

Aug. 14, 81

Dr. Armour,

Here is the W.I.S.E.S.T. report
on Mechanical Engineering. I was
not able to find you or
Wendy, therefore I am leaving
this report posted. Thank you

J. Ward

Aug 13, 1987

MY EXPERIENCE WITH WISEST'S
SUMMER RESEARCH PROGRAM

ELENI ZERVOS
STRATHCONA HIGH SCHOOL

Upon the six weeks of my summer job with WISEST, I had the chance to work in the faculty of Environmental Engineering (Civil Engineering) under the supervision of Mr Dave Rector and Mr Bob Andrews.

He and my partner, Tina Jung, had the opportunity of getting involved in both laboratory and library work. Both sides of the job were very rendering.

In the environmental laboratory we had the chance to get acquainted with different kind of machines and techniques which made us more comfortable towards research and science in general.

The people in the environmental laboratory had been working (among others) on two projects. One of them has as a goal to test the efficiency of the Water Treatment Plant. The water coming from the river is submitted to different stages during which, harmful components are removed and as a result the water is "clean" and ready to be consumed. In order to test the efficiency of that system, samples of water are collected between each two consecutive stages and are analysed in the lab. 100ml of each sample of water were injected twice of three times in a machine that measured the total and inorganic carbon found in the samples, by burning it. The two numbers are recorded and subtracted. The final

number revealed the amount of Total Organic Carbon (TOC) (a harmful component for man's health) existing in the sample. The amount of TOC should reduce as the procedure of the water treatment is advancing.

My and Tina's participation in that project was to do the injections of the samples which were collected in the period between March and May, record the results and compute the amount of TOC in each sample.

The other project is very closely associated with the previous one. One of the stages of the water treatment plant is to remove the trihalomethanes (THM) (which are suspected to be causing cancer) existing in the water by passing it through columns with Activated carbon. The activated carbon absorbs like a sponge the trihalomethanes; but for that to be successfully accomplished a certain quality and quantity of activated carbon is required. The research on that project is focused on finding the ideal quality and quantity of carbon needed to absorb completely the trihalomethanes. For that matter, little bottles are filled with water containing known amounts of trihalomethanes and different qualities and quantities of activated carbon. The bottles are stored for a certain amount of time and then the water is analysed to find the remaining amount of THM's.

Again, our participation was to prepare those bottles and put them into storage.

In addition to that, we helped in cleaning up and tiding the laboratories and the equipment.

The library work in which we were involved, consisted of researching published articles in scientific and engineering periodicals which are going to be used as references for the theses and papers of the laboratory staff. That side of our work gave us the opportunity of getting familiar with the library system and is probably going to be useful for our future university years.

In general this program has benefit me as a high-school and future university student, as well as a person. Since it was my first job it gave me a better view of an active and working life, and it made me understand how research works. Being in a research laboratory and actually participating in different projects made me find out more things about myself. It gave me confidence and also made me realize that this kind of occupation fascinates me.

I sincerely hope that other students will have the same opportunity as me in the following years, to participate in WISEST summer research program. They may not finally decide to follow a non-traditional career (as I did) but at least they would have seen that they are able to open their career views broader. That is

something very important because whatever their choice is for their future they would have had exactly that: A CHOICE to decide about the nature of their future works and, as a result, lives.

Eleni Zervos

Linda
Wong

8/13/87

Mechanical Engineering Department

It has been an unique and interesting experience working in the Mechanical Engineering department for the W.I.S.E.S.T.O program.

I have learned a great deal by watching and proceeding with the tasks assigned. The majority of the time was spent taking measurements, entering data into a computer and operating various machine. Metallurgical preparation, developing X-ray diffracted film and working with corrosive chemicals, the duties I enjoyed most, were frequently done as well.

The people teaching me my responsibilities, Craig and Yvonne, are superb individuals to work with. Not only were they understanding, they were friendly and easygoing like the rest of the staff in M.E. building. Both made the working environment an enjoyable place to be, while accumulating new knowledge.

Being part of W.I.S.E.S.T.O was a pleasant way to

spend the summer and to put it to a beneficial use. The best element of the program is that it enabled me to meet different personalities and make new friends. I would recommend any student to apply to WISEST, since it is a satisfying summer job.

