of our problems may be that we have changed too many times in the past. I would just like to try and move us slightly back towards a middle of the road position in relation to environmental studies.

Planet: At a time when government is cutting back on programs and corporations hire environmentalists as a last resort how does a student find a career that actually helps pursue their environmental concerns?

Miles: A student goes out and becomes very confident at what they do. One thing we are discovering is that our students in the Masters program are getting jobs before they finish. This simply means that if the person is well educated and well trained and confident they will be able to find jobs. It is true. Government has been cutting back programs, but this will create more opportunities in the long run. There will be more opportunities in field research because the information base relative to environment and environmental problems is eroding, and we can not make decisions without information. We will have to gather more information if we are going to make those decisions.

Planet: Do you have any closing comments?

Miles: As I sit here looking at the arrival of new students, and the new role I see myself in, I am real excited. We have our problems, mainly the enrollment problem, but given the challenge of environmental management and the opportunities that exist for capable, dedicated people to meet these challenges, I cannot believe that there is not a group of students in the state that would not partake of the opportunities that we provide. I am also very excited about the possibility of trying once again to do with Huxley what we started off to do 15 years ago. I would like to see Huxley take the lead in finding ways campus wide to increase Western's involvement in the addressing environmental problems. ●