The WISEST program was one of the most useful experiences I've ever had. There was so much I learned through all I did, and I will surely use the knowledge gained this summer to my benefit in the future. Actually, in quantity, there was not that many different things I worked on. However, they were all very interesting, so I was not bored.

Since we (myself and my partner Eleni Zerwas) arrived right in the middle of the project the Environmental Engineering department was working on, most of our work was the repetitive chores and testing that must be done in any research project. At first, we only had a vague idea of why we were doing all those things because we didn't partake in preparing for the project and neither will we be tying results together at the end. One of those chores was measuring how much organic carbon was present in different water samples. The sample differed in that they were at different stages of being purified, where the "dirtier" samples had more of the organic carbon in them. The ultimate purpose then, was to test the efficiency of the department's water treatment plant. We were of course, supposed to get lower and lower amounts of organic carbon in the progressive stages of purification. Eleni and I did achieve this, which gave me a feeling of accomplishment and pride. The procedure we used was a very precise one, especially since the machine used required much consistency in technique. We first had to inject some of the sample into the machine and determine the total organic AND inorganic carbon present. Then, we had to

→ turn the lamp to the machine off so that it would measure only the inorganic carbon, since the lamp burns it off. Then, to find the amount of organic carbon, we subtracted the two values. There was also some standard solutions we had to inject at the beginning to calibrate the machine. The precision I had to achieve daily gave me real confidence with research in labs and high-tech machines, both of which intimidated me before.

Organic carbon is not the only thing that needs to be pulled out of the water to make it safe. Dangerous compounds called trihalomethanes (THM's) must also be pulled out. A special type of carbon, called activated carbon, is put into the water, and the THM's stick to it. Another ^{task} we did in the lab was filling bottles with water samples and different types of activated carbon. Here, we were trying to determine which type of carbon is best for removing THM's. I really enjoyed this - especially since THM's may cause cancer. There was also a machine where different water samples were run through columns of activated carbon. From there, the carbon gets put into another machine where the amount of THM's that stuck to it is measured. All in all, I enjoyed the lab work. I learned that research takes a lot of patience, since there is much repetition. It still was all kind of fun though.

We also did a lot of library research, where we had to look up references and find the articles. This, I thought, was most beneficial, since I learned how to use the U of A libraries. In all of the 6 weeks, I've generally learned much about the U of A, and I feel

→

→ very comfortable there. I feel that in one year, when I become a student at the U of A I'll have quite an edge over the others.

Eleni and I also did a lot of odd jobs like filing, photocopying, cleaning up, and picking things up at the store. All these too helped me become familiar with the campus and kept the job interesting.

The most valuable realization I came to at the end of program was that research work is not for me. Six weeks was just enough time to thoroughly enjoy what I did, but I just didn't "click" with it. In other words, I couldn't do this for a living. I have worked in a pharmacy before, and I think I am much more suited to that. This realization plus all the other things I learned has made WISEST a unique experience I will never forget.

Final WISEST
"Report"

Christa Scholtz.
14811-103 AVE
455-5210.



August 11/87

During my participation with the WISEST session sponsored by the University of Alberta I was granted the privilege of working closely with members of this institution's zoology department.

The project I have been involved in for the past six weeks was originally detailed as "a study of lakes and rivers in the prairies." This study, as far as I was exposed to it, consists of chemical analyses of water samples of selected rivers, lakes, and ponds. The rivers and such were selected by graduate students directly involved, with the assistance and direct participation of Dr. Elie Prepas of the Zoology Department. The bodies of water are numerous: Lake Wabamun, Lake Nakamun, Figure Eight Lake, various ponds in the Peace River area, Cooking Lake, ~~to~~ to name a few. The study is very extensive. The above mentioned rivers, lakes, and ponds are sampled at least once a month.

These samples are dealt with both at the Meanook Biological Station near Athabasca and our laboratory here in Edmonton. The samples are collected in various plastic bottles which are given lab identification numbers. The samples are filtered and tested for chlorophyll a and nitrogen levels. Other chemical analyses concern the levels of phosphorus, Nitrates, and nitrites. Dominant cations and anions are also tested for. These include: potassium, sodium, calcium, iron, manganese, magnesium, lead, aluminum. Color and turbidity are also determined. Some of the samples we receive are filtered and sent to the Canadian Council of Inland Waters in Burlington, Ontario ^(for further) analyses.

These tests result in quite a bit of data that

This summer opportunity was very valuable to me and I am grateful to Wendy Kaplan and Dr. Armour for making it all happen. This program is very informative to those participating in it.

I would be pleased and willing to answer any questions future/prospective WISEST students might have. Have them give me a call. A little advertisement never hurt anybody.

Christa Scholtz.
WISEST '87





1. The first section discusses the importance of maintaining accurate records in a business setting. It highlights how proper record-keeping can lead to better decision-making and financial stability. The text emphasizes the need for consistency and thoroughness in data collection.

2. The second section focuses on the role of technology in modern business operations. It explores how digital tools and software can streamline processes, reduce errors, and improve overall efficiency. The author notes that while technology offers many benefits, it also requires a significant investment in training and infrastructure.

3. The third section addresses the challenges of managing a diverse workforce. It discusses the importance of effective communication and leadership in fostering a positive work environment. The text suggests that managers should focus on understanding the needs and strengths of their team members to maximize productivity.

4. The fourth section examines the impact of market trends on business strategy. It argues that companies must stay informed about industry developments and be prepared to adapt their strategies accordingly. The author provides examples of how successful businesses have navigated market fluctuations.

5. The fifth section discusses the ethical responsibilities of business leaders. It emphasizes the importance of transparency and integrity in all business dealings. The text encourages leaders to consider the long-term consequences of their actions and to act in the best interests of their stakeholders.

6. The sixth section explores the role of innovation in driving business growth. It highlights the importance of encouraging creative thinking and experimentation within an organization. The author suggests that companies should invest in research and development to stay ahead of the competition.

7. The seventh section discusses the importance of customer satisfaction in business success. It argues that providing excellent customer service is essential for building a loyal customer base. The text offers practical tips for improving customer interactions and resolving complaints effectively.

8. The eighth section examines the impact of global economic factors on local businesses. It discusses how international trade policies and market conditions can affect a company's operations. The author suggests that businesses should develop strategies to mitigate risks and take advantage of global opportunities.

9. The ninth section discusses the importance of financial management in business. It emphasizes the need for careful budgeting and monitoring of expenses to ensure the company remains profitable. The text provides guidance on how to allocate resources effectively and make informed financial decisions.

10. The tenth section concludes the document by summarizing the key points discussed in the previous sections. It reiterates the importance of a holistic approach to business management, one that considers all aspects of the organization from operations to ethics.

Wendy
Kwong.

Preceding: A Report of My Richest Summer.

I worked under the supervision of Doctor Page in the department of Microbiology. On the first day, Doctor Page showed Bernadett, who was my partner, and I around the building. He showed us the different facilities which we could use and introduced us to lab technicians, graduate students, other professors and staff members. Then he lent us some lab coats and explained our project to us.

Doctor Page was very patient. He wrote us some notes and even lent us a book to satisfy our curiosity on the subject of bacteria. Anyway, after we have ~~been~~ thoroughly understood our work, we started working in the afternoon of our first day there. From then on, we prepared over a hundred slants, sterilized equipments, inoculated forty-one strains of bacteria and prepared medium. We also made medium plates, solutions and many more.

Eventually, we officially started working on our project on the second week. We took the 41 strains of cells, worked on ^{six of} them at a time, and so we had to work on seven batches of cells. Bernadett and I worked co-operatively. We inoculated twenty-four flasks for each batch, centrifuged the cells, and did the Arrow Reaction, Lowry (Protein) Assay, and Gecky (Hydroxamate, nitroge Assay). With so much work, Bernadett and I were fairly busy. Sometimes, we had to work over-time, but, there were also times when we could leave early. Fortunately, we always managed to use the physical education facilities at lunch. Bernadett and I would always play badminton with ~~the~~ three other girls and we had a lot of fun. Sometimes, I ~~even~~ even went to play basketball after work.

It was indeed a lot of fun working in the lab. The graduate students in our lab were really

friendly and nice. They taught us things when Doctor Page was away and always reminded us to have fun. Sometimes they would turn on the radio and write funny but profound statements on a Graffiti board. Doctor Page also encouraged us to enjoy ourselves and he brought us ~~down~~ down stairs for coffee breaks. However, a ~~so~~ funny thing happened on our last Thursday. Our lab was flooded by contaminated ~~to~~ distilled water! ~~The~~ Apparently the ~~sink~~ water hose was laid outside the sink and was not noticed. By the time we found out what happened, it was too late. The water was at our feet and advancing. Immediately we started cleaning up and everyone ~~was~~ found that morning very interesting. As a result, our lab has a clean floor at last.

with pride
from
Wendy Kwong
of
Microbiology.

14-8-86.

Botany — Dr. Vitt

This has been a very interesting summer for me. Not only have I learned a bit about University life (location of buildings, library orientation, etc.), but I have also been able to experience what it is like to actually work in a lab. I believe that this summer program is an excellent opportunity for people my age to learn about what interests them and where their future careers may or may not lie. I, myself, am still not exactly sure of what I am going to do when I reach University. I know that I will probably go into the field of science, but I am still not sure of exactly which department. I thought that it was a good experience working in the lab and the herbarium, although sometimes the work did become a bit monotonous and a little boring. I know now that I probably will not go into scientific research and I will also probably not work in a lab as my career choice.

Throughout the six weeks we did many different things (we, meaning, the girl I worked with (Sharon) and myself). The major project we worked on was for a grad student named Dennis. His experiment was to discover if certain types of bog water plants could live in the bog water of another type of plant. We began by measuring how much each plant had grown over a certain amount of time (about 3 months or more). This took quite a long time because each type of water (eight different types) had eight different types of plants growing in them. Dennis took three separate samples from each type of plant and each sample contained 10 individual plants. In other words, we ended up measuring (and later weighing) 1920 plants! In addition to this we filtered all the bog water and added some HCl to each bottled sample. This past week we have been using the water samples to discover how much chemicals (such as Ca, P, Na, etc.) are in the water and how much chemicals were ~~also~~ absorbed/emitted from the plants. To do this, we were allowed to use a machine called an Atomic Absorption Spectrophotometer.

WISEST PROGRAM

MARIO MATELUNA-ZUÑIGA

When I first started working in the clothing and textiles department of the home economics faculty, I thought that I would be doing very domestic tasks, such as sewing. He didn't realize that there were other areas in the faculty like textile science, psychology of clothes, consumer studies, and historic and cross-cultural costumes and textiles which was the area I worked in.

For the first project I worked on I had to catalogue slides and pictures of the African and Yugoslavian collections. First of all I matched the slides and pictures to the actual garments by looking for them in the compactors and in the cabinets. Once this was completed I had to catalogue the slides and mount the pictures on to cards. Next I would cut the excess amount of picture, type the accession number on the card and catalogue them.

My second project was to do mannequin inventory of the six types of mannequins we had. Following this project I was assigned to photograph with Linda Turner. We were to do all the fur coats and children's clothing.

My next assignment was to work with the negatives. I organized them all in a binder under clothing categories and I had to put little labels with accession numbers on all the slides. After this I was sent to do photocopying which preceded the mounting and ~~the~~ animating of labels. When making these labels I also learned how to do lettraset. The following task was working on the computer to catalogue pictures of donations. Then I catalogued all magazines in the collection.

My last project though was the one I most enjoyed because Anne Lambert let me

work with the things she brought
back from Thailand. I had to
access and describe them which
involved a little bit of research.

I think the Wiest program
is a great idea! Thanks
for having accepted me!

Mario Mateluna 2.

WISEST SUMMER PROGRAM

Chris Arendt

During my summer work experience in the Family Studies Department, I was assigned a wide variety of tasks. More than just making every day interesting for me, this really provided me with a taste of the many facets of scientific research.

My supervisors did everything possible to make my summer an enjoyable and educational one. At the beginning of my stay, I recieved a complete tour of the Cameron, Rutherford, Education, John Scott and, lest we forget, Family Studies libraries. It was then that I was taught the "Online skills" which, needless to say, will benefit me in the years to come. As well, at the end of my term, Dr. Kieren took me on a complete tour of the Home Economicsbuilding, showing me that there is so much more to Home Ec. than just sewing machines and convection ovens.

I consider myself fortunate to have been exposed to so many of the duties which scientific inquiry demands. I worked for quite some time on the office's computer with data base entry filing systems. I also designed the graphics for a number of family problem solving transparencies for a workshop which Dr. Kieren is planning (after all, educational programs are central to supporting research of this nature). On top of the usual "go for" type of library jobs, I was assigned to some library "detective work", which entailed tracking down missing bibliographical information for our files (a "mission" which led me to even the most unfrequented corners and basements of all of the main libraries). As well, I spent a number of mornings at the MAC computer lab in CAB typing out a chapter in a textbook which Dr. Kieren is about to publish on family life education. Not only was I able to appreciate the material, but I also gained invaluable practice at deciphering profs' handwriting! Finally, and I think most exciting of all for me was being able to participate directly in the actual compilation of the project data. Only now can I begin to comprehend how complicated a process interpreting data which involves so many variables really is.

As I look back upon my six weeks, I see how much I have learned about the enormous complexity and diversity of research work. I have experienced both the day-to-day rewards, and the frustration of feeling so distant from that elusive "conclusion". But, maybe most importantly, I leave with the knowledge that research in family studies or home economics is not feministic at all. I no longer feel detered by pursuing a career in faculties consisting of majority female enrollment.

Of course, such ingrained stereotypes are not so easily broken, but it is "hands on" educational programs like these which will help overcome these invisible sex barriers. But I realize that it will be an incredible struggle, especially when, as Dr. Kieren put it, "Only 5 men on campus are interested in a course in human sexuality!"

WISEST - A SPECIAL EXPERIENCE

by

ROOPA SOIN

to

WENDY CAPLAN, CO-ORDINATOR

EDUCATION SOUTH

AUGUST 14, 1984

Many individuals, when faced with career-related choices, refuse to even consider occupations not associated with their sex. The WISEST summer research program is a deliberate attempt to dispel such prejudices and will, I am sure, have a positive effect on the future employment situation. The program places students in faculties not commonly associated with their sex, and assigns them research projects resulting in expanded horizons and the making of non-biased decisions.

I was situated in the chemistry faculty supervised by Dr. Ann Margaret Armour. During the six weeks, I learned many techniques and skills including the purification of products through recrystallization, sublimation, and chromatography; the separation of insoluble liquids; the separation and identification of a combination of compounds; vacuum filtration; distillation; refluxing, and the taking of melting points. I also was exposed to many pieces of apparatus that I would not have seen otherwise at my age. The hands-on experience is just one of the aspects I thank WISEST for; it truly gave me a valuable insight into what chemistry research entails.

Additional support for WISEST students facing an uncertain future was not lacking. Wednesday afternoon seminars greatly bolstered my confidence and have aided me in preparing for university and the world after. When I had any questions, I felt free to ask anybody and knew my query would be answered to the best of that person's ability.

Because of the WISEST program, I am more comfortable in a laboratory environment, more confident of myself; have more employment possibilities for future summers, and I am definitely considering a

science related occupation. I made a great many new friends and thoroughly enjoyed myself.

I would be committing a grave injustice if I did not thank everybody who made this program possible this year. It was these fantastic, special people who are responsible for my savings - who made the program truly worthwhile and enjoyable. These six weeks will be remembered fondly for a long time to come. Congratulations on a job well done, and good luck in the future.

Sharon Luk

The faculty I am involve in is Botany. My partner, Simone, and I were not assigned to any specific project. Instead we did number of small tasks for Dr. Vitt. Nevertheless, we spend most of our time working on a project for Dennis, a graduate student. The thesis of this project is to observe the affect of acid solution on certain type of mosses. The part that we actually took part in were measuring and weighting the mosses, filtering water samples. Afterward, we analyzed the water samples, by using a machine called the spectrophotometer which show the quality of certain chemical in a solution. Unfortunately we wouldn't be able to see the result. In between, we did some mapping, and filing. We were very fortunate to have a chance to go out to the peat-land. From this trip, we were able to experience the process of collecting samples of peats and water samples.

I am delighted to have the opportunity to be part of the WIST program. Through this program, I was able to experienced some of the works that a researcher do. Furthermore, it give me a chance to exposed to new works and machines. Although I didn't learn everything about botany nor being a researcher, but I got a better understanding of them. Beside the knowledgers that I ^{have} gain, I also meet

many very nice people which helps me
though some of the not too exciting moment.
I am very happy to be part of the
program because I really enjoyed.

WISEST...NOT JUST ANOTHER SUMMER JOB
by EDDIE MAH

On Monday, July 6, 1987 I began what I thought was just another "summer job". However, as time passed by I slowly began to realize that WISEST was more than that. While working in the Faculty of Nursing I began to understand that the program was a great opportunity for me to be involved with things that I am interested in. This is not to say that I would become a nurse, although I have a greater respect for them now, but I have been exposed to the medical profession which may be a future prospect for me. I have been exposed to hospital staff and patients which has given me insight on what it would be like to become a doctor, whether it be a researcher or a surgical doctor. I understand now that to become a doctor or a nurse takes a great deal of time and patience beginning from the time they enter the particular faculty to the time they retire.

I worked with people for whom I have a great respect for. Not only did they assist me in a working atmosphere but they also provided me with helpful input on my own future plans. I had the pleasure to work with Salim Remtulla, a WISEST graduate, who is not only a terrific person but he also understands and agrees with me that WISEST was a valuable experience.

With WISEST I realized that there are no limits to what both men and women can do. Although I already knew that there are no particular jobs that are only for men or only

for women the WISEST program really brought that point into focus for me. This experience made me appreciate how liberal the professional world is; to allow males in areas such as nursing and home economics and to allow women into the engineering field. I would like to congratulate the people involved in organizing the WISEST program and thank you for giving me my most profitable summer.

Lianne Durocher
Botany. Dr. Dale
Aug. 13. 1987

This summer I spent six weeks working at the U of A. in the botany department through the WISEST summer student program. I worked with my supervisor, Dr. Mark Dale, a graduate student, Elizabeth John, and an undergrad, Mark Cavanaugh. Most of the work I did was connected with the project I was given in lichenometry but I also helped out in such areas as searching for and photocopying references, matching photo slides to sketches of lichens, and verifying computer data.

Elizabeth John is completing a study on the ecology of the lichens at the snow rock slide, in Jasper national park. As a supplement to her studies, we used lichenometry to date (as accurately as possible) the slide. Because lichens generally grow at a very slow rate, and in such inhospitable environments as on rocks, their known diameter and estimated rate of growth can be used as a tool for deriving the age of the substrate. My project included doing the research on the technique, and writing a summary. Then I was given the opportunity to do actual field work. We spent four days camping and measuring open Rhizocarpon, a certain group of crustose lichens. I am also responsible for writing up the final report discussing our results.

Through my employment this summer I have become more familiar with the University campus

and the facilities available. I have also learned a great deal about what goes on in the laboratories. I have realized that work in the sciences can be frustrating and repetitive but that the results of a scientist's work can be exciting. As well, because I have worked quite independently all summer, and in a very small lab, I now know that my future career decisions will reflect my need for more communication.

I am now much more aware of the options which are open to me in the sciences and, to a certain extent, I have been able to clarify my ideas about which routes I may follow in the future.

Overall, I feel that my involvement in the WISEST program has been a positive and beneficial experience. I feel that the goals of the program have been successfully reached. I hope that WISEST is able to expand to include more project diversity and a greater number of students.

Wiseest Report
by
Wendy Thai

August 12/87

Changing different samples of semi- and superconductors, soldering copper wires, getting liquid nitrogen, making graphs and finding slopes are basically what I've done and have learned to do in the past six weeks. Each day new samples of GaAs or superconductor is tested. Slowly, I've learned not only to use different computers in measuring different properties but also to change different samples.

One sample is tested each day. The samples are placed in a cryostat. Usually my supervisor, Dr Weichman or an undergraduate student, Danny, changes the samples, however, as I become more familiar with the equipments, I have to change the samples myself. Each samples have four copper wires connected to it's four corners by indium, this has to be solder to the copper in the cryostat. Once this is done a vacuum is created in here using a mercury diffusion pump. Then measurements are taken at different temperature depending on the different materials of the samples. Temperatures vary from -140 degrees to 100 degrees celcius. Before each measurements can be taken, the thickness, temperature range, and the magnetic field must be entered into the computer. This is my job. There are three electrometers connected to the cryostat that measures the voltage applied through the sample. I have to enter these readings as well, and they change according to the temperature.

The first few readings are taken at room temperature. A thermocouple is use to measure the temperature of the sample. One end of the thermocouple is place in ice, while the copper

end is placed in the cryostat next to the sample being tested. A heater is use to heat up this copper end of the thermocouple. Because the heater has a certain reaction time, it must be turn off before the required temperature has been attained. Watching the heater is my responsibility.

I also have to take readings at very low temperatures. Liquid nitrogen is used to lowered the temperature. To cool down the sample, I pour liquid nitrogen into the cryostat. This lowers the temperature of the sample. When the temperature stabilizes, two readings are taken. The results are then printed on a computer printout. The printout provides a measurement of the sample's temperature taken at the time of the readings, the resistivity, and the $\ln$ of that resistivity. Usually a hall effect measurement is also taken. The hall effect is produce by turning on a magnetic field. Then a second measurement is taken. The computer measures the mobility and the N (electron concentration). Once all the readings have been taken at the highest and lowest possible temperatures, it is then enter into a computer. Three sets of numbers are entered as X and Y values for each of the three lines that will be graphed. The three graphs, $\ln \rho$, $\ln n/t^{3/2}$, and mobility are one way of recording and showing the results of this sample. It is my responsibility to take the readings, make the graphs, and find the slopes for each of the graphs drawn. Then I have to make an overall summary of all the data measured and calculated by the computer.

It usually takes me two days to complete one "run". One

day to take the measurements and the second to record and graph them. Usually, I do both at the same time, while waiting for the temperatures of today's run to rise or fall, I input yesterday's run into the computer and make the graphs.

Although this program is only six weeks long, it has given me the chance to experience a new dimension in physics that would otherwise not be available. Because I went through this program, I have acquired a more realistic view of what a scientist really is. The most enjoyable aspect for me is the chance to meet and work with the professors, undergraduate students and the students of the different schools.

Report

August 12

Through the MIST program, I worked in Dr. Cass' botany laboratory. There I did lab work involving the reproductive parts of the poppy plant; specifically the gynaeceum, the female reproductive part of the flower.

During the beginning of the program, as an introduction to both lab work and flowering plant research, I learned about the basic physiology of flowering plants as well as the terminology involved in laboratory research.

Following the former, I learned how to "fix" or prepare plant tissue for sectioning and then for microscope viewing and photography. The steps involved in this tissue preparation began with "running" the plant tissue through a series of Ethanol:TBH solutions; a dehydration series. Following these solution changes, the tissue was infiltrated with paraffin. The purpose of this step was to supply a solid medium for the embedment of the tissue. Next the tissue was set in paraffin blocks, cut into cubes and mounted upon wooden blocks. At this point, the tissue was ready for sectioning. This sectioning was done by a rotary microtome, a hand powered machine where the cutting blade remains stationary and the embedded tissue moves up and down past the blade's edge. By this method of sectioning, each section of tissue attached to the one before it creating a ribbon of paraffin sections. Thus, tissue sections were in serial order. Once the ribbons were mounted upon slides with Haupt's, an adhesive, and

formalin, a preservative, they were run through a series of staining solutions. I used a red stain, safranin, and one of two counterstains, either fast green or aniline blue, for contrast. After the slides were stained, cover slips were mounted to preserve the tissue.

I was then taught to use a basic light microscope to scan the slides and to choose which sections were suitable to be photographed. I used the photomicroscope to make either color slides for viewing purposes or black and white negatives for darkroom development.

The steps involved in darkroom development began with printing the picture, or exposing the paper to the image upon the negative. Following this step, the paper was run from developer to stop bath to fixer and finally to water. The picture, after drying, was ready for viewing.

In conclusion, I feel that my being a part of the WICIST program, I have received great benefits. Through this work experience, I have received a flavor of both science and lab work. This experience has helped to reaffirm my desire to enter the field of science upon reaching university and has taught me what to expect from a life of scientific research. I enjoyed working in Dr. Cass' lab and feel that my participation in this program has had a positive influence upon my future in the field of science.

There is a great need for integrating men and women into non-traditional roles in our society; individuals of both sexes have valuable contributions to make in all fields - a great variety of skills, abilities, and opinions. The WISEST summer research program is a step towards the integration of both sexes into all occupations. The program itself has many plusses; the six week time period during the summer is ideal; the regular weekly meetings provide valuable and interesting information and a chance to meet new friends; and, most importantly, WISEST allows students like myself to get an idea about what a career in a non-traditional job could be like at a time when we are planning for our futures.

During my six weeks in this program I was employed under Dr. Armour in the Department of Chemistry. I was responsible for the testing of experiments for future undergraduate organic chemistry laboratories. To begin with, I learned several basic techniques such as recrystallization, pipetting, extraction, reflux, and distillation. Next, I gained experience recognizing and handling various chemistry equipment and chemicals. In doing so, I also learned the importance of safety in the laboratory. Valuable in any field, but especially in chemistry, the observation note-taking enabled me to keep a record in order to better understand what went on (and, in some cases, what went wrong) during experiments. Overall, the work gave me a far greater appreciation and understanding of organic chemistry than I had before.

On a more personal level, I gained a lot more from the program. In addition to gaining more self-confidence from relating with other people, I practiced public speaking while being interviewed about the WISEST program by Eyewitness News. Also, I toured the Swan Hills Hazardous Waste Disposal Plant during a chemistry conference in which scientists from both the United States and Canada were discussing hazardous waste management and a controversial "community right-to-know" bill recently passed in the U.S. This first-hand involvement in an event involving the scientific community was a unique experience for me, and I was especially interested in the politics involved in the discussions. Finally, the tour of the University and the career information session provided during two

of the weekly meetings gave me a better sense of direction for my future plans to attend the University of Alberta.

This report would not be complete if I left out the ideal atmosphere in which I worked - an atmosphere resulting from the patience, friendship, and understanding of the people in lab E1-34. Without these people I am sure I could never have enjoyed my work as much as I did. As a result of the efforts of all the staff in the lab, the work was challenging, fun to learn, and actually became something to look forward to! I especially appreciated Dr. Armour's flexibility regarding working hours, her understanding of my limitations, and the way I was given a certain amount of guided independence. It is people like these who make the program a success.

The WISEST program is one of the best experiences that I have ever had. Not only did I explore deeper into the realm of organic chemistry, but I also learned more about myself - my goals, my values, and my interests. Although my future is still uncertain, the WISEST program has given me the privilege to get a glimpse of what it may hold.

P.S. Thank you, Wendy, for being the co-ordinator - you did a great job!
Best of luck to you!

Sandi Frank

The Wisest Program has been a rewarding experience which I will always remember. It helped me sort out many problems which were causing me some anxiety.

I made a decision about which University I wish to attend and what kind of direction I want my courses to take. I would like to stay within the sciences as I found it quite interesting this summer. I also decided to take Physics courses. (Previously I had been afraid to do so after a rather upsetting experience in it in Junior High.) I realize now how vital it is that I leave all my options open. I don't want anything to hinder me from doing what I want.

It was a bit of a shock to see how repetitive the procedures in the lab were. Contamination was always a major concern. If one didn't have patience one would surely go insane. I worried me a little as I am not extremely patient.

Not only did I learn how to function in the lab but I also made lots of friends. I was worried about how a person could make friends in a University of this size. I realize now that a person will make friends with the people in their own department. I met many different individuals of different positions. One was extremely kind and sensitive toward me.

Of course I wasn't just socializing all the time. I did a mini Dilution Assay. I wrote it down so I'd remember exactly how it had been done. I did up cell culture plates. I prepared samples by stomaching organs. (organ homogenization) I even helped out with a Reverse Transcriptase Assay!

I learned a lot more about my likes and dislikes concerning work. I know now that I like to be able to see my goal and work towards it. I have a goal now. That is to do the best I can in grade 12 to prepare myself for University. Thank you for allowing me to participate in the Wisest Program.

Shannon K.C. Burn

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Shannon K.C. Lum

In addition to Dennis's project we have also been working in the herbarium. We have packaged lichens, mounted vascular plants, labelled vascular plants, mapped numerous species of plants (marked where they were found on a map), and attempted to identify some vascular plants (we managed to name 1 out of about 7 plants and we are still not sure if it was right). We also read part of a book which Dr. Vitt is working on because they needed someone with about our knowledge of botany to find words which needed to be put in the glossary. About two weeks ago we helped put together numerous charts and diagrams which are needed for an upcoming conference in August. Lastly, we went out one day to a peat moss field near Lac la Biche to collect peat moss samples and water samples. I liked going out into the field very much except that it was very tiring to walk through a huge field for 4 hours (something like walking on a waterbed because you sink down with each step) and the flies were very bad.

This is basically what I have done during this six week program. I have enjoyed myself and am glad that I got the chance to receive a job like this. I have not only learned a lot, but I have also gotten to know several very nice people.

Simone Vande Guchte